TRANSCRIPT: U.S. Chamber of Commerce Artificial Intelligence Commission – Cleveland Clinic Hearing 4/28/22

CRENSHAW I'd like to start our event today by introducing our first speaker Dr.Tom Mihaljevic. the doctor actually is the CEO and president of the Cleveland clinic Prior to his work here in Cleveland, as the head of the Cleveland Clinic he served as head of the Abu Dhabi branch for the last few years before taking on this new role also. speaking near and dear to my heart the doctor, as actually taken up tech as a major part of his portfolio in terms of treatments for patients has been published over 140 times, and actually one of those papers I think speaks here, and dear, to my heart, and some of the chapters were written about the use of robotics and mice revalve surgery as well.

So we are incredibly grateful for you to host us today. Dr the Cleveland clinic, and like, without any further ado - Thank you very much.

MIHALJEVIC: Thank you, Jordan, I'm really really flattered you did your research!

12:04:12 But he also pronounced my last name perfectly, which Only few succeed at So thank you very, very much to be here today…Actually, I was just reflecting, walking here into this conference room. I think this is the first time that I step back into this conference room. In the last 2 and a half years we haven't really been using it for an in person in person gathering so the good news is that Covid at least seems to be giving us a bit of a break, so that we can meet in person, and I'm glad that the meeting in person is such an important topic as Ai computational technology is in general. So I would like to thank the U.S. Chamber of Commerce and all the members of the Commission. I think I had a chance to meet all of you, and

12:04:59 Both Chairman John Delaney, and mike Ferguson for being here today and choosing Cleveland clinic as one of the sites for those of you I haven't had a chance to

12:05:10 tell a little bit about the place where you we currently add you're sitting in a in a hotel that is in a car heart of medical campus that takes care of the sickest patients in the world.

12:05:19 There's no single medical facility anywhere that sees a greater complexity, of medical care, and takes care of very many who have lost to hope for cure.

12:05:34 Then the people who are here on their roof at Cleveland Clinic, approximately 25 to 30,000 caregivers work here in support of our patients in our effort to do as much good as

12:05:47 possible. Now, needless to say it's a complex task for number for number of different reasons.

12:05:55 But one of them is just the proliferation of medical knowledge on one end.

12:05:59 The proliferation. Medical knowledge and advancement of science is showing impressive.

12:06:03 That is inspirational on the other hand it is so rapid that it's frightening.

12:06:11 So. just for reference in 1980. the amount of medical information doubled every 7 years, and very many of us remember the 80s.

12:06:24 Today, it doubles every 73 days, So, although we try to read every medical publication that gets published, since there is a new publication and pay review journals that occurs every 30 seconds, it's kind of difficult to keep up

12:06:40 with the pace. So, aside from just an advancement of science, when it comes to management to really complex conditions of our patients, there's a tremendous amount of medical information that we're gathering from patient medical records

12:06:57 for electronic medical records that needs to be not just scattered, but analyzed and protected appropriately.

12:07:04 And then put into the use of our caregivers to adequately steer patients through the challenges of their illness.

12:07:14 So at the Cleveland clinic. We are all about patients; our motto is to put the patients first, to put them in a center of everything that we do.

12:07:24 But what I would like to say is that the future of health care…

12:07:29 …in the past we always celebrated individuals who, with their brilliant effort, intellect, and drive, transform healthcare.

12:07:41 In 20 first century we will be celebrating the teams that work together, and there are supported by computational technology that will help them advance the science faster. Because of everything that I mentioned the role of individual is always going to be important the role of team collective wisdom and our computational ability. carries an unparalleled importance, And that's why we're so passionate about the about the use of computational technology in general, but artificial intelligence in particular, And I would like to give you a flavor of a few areas where, we're using it already.

12:08:30 We are being able now to predict, for example, the certain types of arrythmias, as in irregular heartbeat. By using a algorithm that that is powered by artificial intelligence.

12:08:41 We are discovering an association between the disease that is now touched

12:08:46 60% of us in this audience directly, and that is Covid and the disease that will touch one third of us doing our life and this is degenerative brain disease. like Alzheimer's, dementia, or Parkinson's.

12:09:03 We have been using this type of analytical capability also to steer the better use of radiation. theorem being a treatment of cancer.

12:09:14 And the list goes on and on and on. So our goal is really to use to use artificial intelligence, not as just in our inpatient setting in our hospitals, but beyond that, because the healthcare is going to transform in

12:09:29 very many ways, but is also going to transform in such a way that the health care will be provided in the areas where you're not used to see healthcare, being provided.

12:09:42 Probably the most, the biggest change is going to be that a lot of health care that we will be receiving during our lifetime is most likely going to occur the healthcare delivery now hopes. the only way to do that appropriately in a coordinate fashion is by using, by using the artificial intelligence in a meaningful way… another really important use of

12:10:05 artificial intelligence in a quality and patient safety let's take a look at just in the explosion of the needs of imaging technologies.

12:10:15 or let's say, analysis of pathological specimens the pathological specimens, meaning the samples of a tissue that we obtained from hundreds of patients every single day on this campus along and thousands of patients every

12:10:29 single day across a system of being analyzed by pathologists in a traditional way.

12:10:34 They're looking at the sample center the microscope they may or may not be seeing the patterns.

12:10:41 Ours are… Our team is tremendously good, and have a phenomenal quality assurance.

12:10:46 But, needless to say, even when the process is done perfectly fine, it requires tremendous investment of time, effort, and manpower, and introduces an opportunity for error.

12:10:59 We are realizing that partnering with

12:11:05 other companies like the one that we are collaborating with is just called a path.

12:11:10 Ai is going to help us to analyze it. Thousands of pathology, specimens.

12:11:15 with the use of of artificial intelligence in a way that is going to be safer, more effective. And ultimately it is going to be scalable. The reason why scalability of efforts is so important is because there is a paradox in US healthcare that very few people eat in particularly within a us health care are aware of. imagine before we to ask any one of you. Obviously, I think you will be biased right now, for I ask you a question named the best providers of healthcare in the United States.

12:11:51 I would hope that it the clinic would make at least to the top 5. But if I were to ask you to guess What's our market share, and how many Americans actually benefit from Cleveland clinic care… I bet you do be far off with your answer. And the answer is 1.5%.

12:12:14 So there's a fewer than 2 out of 100 Americans we'll ever experience Cleveland Clinic equality of care, and I would like to bet, did almost 100 out of 100 Americans would love to enjoy that privilege and It'snot just Cleveland Clinic. You can use mayo clinic.

12:12:36 You can use any of the top 5 reputations which we all have similar market share.

12:12:40 You put the top 5 healthcare providers in the United States.

12:12:46 of cumulative market share for the lack of better terms would be probably 5 or 6%.

12:12:53 Why is this so? Because there's no scalability in our efforts to reach many people in it, So the growth of the organizations like ours, and through growth, what we essentially say the scalability of the good that we can provide

12:13:14 in people's lives is imperative no because it's a business imperative.

12:13:21 It is an ethical imperative. The only way that We will be able to do. It is going to be by an appropriate use of technology and artificial intelligence is such an important piece of it.

12:13:36 So, therefore i'm so happy to see you here today, and I would just like to highlight another aspect of this joint effort, and that is that we, as health care providers cannot do this work alone.

12:13:52 We need your support when it comes to legislation.

12:13:55 We need your support when it comes to public advocacy. And we also need collaboration with other companies that are outside of our primary sphere of healthcare such as companies in aareas of computational technology, and one

12:14:12 of our partnerships that we're very proud of is with IBM that is supporting our research efforts.

12:14:19 And that will any. IBM will bring the first quantum computing dedicated to biomedical research and by medical use here in our medical campus by the end of this year.

12:14:29 So. you are embarking in a really important topic.

12:14:36 And a topic that is an intersection between the use of what 20 first century is blasted, and that is artificial and child intelligence.

12:14:43 And the need the 20 first century has generated an awareness, and that is, we have a shared responsibility to bring as much good as we can to as many people in need this possible. So once again, welcome to Cleveland Clinic. We're so proud to have you here in cleveland It's so wonderful to hear that Cleveland is the center of of biomedical and and computational. and and a computational advancement. This is exactly what we were hoping to hear but i'll

12:15:18 I'll turn it. Put you back to you journey or Mike, and I hope you'll enjoy us staying here. Thank you very much again.

FERGUSON: Thank you, Dr. Mihaljevic.

12:15:49 I want to thank him not just for hosting us here today, but for the extraordinary team from the Cleveland clinic who has welcomed us here today.

12:16:02 Every single person We've met Every staff member everybody this is a first class operation, and not only does it have a world renowned reputation here at the Cleveland clinic, but that every person we've met here is extraordinary so thank

12:16:16 you for your warm welcome, and thank you for making this such a what I know is going to be a very, very fruitful endeavor.

12:16:26 My name is Mike Ferguson I'm the co-chair of this commission I served in Congress for several years from the great State of New Jersey.

12:16:35 Maybe not as great as Ohio but we're working on it but and we have an extraordinary group of commissioners here who you all get to meet through the course of today's hearing a great group of experts as

12:16:50 my kids would say, “these are people with big brains” okay and we're really looking forward to hearing both from our witnesses from our panels today, and also from the back and forth and the questioning from some of our commissioners… my

12:17:05 Co-chair, former Congressman, John Delaney, will be joining us virtually sometime.

12:17:10 Soon he was schedule got stuck this morning and he's gonna be joining us at some point to share it. both his remarks and to join in the questioning as Well, i'm gonna take the co-chairs prerogative for just

12:17:24 a moment and recognize 2 great friends and very important people certainly to to me, and I know to a lot of other folks.

12:17:35 I'm. a Senior Advisor, at the law firm of Baker, Hostetler,

12:17:40 Which was founded 106 years ago. here in Cleveland, and the leader of our 1,100 lawyers is here today.

12:17:49 Paul Schmidt, the chairman of Baker Hostetler. he's a Cleveland native he's based in the Washington office now, but Paul Schmidt is here today.

12:17:57 Paul, thanks for being here. and I'm also very pleased to recognize another colleague from our firm.

12:18:03 Carole Rendon. Carol is not only a fantastic lawyer, she was a great public servant.

12:18:08 She was the US. attorney here in Cleveland a few years back, and is also a great partner with the Cleveland clinic.

12:18:15 We are so proud of our affiliation at Baker Hostetler, with Cleveland Clinic.

12:18:19 We are a legal services, a partner of the clinic here, and we couldn't be more proud of the great clients that we have, and none greater than the Cleveland clinic for the impact that this institution is making on society. we're very very pleased to be here today.

12:18:39 So it was so interesting. Hearing Tom talking about AI and its impact on healthcare.

12:18:45 AI has an amazing potential to transform our world for the better we've been talking about that on our commission through our first hearing in Austin, and we continue that conversation here in Cleveland today.

12:18:55 From using Ai and machine learning to assist clinicians and detecting cancers to using Ai to develop new therapeutics.

12:19:05 We can see how it can make our world a better and a healthier place.

12:19:10 And while we continue to see how beneficial this technology can be for society, we also cannot ignore the concerns and the problems that can be associated with the use of artificial intelligence, that's really one of the reasons

12:19:23 why i'm so pleased to co-chair this Commission with former Congressman Delaney and so plays to be doing it on the platform of the United States Chamber of Commerce.

12:19:35 We're really looking to address some of these concerns head-on, and to ensure that future innovation that has so much potential to help Society is also not stifled. During today's.

12:19:49 hearing we are hoping to address issues around healthcare and to discuss how we prepare and assist the workforce for the future of an age of Ai.

12:19:59 I want to, especially again. thank the Cleveland clinic for hosting us today, and I want to thank all of our presenters.

12:20:05 Our witnesses on these panels, upcoming for taking time out of their schedules.

12:20:10 These are folks who are a very, very successful careers whether they're academics or industry folks.

12:20:19 These are a lot of folks who are making a big impact on the world today, and for them to take time out of their schedule. To be with us here today to share some of their wisdom and insights with us is very very important to the work, and the success of this commission so with that that's the end of my opening remarks.

12:20:35 We're gonna now take a moment we're gonna move to the front table here, and i'll invite our first 3 panelists to join me at the at the front desk.

12:21:09 So we are going to get right into our testimony.

12:21:12 And typically the way we I think it's been helpful for us to do this is each of our presenters will share their remarks with us, and then we'll move into Q. and for everybody at the same time, rather than going back and forth and got to be a little bit more efficient use at some point.

12:21:27 I'm going to join my commissioners back up there in the in the first row, but I figured for this first one.

12:21:32 I'm going to join you all down here in the presentations. So our 3 presenters on the first panel here are from the Cleveland Clinic appropriately enough.

12:21:44 First we'll hear from Dr. Serpil Erzurum. Then we'll hear from Dr. Laura Jehi, and then Dr. Rohit Chandra, and why, don't we go in that order that I just gave, and maybe you could begin your comments with a brief introduction of yourself.

12:22:05 And then we'll hear a little bit about your your thoughts for our topic here.

ERZURUM: Thank you so much. Thank you very much for inviting me.

12:22:13 I have been here at the Cleveland Clinic.

12:22:18 Since 1993. i'm a Lung Doctor I also lead research, education, and innovation.

12:22:23 Now for the Cleveland clinic. I did not train here.

12:22:27 I've worked in very small hospitals from South Dakota, Colorado, Texas.

12:22:32 To the NIH Intramural Branch, and at Pittsburgh.

12:22:37 Cleveland. is now my home and i'm very happy to have been at the clinic for so long, and address this important topic.

12:22:44 So with that i'll start off, perhaps with framing my memory of the past and healthcare. Think it's important to remember where we've been, and then talk about where we are now and then the future.

12:23:01 Well, I think we can say that healthcare is one of our greatest success stories in the United States.

12:23:09 In the early 1900s we had no antibiotics till 1940.

12:23:15 We had no vaccines to the fortys and fifties.

12:23:20 We had no chemotherapy, no anesthesia.

12:23:25 The revolution in healthcare that occurred during the first part of the 1900s was based upon the industrial age, revolution, and molecular and chemical understanding of life.

12:23:39 These are ages, epochs really, of our research and our capability as human beings to understand human life.

12:23:46 We're in a new epoch that started about I don't know

12:23:52 Maybe 20 years ago, 10 years ago, with IBM, maybe digital revolution.

12:23:57 the digital network, the data age and that's why we're here, now, there are a few things about healthcare success.

12:24:07 Medical success means we're all getting older so there are a number of things that are stressing the healthcare system now.

12:24:14 And the reason i'm bringing them up is because we look to digital opportunities to overcome those struggles.

12:24:24 The most important one is we've done so well in healthcare that we're all getting older and by 2050 1 in 4 people will be over 65 in the past people died of infections that's very very

12:24:38 rare. We lived to be old, my dad is a 100 years old, but he has a lot of problems.. so whereas we have one in 4 people in the United States with a lot of problems and being very old

12:24:54 there's some real health care stresses. the aging population, and the expectation of those people, for how they'll get care what will be available to them who will know about then

12:25:08 And so, with all this coming together, we cannot ignore the opportunity to solve these problems with the digital resources that we have at our fingertips.

12:25:18 It is clear to me that over my time as being a physician, I started with handbook pen and paper.

12:25:28 You can't read my writing that was one of the problems in in the elect, that when we had pay for charts nobody could rewrite anybody else.

12:25:36 Right. We now have digital charts, the electronic record,

12:25:42 We are all digitized on that system, and as we see that digital resource sitting there in front of us as physicians, we want to use it.

12:25:50 We want to solve the problems of our patients through this opportunity of accessing more knowledge through that digital resource.

12:26:01 And the electronic health record was launched in 2010 and with it has launched a million projects for research and following patients and understanding them.

12:26:13 It's a wonderful time to be a physician, I no longer have to try to decipher the writing of my colleague.

12:26:21 I have all the imaging I want right there at my fingertips,

12:26:25 I don't have to try to hunt them down and yet there are risks associated with this, and I would be remiss if I didn't bring them up.

12:26:36 I value privacy. I value privacy. for myself i'm a patient, too, and you know, when I go to the physician, and I know when my patients come to me, and they tell me things they take me things that no one else knows including

12:26:56 their loved ones, because they trust me. They trust me to do what's best for them and their health.

12:27:07 And they trust me not to tell people actually to tell you the truth.

12:27:14 I don't know where that will go with the electronic health record.

12:27:16 I also have to bring up that my idea of privacy is very different than my daughters, who are in their twenties.

12:27:24 I think privacy may be a forgotten word in the future.

12:27:29 Nevertheless, we should deal with it, because even if privacy is somewhat different for that generation,

12:27:37 I don't think they expect us to transport their data to Amazon and sell it.

12:27:45 I also think, as a physician and all caregivers.

12:27:50 When we graduated medical school, I did not take an oath to cure patients.

12:27:58 I hope, I do that's the goal we want to cure and make people feel better.

12:28:03 The only oath that we took was to do no harm.

12:28:08 We are to do no harm to that person. we're seeing you know why we take that oath.

12:28:16 We can harm people because they tell us things they trust us.

12:28:19 And so we have in this room people who are gonna have to make those policy decisions.

12:28:25 And it is so important to the caregivers and the patients, and all of you in this room, of course, are other patients or caregivers, or something.

12:28:35 We have to hold true to that oath to do no harm, because the patient is a vulnerable person, and I will just end with that

JEHI: Thank you we definitely don't want to do any harm so I'm Laura, J.

12:28:59 Hi i'm a neurologist specialized in epilepsy.

12:29:06 I came to Cleveland Clinic in 2000.

12:29:10 As a medical student, and i've stayed since then in Cleveland Clinic.

12:29:18 It's home to me as it is to the thousands of caregivers that Dr.

12:29:22 Mihaljevic.mentioned at the beginning and what bonds us on is this commitment that patients are first. This is a Cleveland Clinic model, But for us

12:29:35 It's not just towards it's why we it's not

12:29:39 Why we come, but it's why, we stay in cleveland clinic and anybody who is working with you today that you're going to meet or you've already met shares those 2 words otherwise they

12:29:53 wouldn't be here as we're also grateful to be here, and we're grateful for you for joining us and hearing us today.

12:30:03 So i'm very my own for the clinic I'm.

12:30:07 the chief research information officer. So in in that role I am the one who is bridging research and information technology to enable all of the innovation and creation of new knowledge that our caregivers here do.

12:30:28 I will cover 2 main themes and my testimony. First.

12:30:32 I will take you through a deeper dive into some of the applications of Ai that we are now doing in Cleveland Clinic.

12:30:45 Are they today encounters with Ai …and then second, I will take you through some highlights over the guiding principles that frame our decisions around the Ai.

12:30:57 So let's start with the applications. Dr. Mihaljevic .mentioned so many I will focus on 3 categories because these 3 categories mirror the city big aspects of a patients joruney with us in

12:31:15 Cleveland clinic, the first being diagnosing disease, the second being treating disease, and then the third being prognosis, figuring out how that disease is going to evolve over time, and at the clinic we are using

12:31:29 ai across that whole continuum starting with diagnosis let's talk about stroke. Strokee is a devastating illness.

12:31:40 It's an affliction where blood supply is just suddenly cut off from a certain region in the brain.

12:31:46 I'm in neurologist. so I have to start with something that's closer to home in stroke time is literally brain every minute.

12:32:00 Every second that goes by where that brain region isn't getting the blood supply that it on needs is time where brain cells are dying, and those do not recover.

12:32:12 So it is imperative that we find that blockage and address it as soon as possible.

12:32:20 At the Clinic our Radiology department has implemented an Ai software that does 3 things.

12:32:26 It automates the detection of large vessel inclusion so that's the blockage and the blood vessel.

12:32:34 It automatically alerts the doctor, the interventionalist whose job it is to fix that blockage and it gets the whole team that needs to be involved --

12:32:47 That's the neurologist, the surgeon the radiologist that automatically all called together in a virtual chat room to immediately review the case together and decide on the best course of action. by doing that precious minutes are

12:33:06 saved, and with that brain function the second application let's go to Dcs(?) management and he was drug discovery as an example.

12:33:17 Quite often the way a drug works against a diseases is by bonding, linking to receptors in the brain, in the body.

12:33:26 that then, trigger a series of reactions that are influencing that this is progression, pretty much like a puzzle.

12:33:35 -pieces of a puzzle that has to fit together and then unlock a series of things that need to happen after them.

12:33:44 Ai algorithms have helped our researchers canvas through tons of data on drugs that already are on the market --

12:33:54 Already Fda approved to treat certain diseases, but Ai has helped them perform simulations on those drugs to see if they can actually help other diseases.

12:34:08 This is how we have found, for example, that Viagra could be a promising drug candidate to help prevent Alzheimer's disease.

12:34:19 treat it also. The next step is to actually test that hypothesis and Regulus clinical trials ending with prognosis.

12:34:27 -let's talk about covid We used ai algorithms to automatically predict who is going to progress to severe disease of the hundreds of patients who are being diagnosed with covid in our health.

12:34:43 system every day at the peak of the pandemic, who are the few in that ocean of patients who are at highest risk of quickly, rapidly progressing to a point of severity where they end up in the emergency room one at

12:35:00 the hospital. We had to find them as quickly as possible. And these Ai algorithms were using data T data that we have in our electronic health record to help us identify these patients as quickly as possible.

12:35:17 and make that prediction that risk level visible to the people who needed to see it.

12:35:25 Our nurses, whose job was to call every single patient who has covid positive to follow them up and monitor their disease progression instead of being lost in the ocean.

12:35:40 that algorithm that we developed and integrated in our electronic health record helped us surface that prediction-

12:35:50 make those patients more visible, so that these nurses could get to them as soon as possible.

12:35:54 Give them the care they need as soon as possible, but also more importantly, it freed them to go back and do their pre covid work. r

12:36:06 These nurses didn't fall from the sky they already had a full time.

12:36:10 job monitoring pupil with diabetes, with hypertension, with cancer, with all the medical problems that our world still had, and still has.

12:36:25 now, in addition to Covid, and they had initially, without these algorithms, they had dropped everything they were doing to just focus on this one emergency, this one disease…the algorithms that we created were the tool that allowed them to

12:36:42 prioritize and allowed us to get to the sickest patients when they really needed us.

12:36:48 All these examples share one critical commonality, and all of them the Ai tools were informing, but they were not replacing the human decision-making element. And that is key.

12:37:05 When we talk about the value of ai we are not talking about some magical wand that's going to just be waved and solve our problems and give us the answers.

12:37:19 These tools are effective in Cleveland clinic because we use them to inform.

12:37:25 We don't rely on them in all the examples that I mentioned there was a human safeguard.

12:37:31 There was a person with judgment that was looking what the Ai algorithms were doing and making the final decision.

12:37:41 But that humans job was so much easier because of what the Ai algorithms provided upfront, and that is the piece that cannot be lost in all of this.

12:37:57 Pivoting now to the second half of my testimony, what guiding principles do we follow in our overall Ai strategy?

12:38:05 And again, i'll give you a 3 the first one is that the value of an Ai algorithm is not in its academic, scientific sophistication.

12:38:18 Its value is in what it actually does to help people and what it actually does at the end of the day, to change healthcare for the better.

12:38:28 After an Ai model is generated and before it gets implemented.

12:38:34 the key steps of validating it, testing it, deploying it, optimizing it.

12:38:38 -All of those steps are really essential, and we have to know that the model is generating accurate predictions in the reward.

12:38:48 Not just in a research setting. We have to make sure that the right eyes will see it at the right time and then make the right decision at the clinic.

12:39:00 we have a team that goes through that trigger. All these steps that I mentioned before we quote unquote: Apply any Ai model in our patient care system.

12:39:14 Second guiding principle: Research and clinical care need to be aligned for the benefit of all.

12:39:21 What do I mean by that? clinical care is where the questions come from?

12:39:24 This is where the challenges are. These are the problems that we need to solve.

12:39:29 They come from clinicians who are taking care of people.

12:39:36 But the model is with Ai are generated in research.

12:39:41 Research is where the science transforms this amorphous mass of data..

12:39:49 the flood of data that we talked about earlier. research is what transforms all of that into useful .. into something that is good at the end that can be used.

12:40:05 And these 2 parties - clinical care and research- have have to speak

12:40:14 They have to coordinate. Just imagine, if you would should, if clinical care and research were actually holding hands.

12:40:23 I have this team, both of them holding hands and walking together down a path.

12:40:30 -the same path towards a final common good. Versus the reality that many institutions across the country team with where research sits in a silo silo and clinical care sits, and another silo, and we could add a third title which

12:40:54 is industry and commercialization stakeholders, and all of this… we could do so much better if we actually coordinate.

12:41:07 And this coordination, this alignment means 2 things: it means alignment in process-.

12:41:13 so take the covid example that I mentioned we wouldn't have been successful.

12:41:19 if we hadn't coordinated very closely between our research teams and our clinical care team, and even things as simple as developing the clinical templates, the notes that the clinicians would follow when would use when

12:41:36 they are seeing patients. We coordinated the researchers with the clinicians to align what is being asked about in clinic with what they, the elements we are using in in the development of our model, or something as simple as this just

12:41:52 made our job so much easier, and it allowed us to ask the questions that these clinicians really cared about.

12:42:00 Alignment is also alignment in technology. The data that gets collected is the source that we build these models on.

12:42:12 We bend the models in platforms, in analytic platforms.

12:42:19 These 2 things also don't always talk together… so we need technology that aligns

12:42:28 data collection with data analytics, with implementation of models. And that technology isn't always accessible and it isn't always safe to use.

12:42:45 The last guiding principle that I wanted to finish with is that we cannot lose the anchor.

12:42:50 This conversation is really about people. it's about your constituents representative Delaney and representative Ferguson.

12:43:01 it is your constituents.. It is our patients and it is the patients of today, but equally important.

12:43:11 the patients of tomorrow. They are both equally important One cannot see it.

12:43:20 The other the patients of tomorrow. our kids and our plans kids and they're the ones that our kids and kids are going to take care of.

12:43:30 And both deserve our attention, that today cannot come at the expense of tomorrow.

12:43:38 And I am saying this, not just because I think it's I do think it.

12:43:43 But I'm saying it because I asked and I asked the patients Dr.

12:43:48 Mihaljevic.mentioned our Cleveland Clinic data governance principles in passing.

12:43:55 That is a one-page document that is publicly available on our website, and we give it to every patient, every new patient that establishes care.

12:44:04 in Cleveland Clinic. This one page took us about a year and a half to create, because it took numerous conversations among us, and the Us.

12:44:15 here is clinicians, researchers, administrators, lawyers, compliance officers in and patience.

12:44:24 We would go every step of the way back to our patients and ask them, What do they think this means to them?

12:44:34 What do they think is missing? What do they want to emphasize?

12:44:39 They were our partners in creating that document, and what they told us is that they are trusting us with their data.

12:44:49 They are trusting us with their specimens. That we heard about earlier.

12:44:57 So they want us to protect that information. But what they also said is, they want us to use that data,

12:45:06 use those specimens and research and innovate… they want us to do things they don't want us to just protect behind a wall.

12:45:22 And secure without any benefit. I that's coming out of that securing patients demand that we research and innovates regulation, privacy, confidentiality, our key,

12:45:37 but they should not come at the expense of discovery.

12:45:40 Cleveland Clinic. We had to end innovate, actually in our data governance processes, and we revamped our whole structure around data shading.

12:45:50 That was another numerous series of meetings and stakeholders. Innovation and the technology that manages confidentiality, privacy.

12:46:01 and with that regulation has to also evolve. We cannot regulate.

12:46:05 If that's evolving as quickly data science, computation, Ai.

12:46:11 And in the very near future quantum computing with regulation principles and with technology, that is, from the past century. Technology is evolving our thinking about how to deal with.

12:46:26 It needs to evolve in parallel I would like to conclude with a statement that one of my colleagues told me in one of our distant conversations about ai opportunities challenges for Cleveland clinic… he's one

12:46:39 of our surgeons and he is a member of the team that we have together.

12:46:47 He said, Laura, and the big scheme of things, our professional half life on this earth.

12:46:53 is relatively short… We only have so much time to make it difference,

12:46:59 we need to make that time count - see that's that patient for us.

12:47:07 So I want to thank you. The Chamber and the members and leadership of this hearing for your attention to this matter,

12:47:16 your investment in thinking through it, and all the thoughtfulness you brought to the planning, and to make sure that our time together today will count.

12:47:27 Thank you.

FERGUSON: Thank you very much. You know, before we we go to Dr.

12:47:32 Chandra. I just need to make a couple of remarks.

12:47:37 I asked our panelists to briefly introduce themselves. there's a way too much humility up here, and you can tell.

12:47:44 I'm used to dealing with folks in Washington dc where there's maybe less of that.

12:47:50 So you know. you know in Washington there's folks who are ready to tell you every great thing about themselves, whether they're accurate or not.

12:48:00 And here we don't have that same affliction. so I would.

12:48:03 I would just like to take a couple of moments for each of our panelists and give you a little bit of their background for their for our audience. Dr. Erzurum, who you heard from first she's the chief research and academic officer

12:48:15 here at the clinic she focuses on strategic growth of enterprise-wide medical and scientific educational programs, clinical basic and translational research and technology development to deliver the most innovative care to patients shared her medical

12:48:32 degree from Northeastern Ohio Universities College of Medicine, and completed Residency Training in Internal Medicine at Baylor College of Medicine

12:48:41 Dr. Jehi, who just heard from is a professor of neurology, she said, at the clinic's Learner College of medicine, and an epilepsy specialist at the Clinic since 2006 she's the director of

12:48:56 the Outcomes research program for epilepsy.

12:49:00 And, as she mentioned importantly, She's chief research information officer for the Cleveland clinic health system, and she and the executive program lead for the discovery accelerator focused on artificial intelligence

12:49:14 quantum computing and data science education. She received her medical degree from American University of Beirut, and she completed her residency in neurology and Fellowship and Clinical neuroscience Physiology at Cleveland Clinic and

12:49:28 holds a master's degree in healthcare delivery science from Dartmouth College.

12:49:33 Finally, we are going to hear from Dr. Chandra, who is the clinic's chief digital officer.

12:49:40 He oversees information, the information technology division and leads the digital innovation throughout the Cleveland clinic's global health system.

12:49:49 He holds a bachelor of technology degree from the Indian Institute of Technology and comport India and a doctor of Philosophy degree from Stanford University.

12:50:00 So, as you can see, those are important things to know, and of course, with those sorts of accomplishments, there been very humble about sharing those with you.

12:50:10 So I felt, took it upon myself to share all this with you. Dr.

12:50:13 Chandra ==

CHANDRA: I'll give a little bit of background on my stuff, and I know that we want to get to the Q/As

12:50:20 And a as well keep it brief. My background is I grew up, and I've been trained as a software engineer, and I work in the technology industry for the last 25 years.

12:50:33 Most recently I worked at Yahoo for about 15 years working on stores and online at advertising. and if I look back just at the evolution of the industry, that's where a lot of technologies and

12:50:45 techniques around big data and around and at X (?) and

12:50:51 Ai were developed, so that's a little bit of my background.

12:50:57 A year ago I was approached by the clinic, and a little bit to Dr.Mihaljevic's point that he made earlier, I think

12:51:04 the clinic had realization that there's significant opportunities in leveraging technology to transform health care and the clinic made a deliberate effort to go outside the health care industry.

12:51:15 and recruit people from technology with the premise that actually it's that deep collaboration that's gonna unlock sort of the big breakthroughs and healthcare So that's I was approached by

12:51:27 the clinic about a year back, and for me it was a fascinating conversation, because healthcare is big,

12:51:34 and as I talked to the clinic more there's a lot of opportunities to leverage technology, and that's kind of what brought me here.

12:51:41 Ive been with the clinic for about a little over 2 months.

12:51:43 so my perspectives are still evolving but at least i'll share some early thoughts.

12:51:48 One observation is just about Ai. I know that we gathered here because all of us believe that Ai has the potential to transform health care. One comment that I will make if you look at just the trajectory of Ai-- Ai

12:52:01 is only partly about algorithms it's mostly about data, and it's important to keep that in mind and if I look at the clinic we don't just generate our healthcare in general, we don't just

12:52:16 generate generate large or vast amounts of data we generate an *insane amount of data, and there are tons of insights and applications that are literally waiting to be discovered.

12:52:29 That's the opportunity… and the example that Dr. Jehi.

12:52:36 gave about finding cross-uses of Drugs with viagra could potentially help Alzheimer's.

12:52:43 This is literally discovering you don't go in with that hypothesis, but because of the fact that we have large amounts of data makes it almost impossible for us to say, can we throw algorithms at it a computer literally by

12:52:57 brute force. You throw enough computational power you have enough data that's where new insights can be generated, and that's the potential.

12:53:08 Roughly 15 years back is when I think there was a national effort to put and get all of this data digitized.

12:53:16 We are now at a place where we have electronic health records.

12:53:18 I think the next frontier is actually leveraging that data and not just to provide individual care, but to actually *discover new opportunities, new treatments, whether it's in research whether it's in …just discovery of new correlations

12:53:34 that we did not know before, and I think that that's sort of the opportunity in terms of the long term.

12:53:40 I would also add that these techniques have the potential to help us in even more immediate time frames as well.

12:53:49 So yeah, Dr. Mihaljevic said that if you take the top 5 health care institutions, we probably touch sub-

12:54:00 10% of our lives, And there's an opportunity for technology to say, how can we scale that out to provide-- to reach way

12:54:13 more number of patients, them equally good care but to end to do it at a lower cost. so trying to maintain safety consistency, and quality of care, and to do it at scale-- that's the opportunity.

12:54:26 I'll just give simple examples today. physicians are spending 40% of their time typing up notes.

12:54:32 That's a good part about electronic health records… can we leverage speech.

12:54:36 Can we leverage ai algorithms that can transcribe a physician's conversation into electronic health records and reduce the times from 40% to 20%?

12:54:45 That again helps positions to scale. It provides consistency of care.

12:54:49 Lower cost equally good, if not better outcomes. Another example would be: Can you understand enough from the data to see which patients are more likely to develop which afflictions which ones are likely to need more acute care versus less acutecare and you

12:55:05 can sort of focus your energies and efforts accordingly.

12:55:09 And then again provides, helps, enables us to provide equally good care.

12:55:14 scale it out, and it a better sort of cost point. The last thing that I would say, is it's not easy to do these deep collaborations, and my empirical observation is that we are probably only scratching the surface and

12:55:30 that's the question. that I think is facing us as an industry, and to the extent that the policy initiatives that can help enable that I think it's an important conversation to have. Thus far I don't think any

12:55:42 healthcare institution has really cracked it in terms of how do we leverage

12:55:47 technology deeply across all of these spectrum. there are bits and pieces of it.

12:55:49 but I think you have an opportunity to do a lot more and I think that that's a question that you know.

12:55:56 obviously we, as the clinic, are trying to figure out how to crack.

12:55:58 But that's something that I think that faces the industry as a whole.

FERGUSON: Thank you we we're gonna move into questions now. but I will just say that's an amazing amount of time that physicians spend taking notes, and I have to say that I have a daughter who's graduating from college.

12:56:20 Next month she's wanted to be a nurse for a long time.

12:56:22 She has this great desire to care for patients and she got a job upon her graduation, and she's going to be a scribe, and I didn't even know that this job existed.

12:56:34 But she told me she's, going to be trailing around physicians and nurses, and others just typing everything they say into the laptop.

12:56:45 Which is very exciting. I was I was very excited because it's a great step on her way of trying to be a healthcare provider. she was actually most excited, because she says she's gonna get to wear

12:56:55 scrubs, which is what she's maybe she's very excited about them. but perhaps she can be a part of this process of reducing the amount of time that physicians need to be taking their notes. Our commissioners,

12:57:11 please. Now, i'm not gonna give every one of your backgrounds, either, and I know our witnesses have had a chance, and others are in our audience. Had a chance to see your profiles on the on the C_TEC Chamber of

12:57:25 Commerce website. But if perhaps before you ask your question if you want to briefly just give your affiliation, that would be most appropriate for our audience and our panelists, who'd like to begin?

THERIER: we've heard a lot of talk from all of you privacy, but also innovation and this is where there's a clear intersection with public policy.. I think this is something that we all up here struggle with trying to find that. so perhaps you can

12:58:02 How Congress other law makers should strike that but also protect patients?

JEHI: that's what i'm doing so it's a very tricky question and what we, you know found as a general principle that can help us navigate it is the importance of

12:58:30 transparency being transparent to patients about what data we're collecting, and why and what do we intend to do with it?

12:58:41 Is very challenging to strike that balance between imagining every single scenario where things can go wrong and make sure you are protected against it by putting it in a You know lengthy legal documents and expecting

12:59:02 a patient to understand what all of that means for them.

12:59:08 Language has to be simple. It has to be direct. patients have to understand what they're getting into, and we need as a healthcare system, to abide by certain rules of engagement.

12:59:26 You know, for what we will do and not do with data and samples that they provide us.

12:59:35 So, having a document like this, we call it our 10 Commandments, actually not to be presumptuous about it

12:59:42 But we wanted to stick with a clear set of simple rules that patients knew and understood.

12:59:50 So we generated that, and we give it to them whenever they register for care.

12:59:57 We also are creating a patient advisory Council related to data that was c

13:00:05 The creation of that Council was part of the revamping around our structure with governing data, sharing initiatives and review of what data gets shared.

13:00:15 Part of that process was the way we realized we have to include patients in it.

13:00:20 It's not practical. not realistic to expect that. every single opportunity for data sharing either internally or externally, would be reviewed by a patient- that was just not going to happen.

13:00:34 but we needed to keep patients involved, and we needed to stay abreast of where their mindset is right?

13:00:43 So we talked about how privacy means different things to her than it does to her daughter. so we can not just assume that where patient sits as far as what they allow us, or don't allow us to do with their data now is going

13:00:56 to apply actually, tomorrow or later. That is a dynamic, evolving thing.

13:01:02 So we're creating this patient advisory council that we are going to be meeting with every quarter and discuss with them right at different questions, different topics related to data sharing.

13:01:21 So that we are continuously on the same page right? so it's process. simple communication keeping patients involved, making sure the rules are clear for our institutional review board.

13:01:38 That's the body that governs data transfer sharing for res search purposes and with our law department. where every single project in a way is being looked at and in a standardized fashion, where you ask the same question to anybody along that

13:02:04 hierarchy and you're going to get and answer So it's innovating the process the infrastructure for how to handle this rather than relying on individuals and individual documents and stuffing them with language that is not really going to

13:02:21 be applicable. that is someone after it gets signed.

ERZURUM: I want to add one thing I think that's absolutely wonderful what you said.

13:02:32 I want to point out the fact that we have 2 people sitting up here whose job description didn't exist three years ago.

13:02:40 So the reason we we did that- Dave remembers, - our chief legal officer.

13:02:48 We saw this tsunami coming 100,000 folder data has increased in the last 5 years almost a thousandfold.

13:02:58 Yeah, you know Rohit comes from Yahoo.

13:03:01 He says we have an insane amount of data, that is the perspective here.

13:03:06 I don't think any of you know how much data we have.. one of the things would be to know what is the data we have and what should be shared?

13:03:13 What are the controls? We hired a Chief research information officer.

13:03:18 The job didn't exist. our CEO at the time asked what is this? is Toby Cosgrove, though it's the old one o good. and I had to make a case for it now it seems like

13:03:35 everybody's having this right> because you we asked ourselves the question is just asked. Oh, my gosh

13:03:40 I was getting all these data use agreements, I said, What do I?

13:03:44 How do I know? and I think what laura is trying to tell you? Is we're purpose driven or healthcare system to drive stuff That's good for you, and so.

13:03:56 Maybe this kind of collective of what you're starting here right? coming together, starting to understand what is the insane amount of data we have=

13:04:04 I bet you're curious now how many how many day data use agreements can cause I i'm the signature.

13:04:10 How many can I really sign Dave honestly there there's a lot..

13:04:14 So what what's the control mechanism? that's what you're here need to understand each other.

13:04:19 Yeah,

DIMAKIS It's set here to push the Button so I'm pushing the button.

13:04:27 I'm Alex, ut austin I wanted to ask a little bit more about you, said if I understand correctly that you are deploying in production, as we would say, Ai system ai models that are making

13:04:39 recommendations I want them to understand. Is this the physician or the experts?

13:04:44 and they're the data in some app or they're already there and then the machine says do A.

13:04:51 And then, of course, the expert has some judgment. But does the expert interact with the model in any way?

13:04:57 Is there any transparency or interpretability knobs or mechanisms that they at the end Can I can interact with

13:05:06 or is it just okay. Machine says, do I I also think that's probably a good idea.

13:05:11 But I haven't read all this data and hopefully I have and and I make a decision from that.

13:05:16 So that's one aspect… and the second aspect relating a little bit.

13:05:20 You said 40 40% of the time goes in writing notes, and you know maybe 40% of my time goes and writing research proposals.

13:05:27 But while i'm writing them, i'm actually maybe *thinking about them, or maybe i'm actually making sure I I So what what part of this 40 would you say that's my second question - is in could be just automated or what part

13:05:40 is actually loading in the brain of the expert the key things and actually thinking about it, and actually making a decision about that probably would not be automatable.

13:05:51 I guess it's on my two questions.

CHANDRA: I can do it crack at the second one, and maybe part first.

13:06:00 So I think we have to push to see the the one part that I would say.

13:06:05 Obviously, when you're writing 45% of your time writing proposals, that's actually when you're thinking is, I think, the point. when a physician is with a patient, then actually observing the patient is

13:06:18 critical, so that attention should be with the patient. and understanding all of sort of the different observations that you wanna make, and part of it is that you need to connect with the patient.

13:06:28 So it's kind of harder to say and I think that physicians fall into the trap of trying to say either during a patient visit. Either they're not looking at the patient and typing up notes or they're

13:06:42 spending 3 hours at night typing up notes.. so that's sort of the dilemma, whether that 40% goes down to 30 or 20.

13:06:48 and no, but I do think that it is something that is asignificant.

13:06:52 a strain on their staff. The other question that you asked was, around when we deploy Ai based recommendations or decision support systems.

13:07:05 I think the successful methodology is when the models and the predictions are done, not by a technologist, not by physician. but together.

13:07:20 So. So I think that they need to be trained, because that is that requires domain experience.

13:07:26 So before you get to a model that that before you can deploy it in production and make a distance support sort of recommendation.

13:07:34 It needs to be something that meets a physician's bar for accuracy and recall before you would say you would use it in a production setting.

13:07:41 So I think it has to be developed jointly, and after that, obviously to scale it out hopefully

13:07:46 you know, with hundreds of thousands of physicians you don't necessarily need that kind of back and forth.

JEHI: You know I can testify as a physician who sees

13:07:57 Many patients every week that there's a tremendous of time that amount of time that is being lost by physicians just doing the typing piece, you know, when i'm in clinic I want to be looking at the patient talking to

13:08:11 them, listening to them. I cannot listen. I cannot really listen when my head is away towards the screen and typing up.

13:08:21 So in reality. what happens is, I look at the patient talk to them, and then literally, I say, let's break for give me a couple of minutes.

13:08:33 so I can type this up in the computer, and then I move,

13:08:36 and then I type. The patient is sitting there, and then I move back, and then I continue the conversation.

13:08:42 How useful is that? I mean it's not really rocket science that this is not the best use of the time of somebody who is you know, trained in medicine, and that everything that they have to do

13:09:00 so, That is a lot of opportunity for efficiencies there.

13:09:04 There. Now, the second question that you had this is really about explainability right of the models that we have.

13:09:09 And we that is one of the steps that we go through as we're reviewing these models before we implement them.

13:09:18 We try as much as possible to automate the ingestion of data.

13:09:21 first into the the prediction of the models to minimize the load on the physicians.

13:09:2 who are you know, encountering them that they don't have to manually write

13:09:32 enter what goes into these calculators or predictions. But more importantly, when, when the prediction comes out, we did one on the discovery.

13:09:45 admissions after hospital discharge there is an absolute test that gets predicted.

13:09:50 That is surfaced, but then there is next to it an explanation of where that came from.

13:09:56 So of all the you know, the 20,30 things that could contribute to somebody's risk of ending back up in the hospital, which ones are for this particular patient, the ones that are most benefit?

13:10:11 So the physician has some insight, then to help them know what to do right, through that prediction. And the example I mentioned with the stroke situation all the algorithm is saying is

13:10:28 that there is, you know, there might be an occlusion here, and the physician is still looking at the raw data, they're still looking at the scan right? and then deciding if they believe it or not. the false positive rate is

13:10:42 8%. But we decided that that's acceptable because it was more important for us to not miss

13:10:50 an occlusion when it's there then you know the alternative and we, but the safeguard that we implemented is then this last step where there is that virtual call where the whole team gets together and together they've used those

13:11:10 scans to decide what to do so that it's not the algorithm making the treatment decision.

13:11:16 it's the group of physicians who would have made it otherwise.

13:11:21 But they are making it at the right time. informed with the raw data that was assimilated right by the algorithm.

MONTGOMERY: I'm Christina Montgomery from IBM

13:11:39 And I had a question when you think about the guiding principles and the steps that you go through before the deploying an Ai algorithm, and you think about it across the categories that you described in terms of using ai do you have

13:11:51 a different standard in, for example, diagnosis versus treatment versus

13:11:58 the prognosis like, Do you hold an algorithm to being more accurate

13:12:02 Many of those standards, for example? and then as you think about the life cycle of the models in the algorithm, do you have a process for sort of over the life cycle as it's deployed testing ensuring

13:12:18 that it remained true to what it was intended to do

13:12:21 Initially?

JEHI: Yes, that so? The answer is yes to both questions.

13:12:30 The team that we have, that we use these models before they get deployed includes members from our

13:12:39 the medical, the clinician side of thing,.

13:12:42 in addition to the technology side of things. So we ask of every team to give us a detailed plan for what they want to do.

13:12:54 So first, Who do they want to see this smarter?

13:13:00 What do they want them to do when they see that result?

13:13:04 How are they going to make sure that the right thing happens?

13:13:09 And how are we going to make sure that whatever decision you know they made now is going to still be applicable

13:13:17 6 months from now? So, for example, one of the decisions that we make when we review this is, at what point should we revisit them?

13:13:26 And with some of them we say we revisit in a year with some of them.

13:13:29 We say we have a certain 6 months, etc., depending on that particular application.

13:13:37 In a situation like this stroke, example that I mentioned

13:13:41 we really cannot miss, I mean, when you only have minutes and you have to fix it.

13:13:45 it's Okay, to get that team together 80% of the time and they still decide this is nothing.

13:13:53 let's move on, so you allow some false positives.

13:13:58 But when it's a screening you know situation your standards would be difference.

13:14:09 We have time for one more on this panel i'm gonna let you all fight it out.

FERGUSON: We have a lot of interest here, and of course we can do.

13:14:17 We can follow up later informally, but let me go ahead. I I I've heard a lot of you had the biggest smile.

13:14:27 He was charming us up here. it's a trick I learned..

OSOBA(?): I I've heard a lot of talk on the panel about data privacy, and and I I in the healthcare space I think it's super important the One thing I have

13:14:39 not heard is the question of equity especially given that this is how okay that every single person in the country, looking at some point, and especially given that Cleveland Clinic, as the Dr

13:14:50 Tom was saying, sees only 1 point: 5% of the hardest cases in the country.

13:14:54 How did models you build after generally? Is that something you think about?

JEHI: Yes, we do think about that. We think about it the last, actually.

13:15:05 And we it it is a It is something that we specifically look at.

13:15:12 we learned to look at it more during the pandemic.

13:15:17 actually… one of the mothers that we created was one that allowed us to predict the spread of the pandemic region, and we were looking at it very regularly, and we saw how the rate of infection was growing at a much

13:15:38 faster rate in our disadvantaged neighborhoods here around us, and

13:15:44 We took that immediately. Actually, I remember the day when I saw the other curve, I call certain.

13:15:51 And then she said: You know she spoke to Tom, and then we showed it to the executive team.

13:15:57 All of that happened immediately, and because of it we ended up dating steps as a healthcare system to make our care more equitable in the region.

13:16:08 We look/we sent buses to go to those neighborhoods to test to offer testing for Covid.

13:16:16 We put teams together to be available to make sure that those patients got connected back to our system.

13:16:30 It just highlighted to us how important it is to make a conscious effort into it.

13:16:37 And then we translated from that -now it's just routine practice in every model that we develop with us for bias with us for distribution,

13:16:48 It's through team

ERZURUM: it's a good question because that's a great example.

13:16:53 It will improve health equity when you see it you can't ignore it.

13:17:01 It's transparency; and that's what we need we need transparency across all the healthcare systems right now

13:17:09 we don't have it and I think that's the problem.

FERGUSON: This has been a fabulous first panel. Thank you.

13:17:18 I know some of our commissioners have follow up questions maybe we can submit those, as we'll say in congressional parlance, we'll submit those for the record QFRs, and hopefully get some additional information as

13:17:30 as answers to your questions. Thank you to our first panel.

13:17:34 This has been marvelous. We are going to take a 5 min recess allow folks to catch their breath for a moment.

13:17:41 But thank you all very much for being. Thank you.

13:18:11 Years ago,

FERGUSON: We are going to get started with our second panel, and I will introduce each of of our panelists.

13:31:27 Not at all. i've been burned by that and I will.

13:31:32 I will introduce each of our panelists as they are preparing to deliver their remarks.

13:31:38 So we're gonna go in this order only because it's the order and the piece of paper in front of me.

13:31:44 So first we'll hear from Shawn Wang/ Shawn is the chief Ai officer at Anthem. he leads the enterprise scale Ai and digital transportations.

13:31:55 Yes, significant cross industry, experience from retail e-commerce.

13:31:59 and now health care, and he is from the Ai. graduate from the University of Southern California Marshall School of Business Shawn --

13:32:08 Thanks, Mike, for the introduction, and want to thank the Us.

13:32:15 A chamber of Yeah, I call for pulling us together and have the great opportunity to listen.

13:32:22 Something really inside from my peers and and and also our opportunity to really share some our perspective, that as the people actually do the work.

13:32:33 Who's talking with some some of the folks that during the break

13:32:39 I was really inspired by the prior remarks done by the clinic folks, and and we were joking with that it's pretty serious competition going on there between the

13:32:56 panels. So we we have to do well to really kind of show how it's done. So so I know a little bit background myself.

13:33:04 And before healthcare, and you know I work 7 years in in and some before that.

13:33:12 I spent 10 years actually at the Home Retail Company.

13:33:15 So it is named Sears, the manufacturer, the company.

13:33:23 I think my memories i'm not that old so I I do remember.

13:33:27 You know the initial we call the cutting edge

13:33:32 Technology was the catalogue that was mailed to the consumer homes, and you know, and then really to share the problem and service is engaged.

13:33:43 The consumer for shopping behaviors. I spend the, you know, 10 years working on digital technology and and data analytics.

13:33:52 Really more as a consumer, as these days. and nowadays we are kind of very used to much better much more personalized digital experience.

13:34:04 So we're expecting same day or second day delivery from Amazon, we expecting seamless payments.

13:34:13 We we never need to worry about, you know. payment Go through, and all that.

13:34:18 Things get paid, and all get paid and We're expecting personalized recommendations from you.

13:34:26 name it- Netflix. So so? why you look at healthcare is totally different.

13:34:30 animal. we see signal operators or or and also gaps really for us to apply same rigor with technology and data inside to really empower the users and drive that transformation.

13:34:46 And really to me the consumer expectation. This is about meeting expectations really to to deliver services and deliver experience.

13:34:55 The consumer deserve …they deserve it. So we have a lot of work to do.

13:35:01 Talk a little bit about definition of ai there there's so many technical definitions of those you can look up on Google.

13:35:13 But my definition is very simple. It is about delivering actionable intelligence.

13:35:20 that empower end users. so to just keep that perspective in mind it has to empower the end users in itself.

13:35:30 It's not good. It has to be empower the end users their room.

13:35:36 2 primary type of Ai application and and use in the company like anthem.

13:35:42 The first one again back to the empowerment, really empowering the end associates, to empower our stakeholders to really be much more connected and coordinated.

13:35:53 I give you a kind of example and great planning, for example, shared by Cleveland clinical clinical setting.

13:36:01 My use case is a little bit different about really coordination, coordination of different teams.

13:36:11 To deliver that, I would say, you know sensible experience or sensible interaction with consumers.

13:36:17 So, for example, is we do have an ongoing Ai collaboration with Cleveland Clinic

13:36:26 believe all or not, between the insurance company. and while the most effective, you know, care providers.

13:36:34 So it's really about on cardio care so we created predictive algorithms to predict.

13:36:42 folks are likely gonna need have cardiac care and procedures.

13:36:48 Now, from there we take care our opportunity to either direct the patient or members to,actually patient access center in clinic?

13:36:58 Or we share the insight with Cleveland clinic, so they can do proactive outrage to this patient, and what they do is they offer complementary, medical advice and recommendations.

13:37:12 And then, you know from there it lead to more personalized treatment plans and and care.

13:37:19 Plans, take actions, to close the gaps and to help improve the quality, and also provide much better access options, since there are always options, may not be a surgery needed.

13:37:31 Maybe a second opinion, maybe other. You know more effective treatment class so that's kind of one primary use when you look at that example is so much to do with.

13:37:42 How do you create the connectivity between different stakeholders, between different resources?

13:37:50 Really health care is about the team. So the initial, you know, remarks by by the CEO of Cleveland clinics.

13:37:58 Talked about it. Healthcare is now by individual, healthcare about really a team effort to bring things together.

13:38:06 The second primary use case on applications its more automation.

13:38:13 Why you look at healthcare, their signal cost efficiencies tied to administrative process processing claims, processing billing, processing per off,

13:38:28 So all we do at anthem. we we pull a lot of effort and investment into embedding Ai and digital technology into our care management teams.

13:38:40 By doing that, freeing up them from the routine manual tasks.

13:38:47 Oh, like par also review on other things, so that they have more resources and and opportunities, and and really to really spend time on patient-centric activities, talking to the patient, solving the problem from the numbers dealing with the provider to really look

13:39:08 at their pain point. see all things! How can better support them?

13:39:13 So you kind of think about it, Many folks actually have this kind of missed notion of Oh, ai can automate jobs.

13:39:23 Well, we could, but they automate the value of the jobs.

13:39:28 They create opportunities for more value added value generation activities that would benefit for the greater good.

13:39:39 So I wanna give you that perspective. The use cases, and what we see is really how Ai can come to value from a very fundamental way.

13:39:51 Now talk about policy considerations that's the topic right where where we are here today to provide some thoughts around that topic.

13:40:02 So really 3 key aspects of this: one is, we think, that a policy makers need to make sure the line with both private and public effort.

13:40:13 on Ai policy recommendations and creation. it's Why, you look at the multiple groups there's NIST. right?

13:40:24 So that organization, ongoing work on technology technology standard include Ai.

13:40:31 Then we have FDA,actually a great news there is released the initial guideline of addressing and improving diversity in clinical trial.

13:40:45 That's a great step in the right direction in terms of addressing potential mixed representation of healthcare data sets. and the third one is the the Moc(?) organization is real around the data sharing standard.

13:41:03 So do you think some yeah specific some are not but there are depending on each other?

13:41:09 Data the sharing is the foundation with ai as the cleaning clinic chief did they just offer to talk about mostly is really depending on the data.

13:41:18 So. So how do we facilitate the data sharing for better use of Ai to create a greater good ?big deal.

13:41:26 The second component is is model policy focus of policy. They need to be on outcome, not on technology itself is really about making sure that we have the policies which is adaptive

13:41:42 so can can actually a wall along with the technology, the advancements.

13:41:50 Otherwise it's really you you run the risk of being irrelevant very quickly, and they said you're gonna have a hard time playing that catching up game. and the user aspect.

13:42:04We also want to support and propose supporting the responsive ai framework and principles.

13:42:11 Not only look at one aspect of Ai, which a lot of articles and publications talk about.

13:42:18 hpw do we gar on the use of data, you know? Yeah, algorithm.

13:42:22 But also I you heard the folks talk about the real ai life cycle.

13:42:28 So it's really encompassing many aspect of components of why you create Ai starting with scoping the right project, making sure you solve the right problem.

13:42:39 And sure you how stakeholders actually the inclinations and healthcare resources embedded in that scoping.

13:42:49 And second, one is creation over Ai. Ai is not a black box.

13:42:53 You need clinical input to make sure, the right features being incorporate.

13:43:00 so the particular algorithms and Ai can do as a decent job as thye intend to be.

13:43:07 And the third one is production. So there's that around there's a second number of all percentage of Ai project actually for short going from research development to actual production.

13:43:20 So no production there's no value it's wasted effort.

13:43:24 So it's a while production. So how do we make sure that production process is really being thought through, and actually have the integration between Ai and the bigger pictures, not Ai systems.

13:43:39 That's a lot of things people don't talk about. In reality, Ai is a small component. the bigger ecosystem of all the carriers.

13:43:49 The last one is a monitoring, making sure we have the right monitoring to make sure the Ai is doing what they intend to do constantly, effectively. so that responsible ai framework. we think is is a should be a

13:44:05 primary consideration for policy maker to think through.

13:44:13 The last one is really around there's this kind of balance between citing right standard and also not hindering an inhibit the innovation ongoing, continuous innovation and also adoption of a technology for greater

13:4:33 good, so that balance is, it need to be thought through, and and that risk and need to be thought through.

13:44:40 So. that's all I wanna say today I wanna thank you

13:44:47 The Commission again for hiding Oscar, and I want to thank Clinic for the great partnership.

13:44:55 I will thank all attendees, even though I do see there there like a last number of people kind of for this session.

13:45:02 But maybe it's not by by calls all by design.

13:45:08 But I appreciate the supporting engagement.

FERGUSON: Yeah, thank you, Shawn. Next we're gonna hear from Ben Ko.

13:45:19 Dennis, the general manager at kaleidoscope, innovation, and product design.

13:45:23 He works on designing medical solutions with a basic patient, centric mindset, bringing solutions to improve the human experience.

13:45:31 He's a graduate of the University of Cincinnati Ben.

13:45:33 Thank you for being here.

KO: Thank you. Good afternoon. Thank you to the co-chairs.

13:45:41 Ferguson and Delaney and to the commissioners it's been a great session already, today, and it's also great to not only go second in this, so I can gather my thoughts, but also, go second kind of in

13:45:52 the the Meta presentation of these Field Hearings, being able to listen to the comments from the Austin hearing, was informative.

13:46:00 It was also great to hear some of the important issues brought up there, so that we could formulate some context around those, but also bring some context that's really important for our perspectives as product developers who who exist in an ecosystem of creators. As Mr.

13:46:20 Ferguson said I'm Ben Co I'm the general manager of Kaleidoscope Innovation, where a Product Development company located in Cincinnati Ohio love that this is also

13:46:27 occurring in a great state like Ohio, and we have the pleasure and privilege of working as a consultancy with many companies across different industries.

13:46:38 Most of our businesses in medical device, and pharmaceutical solutions.

13:46:43 That's device and technology creation for for productization.

13:46:47 But we also get to work in industries like consumer electronics and in industrial systems, manufacturing and automation.

13:46:54 And so we like I said it's a privilege because we get to use that position as a point of cross pollination.

13:47:01 What are you doing in other industries that we can apply in in the problem that you're trying to solve. The core point

13:47:08 I wanna make about our business is that we are not the technologists themselves.

13:47:12 We're not the the researchers creating the data sets that are from which many of these insights are being drawn.

13:47:20 But what our role is is to turn that technology and those insights that research into products, into solutions, whether that's a software system, a medical device,

13:47:30 how do we deliver drugs more effectively, How can we automate processes for more efficiency?

13:47:37 And the important point about that is our process, as as described as patient centric.

13:47:43 Is is user centered design that's the more generic term of it. and these days it's often user driven design,

13:47:50 so you can't design for you must design with.

and it was wonderful to hear the Cleveland clinic physicians speak about their work because they are part of the design and development process, and the same way that that we we would need

13:48:04 patients and nurses also involved when we're talking about medical systems.

13:48:10 So in in that view you need a team. you need user researchers,

13:48:14 You need engineers, designers, human factors, researchers folks who can turn really complex hairy problems into something that's hopefully simple and intuitive to use

13:48:27 and then, at the end of the day meets a core need.

13:48:29 --It must address a problem statement. So with regards to artificial intelligence and machine learning

13:48:38 I want to talk about 4 elements that are really critical from our perspective. and that's regulation,

13:48:46 It's data comprehension, it's liability, and then I want to end with accessibility to creation and invention.

13:48:52 The first one I'll start with is regulation, and I want to call this regulation, and surveillance really and and Shawn touched on this.

13:48:59 It's it's about how we of course release ai products.

13:49:04 But then, how do we monitor them over time i'm a biomedical engineer

13:49:08 And I spent a lot of my career developing products and going through a burden of proof generation for FDA.

13:49:15 They want to know that the product you're launching is the product you intended to launch, and that it in fact meets the needs of your users, and then it's critical that every year after that as manufacturing

13:49:27 evolves as the product is on the market, that that product is identical

13:49:31 3 years from now, as the day you launched it- you want to know that change is controlled, that's an important tenet of medical device and pharmaceutical regulation.

13:49:42 The interesting thing about artificial intelligence and machine learning is that second part of this little learning.

13:49:48 So as these algorithms are released, of course, simpler algorithms will, you know, take an input provide an output.

13:49:55 But what happens as that that technology continues to develop to develop over time?

13:50:02 Now all of a sudden, the change control mechanisms that we have in place in the industry no longer apply the same way that they did in the past.

13:50:09 We need to think about frameworks of boundaries and on-market surveillance that allow for some change in evolution.

13:50:16 One of the points we heard. in austin is that as data is aggregated, it becomes more valuable, and that's a really cool idea.

13:50:26 What it also means is that it can shift. And so, as more data is added to it, the algorithm is making different inferences or decisions, and it starts to drift.

13:50:35 So what are the the guard rails that we're putting around this that we, as product producers along with FDA and any other global regulating body that the product we've launched as it evolves is is still Acceptable to

13:50:50 the original mission for which it was was created? The second point I'll. i'll make is about data comprehension. One of the the really cool points that that Dr Mihaljevic.

13:51:02 brought up is these multimodal data flows.

13:51:05 So how can you pull from electronic health records and claims data?

13:51:11 And Medicare Medicaid. How can you look at trends that are produced by millions of different devices that we interface with every day and make decisions about that?

13:51:22 When that data is presented in a dashboard and a calm call collected office, you could take your time with it. You can evaluate and understand it. But when we start providing this data, this flow of information in circumstances like surgery

13:51:37 or driving, or high stress, high-page environments,

13:51:42 How are you ensuring that the user is getting the right data, in the right format at the right time? and importantly, that we're not overwhelming the user with just constant data?

13:51:53 Anyone who's. been in an operating room or a hospital ward just knows that there's words and beeps and buzzes and lights.

13:52:00 It can be overwhelming and for those who are in that ecosystem constantl.

13:52:06 it can be numbing, so that you are no longer listening to the the insights that are being provided for you.

13:52:12 So in in that format. it's important that we have not only great Ai developers and great care providers who are using it, but we have really excellent user experience designers that we have really excellent human

13:52:25 factors engineers, that we have teams that are interpreting what is most important for those users at that moment, and providing it in a in a context, in an interface that works for them at the at the right time.

13:52:40 that they need it. So then that comes to the point of liability.

13:52:45 So when a user is interpreting this data it's important to consider, are they making a decision? Dr.

13:52:52 Jehi mentioned that they leave the clinician in the process.

13:52:57 Leave the person in the process, I think that's absolutely critical from a decision-making perspective.

13:53:03 But as we look at artificial intelligence applied in diagnostics, there, therapeutics and prognostics, a decision doesn't always look like, give this drug or give that drug.

13:53:15 Sometimes the decision is -- this data matters that data does not matter.

13:53:18 So when we consider these multimodal data streams it's not always clear as much transparency as we want to build into the algorithms, the the machine learning systems, what is it in what it's including and what it's not

13:53:32 including, what's, an outlier and what's important for this patient with their history in their region, their socioeconomic level, their race, their gender, all of those things have to come into play and it's important that those

13:53:46 data sets do reflect those communities because it's going to be making decisions, whether we consider it a decision or not, simply by inclusion or exclusion of data. Andthe final point. I would like to talk about is accessibility; gonna

13:54:07 shift gears here a little bit, because I I also want to look very optimistically at what Ai could do for us.

13:54:14 As creators, inventors, and as a nation that's built on entrepreneurship and development of new technologies, artificial intelligence

13:54:26 while, as Shawn pointed out, has often been, belong maligned as a job taker.

13:54:33 in some of these cases… how do we look at it as a as a not just a job creator, but a job focuser-- that humans are doing what humans are best at.

13:54:43 And in my world as an engineer, designer. people creating stuff,

13:54:47 that means getting getting humans focused on invention and and getting good ideas out there and then honing those ideas over time.

13:54:55 So. some technologies that I consider in that space are are like natural language processing.

13:55:03 Examples of it have been seen to write journal articles or press releases, It's also been able to create images something called Dal E. 2 (sp?)

13:55:12 You can just describe an image, and it will put it in front of you. and some of the examples they use is like a cat riding a horse dress as an astronaut in the style of Monet, and then Boom that image is there maybe that image never

13:55:23 existed before, but it's been created. How could we think about building frameworks and technologies that allow anybody to use that technology for invention?

13:55:39 A great example are brainstorms-- we have industrial designers who create museum level illustrations in 30 seconds, and it's impressive and it's also

13:55:50 intimidating. So when you bring in patients and nurses and doctors and engineers like myself into that process, we often say, Well, I'm, i'm thinking about something that looks like this, but I can't really draw it what do you

13:56:04 think, and the idea doesn't go anywhere… education and training often become gatekeepers to invention

13:56:11 in that case. So how can we use these types of natural language processing evolution to empower more people to create ideas by lowering the level of fluency required with some of these technologies turning computer aided design- a cad

13:56:27 system- into a descriptive system rather than something where you're doing a 1 million clicks to get a a complex beer mechanism in place that really at the end of the day you're trying to just enable an idea so that

13:56:40 you can test it, and then you can move technology forward. The way I see this really helping all of us is that it

13:56:49 also allows more entry into fields like engineering and design, which often also come with heavy burdens of education, which usually disproportionately bias towards folks who have associated economic benefit towards those types, of educations… this is

13:57:06 a way of getting great minds together and taking away a lot of this barrier of routine that we've called education and training, and really get down to the creation itself.

13:57:18 And I want to conclude with a a thought towards the importance of this commission, and and what we're doing -- it's a privilege to be a part of this and I want to reflect on an example of

13:57:31 cameras because I love taking pictures myself. i'm an engineer so I like to nerd about some of the technology developments.

13:57:40 And one of those developments is the use of the Shirley card that was originally used to calibrate printers for analog printers by Kodak and Shirley happened to be a woman who worked at

13:57:50 kodak that took a picture of her. She also happened to be a white woman with a lot of colorful things in her clothes that for generations of photographers and people taking pictures was considered the normal the standard for

13:58:05 photography as that technology developed, and all of a sudden the jpeg was invented.

13:58:11 there was a great opportunity to do something different and yet,

13:58:15 There was a a lena that was developed that was used to program and verify the jpeg.

13:58:21 Does jpeg A equal Jpeg B? Again, another white woman, and it was only until this year, early last year that we get cameras like the the pixel that are really looking at different types of skin tone, at getting true images

13:58:39 of all humans and making sure that it's representative of the people we're trying to take photos of, and I mentioned that because the frameworks we're choosing now we're going to

13:58:49 echo into the future …a decision that kodak made in 1930/40 still applied in 2.021.

13:58:58 And we've got an opportunity in 2022 to set a different mark.

13:59:03 So thank you very much. appreciate your time.

FERGUSON: Nice to do this in Congress. Do it. Always forget to turn on my mic.

13:59:12 Thank you, Ben, but next we're gonna hear from Dr.

13:59:15 Tanya Burger-Wolf. She is the director of Translational Data Analytics Institute and a professor of computer science, engineering, electrical and computer engineering as well as evolution ecology.

13:59:28 And organ it. Yup. Organizmal Biology. That is a long title.

13:59:35 Congratulations. the Ohio State University. She is the director and co-founder of the artificial intelligence for wildlife conference software nonprofit, Wild Me. home with a wild book project which brings together computer

13:59:51 vision, crowdsourcing and conservation. She holds a PHD.

13:59:55 in computer Science and the University of Illinois. at Urbana, Champagne, Doctor?

BERGER-WOLF: Thank you. Yes, I have 2 first names, 2 last names and a lot of titles takes a while, you know.

14:00:10 Introduction in one breath takes a very good breath control. So

14:00:15 I came to OSU in January 2020, right before the world changed, and I came from Chicago, from University of Chicago.

14:00:26 I spent 15 years there, and I came to take this position of the entrance of the Director of the Translational Data Analytics, institute at OSU which is the largest interdisciplinary research institute at This somewhat

14:00:38 large university. The mission of the Institute is translating data into insight to benefit the world, and it spans all the our faculty.

14:00:54 More than 250 faculty, who are part of the Institute, span all 15 colleges of the University and 60 plus 62 departments.

14:01:04 by the last count, and it is that connection among all these interdisciplinary perspectives and ways of asking and answering questions that really allows us to, and as well as our connections to external partners, the

14:01:20 healthcare institutions, government, nonprofits industry that allow us to to translate data into insight, to benefit the world.

14:01:27 And some of the examples around healthcare, in addition to that that are really researched, the current research projects many of them are in partnership with the College of Medicine, but the boundaries that go way beyond the in addition to

14:01:44 the typical kind of projects that have been mentioned in equivalent clinic, and probably every other Ai enabled healthcare project organization that does health care.

14:01:55 Ai enabled health care is drug and discovery, precision, pathology.

14:01:59 But examples of really bringing together many different perspectives. and I and health impact awareness, healthcare are things like spinning up code.

14:02:10 Blue responses by taking engineering systems, approaches and really bringing multimodal that multimodal data so saving lives by speeding up response, identifying associations between mothers' nutrition and the infant healthcare a

14:02:23 well-being. right? So this really looking at everything from closing food stores, grocery stores, and different neighborhoods, and how that impacts downstream. well-being of of an infant improving drug drug

14:02:38 compliance in Cardiac and cardiac patients.

14:02:43 African American patients by understanding their relationship with a healthcare provider.

14:02:48 Again, looking at a variety of different modalities of data, The breadth of sort of information that goes into understanding something like this was never possible without Ai and without the data that we have and more recently also on demand

14:03:07 deployment of covid tests and we're part of this-

14:03:11 Our team was part of the I was leading the data analytics and modeling team responding for the State of Ohio.

14:03:17 The daily reports to the Governor early on and now for the University, and we're part of that recommendation to the State on improving the equity of deployment of covid tests that was mentioned

14:03:30 before. And now to put our brains where our mouth is with,

14:03:38 Also created algorithms, literally solutions of how you could do that in an equitable way.

14:03:44 And so with that, the points that I would like to make.

14:03:50 I will take a more sort of research and technical perspective, because I think that that is something that I can bring to this conversation, which is, which is unique.

14:03:59 Perhaps so one is. Yes, we all agree that Ai must be regulated.

14:04:04 But I would say that we focus a lot on the regulation of Ai systems.

14:04:08 I would argue that the regulation should be based on use, not of the system right?

14:04:13 Because the same system can be used in different contexts.

14:04:18 For different from different data, and it will be completely different.

14:04:22 --It should be completely differently regulated and essentially. But the problem is that we're all grappling that Ai is hard to regulate, because it is nothing like with like anything we've regulated before == for all the reasons

14:04:36 that've been mentioned, because it's a regulating and ever ever changing entity, Because, it changes with the as the data changes the lifelong learning, and all of this aspect.

14:04:49 But part that we haven't mentioned is that it is in some cases provably impossible.

14:04:54 It's Not that we can you know we haven't developed the research yet that we haven't thought hard enough that we haven't solved the particular problem in some cases it is provably impossible to comply with requirements

14:05:08 of policy..math doesn't work that way so to give an example of what I'm talking about is you know for a general given model ai model.

14:05:21 But even more process to prove, and and a data set to provide to, to not even provide an instance To answer

14:05:30 the question is there, and individual bias instance in that data set for that model? Just don't even show it to me.

14:05:40 just yes or no. That is a probably undecidable question.

14:05:44 As in in general, we will not be able to mathematically answer this question.

14:05:52 So it is that deep right? And even if we simplify these 2 to a large extent, that the to answer the question still very, very, very hard, provably hard.

14:06:05 And so so so it is. These is the type of regulation that we actually essentially cannot comply.

14:06:10 often, scientifically so, because of that. I would argue that there are 3 principles, and we all come up with our list of principles.

14:06:21 So I have 3 broad ones that that should be around Ai regulations.

14:06:26 So One: is that the process of deployment of ai should be participatory in inclusive, and it's been mentioned several times already, and it's participatory and inclusive of people at all stages.

14:06:42 So to me, that is that people who whose data are used for training of the algorithms, those who those who create the algorithms themselves.

14:06:53 And, by the way, that regulation of those people, those who create the algorithms is the only focus of the European Ai Act --

14:07:02 Of all the people that are there in the process that's the only focus of the European Ai act.

14:07:06 But to me. so they those who whose data use those who create the algorithms, those who use the data in healthcare.

14:07:13 That means that those who use sorry the the algorithms the outcome of Ai.

14:07:16 That's the physician in this context and those were impacted. Those are the patients right?

14:07:21 And even broader the population right this is we're talking public health beyond the well-being of communities.

14:07:31 not only the patients themselves, and it's been mentioned by Dr. Jehi and Shaw

14:07:37 that these aspects. So all of this means that yes, we need to inform people that their data going to be used, that the solutions that the decisions are going to be made by Ai that the solution should

14:07:53 be created with those whom they benefit, as Ben just mentioned. Not for them.

14:07:57 That there has there has to be diversity at every stage, in particular, the stage of creating ai systems, and that for that we need to build AI capacity, and we haven't talked about that really we we're lacking

14:08:12 expertise at almost every stage of this process. The Second aspect that that I would like to see an Ai regularly addressed by the Ai system.

14:08:23 regulation is they transparency and human accountability.

14:08:28 And so I want to make a very perhaps technical distinction.

14:08:32 We use the words, explain a bill explainable interpretable and transparent interchangeably--

14:08:38 They're not; and explainable is hard probably impossible interpretable is, you know, feasible, transparent, is doable and doable.

14:08:50 now. And so here's the difference one of the best examples between explainable and interpretable. that I've heard is a microwave r--

14:09:03 The explainable version of the microwave.

14:09:05 Is it heats your food by using the microwave.

14:09:09 And so then comes the physics right, that's the explainable. The interpretable is, if you press this button your food will be heated

14:09:18 for 30 seconds reliably and repeatedly this action will the input right, the repeatedly and reliably lead to the same outcome.

14:09:29 So that is the level that we're *hoping for ai and that's the frontier of research of interpretable Ai, that if you do this this will come out.. But there are caveats there because we're

14:09:40 talking about lifelong learning, right? the algorithms that learn over the entire course of their deployment.

14:09:48 So. no, the same action will *not produce the same outcome, because the data have been changed, because the algorithm have learnt on those data and the outcomes will change.

14:09:59 But transparent is doable in doable now here's what I mean by transparent. and again Dr.Jehi

14:10:07 spoke quite a bit to that the transparent process, not the algorithm, but the process.

14:10:14 So we need open source, and I understand that that open source not always possible.

14:10:18 So it has to be accessible by through maybe access control by certain people at certain times, in certain contexts, verifiable and replicable right… it has to be open process of deployment and open and transparent process of process

14:10:34 of deployment of Ai systems. They have to come with clear assumptions and certainty and limits of use.

14:10:43 right, you can't use it you can use this algorithm or this system in this circumstances, but not in these ones.

14:10:49 It. wasn't tested under these circumstances for example. And so we also have to take humans have to be responsible, not the systems right?

14:11:00 Humans have to be responsible for the outcomes and that there has to be mechanism for adjusting ai systems based on the diverse, undiscovered adverse outcomes or impact undesired impact.

14:11:12 Right now we don't have anything in place that allows us to sort of throughout the cycle life cycle of deployment of these systems to continue to to change them if we need to.

14:11:24 And the Third point, I would argue, is is the one that we talk about most typically is the safety and safe, effective and socially beneficial.

14:11:34 Ai system right? They have to be addressed by the regulation.

14:11:39 We have to have a process for stage and gradual deployment

14:11:44 so everybody I think. and particularly Shawn and Ben talked about continuous assessment monitoring adverse effects and a system for reporting adverse effect.

14:11:53 So okay, we've discovered them. How do they get back and what happens with that discovery of adverse effects?

14:12:00 We need to be able not only adjust the algorithms, but also adjust the policy.

14:12:05 If we find, because these things take a long time to surface quite often that verse effect, and then the do not harm approving.

14:12:13 Not only this do not harm the oath that every physician takes.

14:12:18 If we're starting to use ai in instances that impact the lives of individuals and the life of the planet itself, quite often, then, we need to take that.

14:12:30 Do no harm oath and it's not only preventing it, and assessing a diverse effects and bias and inequity--

14:12:36 but this also means that it has to be an improvement on the existing systems and the existing solutions.

14:12:42 Right, and that is measurable bias is and i'll talk a little bit in a little bit. bias and equity and adverse effects are actually often hard to measure in algorithms.

14:12:53 And then systems. But improvement on existing is easy.

14:12:58 And the other aspect has to take the cost into account. So this do no harm, because deploying Ai systems is costly--

14:13:05 You quite often have to change the entire system around Ai system.

14:13:10 Healthcare is a great case in point, and but there's also Ai systems a cost in terms of not only money and and effort, but also environmental could come with a huge environmental cost

14:13:26 the hardware that has rare metals, the energy and the water requirements for Ai for the

14:13:42 Solutions are incredibly expensive. and, the CO 2 footprint--

14:13:47 The carbon footprint is huge, so the do no harm, I would argue, has to, has to address that. And then, like the last 2 points of like the last aspect of the safety, a a safe effective and socially beneficial are the data,

14:14:05 governance and the data governance. we've had so the big data became big started becoming big about 20 years ago, right when the storage became cheap.

14:14:14 It took us 20 years to get to the point where we have positions of data governance almost in every big enterprise.

14:14:21 But the with the advent of Ai, which is about 7 years like Big Ai…

14:14:30 I hope you don't wait for another 20 years to regulate it, and to have positions sort of people who can understand the process, and to make it an enterprise level priority to have responsible and fair and

14:14:48 equitable and ethical deployment of Ai systems.

14:14:53 The data governance also changes with deployment of Ai.

14:14:56 I spoke a little bit before to some that privacy, privacy, regulation, we we can ensure privacy in the data set itself.

14:15:05 When you bring Ai the identified information can become identified, identifiable.

14:15:09 Again, predictions can be made based on completely unusable.

14:15:14 What we would think of unusable and publicly available data by combining data sources, by using your friends data to predict yours, and so on, and so forth.

14:15:24 So So we have to resend data governance, in the age. of Ai. And fairness and bias, including algorithmic bias, which was kind of, you know, glossed over and again.

14:15:34 It's blossomed over Also we talk about about a lot about data fairness and bias and the impact harness and bias.

14:15:43 But the algorithmic bias again, something that you

14:15:49 Ai act talks about, but doesn't do anything about, at all.

14:15:57 And example. I you know, can bring a couple of examples.

14:16:00 But the the thing is that unbiased data can lead to biased algorithms and vice versa.

14:16:04 So bias is not a good of bad in and of itself It's the question is harmful.

14:16:12 bias, and you know, the interplay between the data and algorithms does can go either way, and we have to take that in into account.

14:16:21 And it is actually again the boundary, the right real frontier of research.

14:16:25 Part of my research as well of assessing algorithmic bias.

14:16:32 In Ai algorithms. For example, one of the recent examples in healthcare comes from insurance companies realm of algorithms that are used for insurance by insurance company to predict the level of health care turns out to

14:16:53 be turned out to be using a proxy of previous cost of health care for patient, and that was in and of itself already biased among the different ethnic minor ethnic groups, and therefore under predicted the level of health care for African American

14:17:12 patients. It's subtle. you don't see the data we're not biased initially.

14:17:17 It's the outputs salient feature for the prediction, that's what made it bias And and there is also the the one aspect of a algorithms in general is overnight, or diagnosis, because when we

14:17:36 report accuracy that 8% that was mentioned 8% error- how's that error distributed among different demographic groups?

14:17:45 --That's the question of equity. Especially 8% can be a lot when you're talking you know if 8% of your patients are African Americans or Asian, and it is for them that you're completely set up the air all

14:18:02 the air is concentrated in those demographic groups.

14:18:06 Quite often it's very, very very hard to detect and and in some cases impossible, Right?

14:18:12 Just provable impossible. So what do we do with that? and I I think I want to close with the future that I do think that the future is in the responsible and trust where the human ai partnership one of the again sort of research projects

14:18:25 that we're focusing the conversation ai was mentioned conversationally.

14:18:29 I to help physicians to deal with the transcriptions that are very tiny, tiny use of conversational Ai. We want to

14:18:37 we're working on the project where we can help not create conversational ai leverage conversational ai an intelligent agents to not only help physicians, but teams of physicians and patients to engage patients to

14:18:53 explain what health care they're going to proceed to receive, what does it mean that Ai is going to be part of it?

14:18:59 So use Ai to explain ais because it's hard data, use agreements, and so on to engage them in that conversation and answer questions, but also help position teams to interact with each other interact with data So they are not overwhelmed

14:19:14 by data right away, and they, when they point to the screen, saying," I see something here"

14:19:20 It is Ai that can pull out and understand what they're talking about and in engage the rest of the team.

14:19:26 So that hopefully, is the future. Thank you.

FERGUSON: Thank you very much. Do we have Dr.

14:19:30 Eckert available virtually. Hi there! Great. Thank you. Dr.

14:19:38 Carly Eckert is the executive Vice President at Olive, based in Chapel Hill, North Carolina, at Olive, Dr.

14:19:44 Eckert combines experience as a clinical physician epidemiologist and informationalist to advance innovation and health care with equity by design she's a graduate of the University of Washington school of

14:19:58 Public Health and the University of Oklahoma Health Sciences Center, Dr.

14:20:01 Eckert.

ECKERT: Hi, good afternoon, Thank you to the Chamber and Commission members, as well as the clinic for hosting.

14:20:09 I appreciate the opportunity to participate in this important conversation today on behalf of all of

14:20:14 I know we're a bit over time so I will keep my comments short and hit some of the high points, and I assure you I didn't coordinate my comments with the other panelists but it does goes to

14:20:24 show how industry in academia are aligned on many of these goals and objectives.

14:20:29 As you mentioned, I am a physician by training as well as a clinical and traumaticist and epidemiologist.

14:20:36 I've worked in health innovation for about a decade, including collaborating closely with data scientists developing an implementing machine, learning, solutions, and healthcare.

14:20:44 I have a particular interest in ai governance socially responsible technology and community impact.

14:20:50 Additionally, i'm a doctoral student at the University of Washington, where I study transfer learning and trauma outcomes prediction.

14:20:56 At Olive I lead a product team focused on developing innovation for providers and patients.

14:21:03 As many of us know, Healthcare is a special industry' as a physician

14:21:08 The delivery of care, and the provider experience is really personal to me.

14:21:12 I empathize with providers today, and the challenges they face in delivering the best care possible. as a patient.

14:21:19 I'm awed by the complexity of a system meant to treat the sick, and to keep people well.

14:21:26 Patients are often forced to navigate an unfamiliar and complex system alone resulting in delays and lack of access to care.

14:21:34 There's so many layers since industry and this vocation and these are opportunities for collaboration and innovation to alleviate the complexity for patients and reduce burnout for health care workers. Over the last several decades

14:21:44 healthcare has gone through a boom of systems created to address digitization- from moving paper medical records to the

14:21:51 digital desktop, engaging with patients to schedule or cancel an appointment through a mobile platform and apps to networks to exchange patient data.

14:21:59 While efforts have been made. True connectivity and interoperability are lacking, and due to this lack of connectivity,

14:22:07 humans act as data routers between disparate and segmented systems.

14:22:11 and this creates a lot of administrative burden and waste.

14:22:15 Administrative costs make up one third of total healthcare expenditures, which is about twice a percent

14:22:20 that Canada spends. There's an estimated 760 billion dollars a year wasted as well inefficient, inefficient or unnecessary services and we know that

14:22:35 Ai. and automation have so much potential to transport how healthcare is delivered as the previous panelists have noted

14:22:42 There's a real opportunity to use automation in the places where humans Aren't needed.

14:22:48 This can boost productivity, decrease the number of mistakes that humans make and prevent costly errors.

14:22:53 This also frees up our human workers to really do the task that we're best at it, allows us to harness creativity to solve complex problems,

14:23:02 It gives us the time to do that, and to advance healthcare even further.

14:23:07 And this really allows us to do more meaningful work which can actually, you know, increase the roi for their employers.

14:23:15 I'd like to touch on interoperability a bit which is really a critical component of our work at olive, and more importantly critical to unlocking improved and seamless care for patients.

14:23:25 So interoperability is the ability of different information systems to access, exchange, integrate and cooperatively use data in a coordinated manner within and across organizational regional and national boundaries to provide timely and seamless

14:23:38 portability of information, and it's really important to optimize the health of individuals as well as populations, interop standards enable data to be accessed and shared appropriately, and securely across the spectrum of care we're driving the importance

14:23:52 of interoperability with a focus on data exchange

14:23:54 Between our solutions and electronic health records as well as with other advanced health exchange networks; and at its fullest data interoperability

allows patients to share health information across systems, instantly, thereby removing

14:24:08 barriers to care and reducing delays. Theres been a lot of other comments made about kind of ai governance,

14:24:17 And Id just like to reiterate really the importance of thinking about these technologies and these these models within socio-technical systems.

14:24:27 It's really critical that we think about these as living and breathing models

14:24:33 As the data changes as the population changes. There's really what I call 3 axis of 3 axes of distributive justice

14:24:40 When we think about both, how how models perform also then how care decisions are made, and then how patient outcomes kind of follow that as well.

14:24:51 I'd also like to talk about the replicability and limits of use that were brought up by Dr.

14:24:55 Berger-Wolf and about facilitating data sharing.

14:25:02 I would like to thank the Commission for the opportunity to share my thoughts today.

FERGUSON: Thank you very much, Dr. Eckert. as Dr. Eckard mentioned.

14:25:14 We are overtime on this panel but when we're going to try to do is let's say we'll do 2 questions, and what i'd love to do is prioritize the folks who didn't get to the

14:25:22 answer. Ask a question on the last panel. I see a hand Okay, 2.

14:25:28 We have 2 right here, neither of you guys ask questions.

14:25:31 The last panel Right? Alright, you are 2 questions to meeting: how to stand for 30.

COMMISSIONER (undetectable): Yeah. okay, guidelines for use. he when you Know, , and suggested that

14:26:09 Yeah. and in making, in creating and i'm curious anywhere else

14:26:29 Our professional association of developers and researchers and use users of Ai

14:26:38 Are they able to do that? Does that sound plausible to you?

BERGER-WOLF: No, no, it's plausible, but this is exactly the conversations that are happening right now, because you because there are no no laws policy or regulation

14:26:53 The only path forward is ethical use and agreeing that we're all going to some ethical norms.

14:27:00 So association for computing machines developed its code of ethics and the Institute for Electric Electronic Electric Engineering.

14:27:13 Yes, So those are 2 main professional organizations that that govern essentially computer science and computing computational solutions, engineering solutions. the

14:27:25 Association for Computing Machines code of ethics which was voluntarily created without any regulation of software before any regulation of software has been updated to include ethical norms for a use of ai systems the main research

14:27:39 Conference research gathering the of machine learning and Ai experts has added ethical, added ethical review to its to its research papers.

14:27:56 Publications 3 years ago created a lot of an ease first, but in the conversation still ongoing.

14:28:00 But yes, and I think that, what i'm very heartened o see that the conversations about a ethical and responsible Ai used to be constrained essentially to the computer science computation with broadly computational community and maybe

14:28:15 statistics and until about 3 5 years ago. and now. we're having these conversations with policymakers applied as a social sciences lawyer, lawyers, or case law professionals of some form and

14:28:30 That's exactly where the conversations have to be not not within the discipline.

14:28:37 And i'll pass it on to business

KO: yeah I would I would add, from an engineering perspective, You know this this print this person engineer's licenses, architecture.

14:28:48 You mentioned the Hippocratic oath of course, I I think that's important. and as we as we also have new roles like chief data officer, chief information, Officer: chief research and innovation officers do we do

14:29:01 we need chief ethicists and things like that in industry as well, I think that's important.

14:29:06 I think it's also why we need to have as multiple people have mentioned transparent process.

14:29:11 So if you bring in we've talked a lot about patients,

14:29:16 But a lot of Ai is first being rolled out in other industries, warehouses, logistics, Hr.

14:29:23 Finance. If you bring those folks in and the first reponse, you get is a cringe. You probably should take a look at that. and I I think that's a really important part of the process, not just a kind of a governing body, within

14:29:34 these, but making sure that that trying to kind of transparency, is just built in from the day from day one.

WANG: from my perspective, I think what you might make total sense.

14:29:47 I think we we got to empower the creators and users of AI.

14:29:52 to provide input and how define the clear standard, and then leverage the governing bodies to really help orchestrate an align different point of views together.

14:30:06 And then also really kind of govern, more from outcome perspective

14:30:11 Instead of looking at a process looking at technology self. So how in clear definition outcome is important.

14:30:17 And leveraging the professional input is very important, especially both for Ai creators and users.

FERGUSON: Dr. Eckert, Did you have any comment on that question? No, I

14:30:33 I was unable to hear the question. I apologize.

14:30:36 Our apologies. Shakar. Why, don't you go just make sure we're using the microphone.

KATURI: Thank you. this is Shakar from Bank of America.

14:30:46 My background is not health care, so i'm just soaking in a lot of information to sharing.

14:30:52 So I'm gonna ask a question more from an individual perspective which is the question really is, are do we have the right systems in the Us.

14:31:04 Across all this different place and stakeholders for driving the right care of innovation, right health care, innovation.

14:31:12 I asked this because I I hear Shawn you talked about how you use ai for cardiac patients prediction.

14:31:21 In my mind. i'm thinking, Well, you could use health the insurance data, right?

14:31:25 But, on the other hand, if insurance data is being used by hospitals, right sometimes doctors might be motivated by putting a higher code, still legal, higher code.

14:31:37 And if you use *that data, you're going to be highly biased, So here's a case where the system with various take holders are not necessarily driven to the right objective and i'm a little bit lost ..my question really

14:31:49 is: do we have the right information systems that need to come together across all the stakeholders to drive the right care and innovation?

14:32:04 , starting with , Dr. Eckert and

FERGUSON: i'm going to give you first crack at that one Did you hear the question first?

ECKERT: I did I did it's a good question.

14:32:15 I think I think it gets to some of the points right about

14:32:19 How is the data collected that we're using in all of our models, and across all of the work that we're doing?

14:32:26 You know we've been using models for a long time in health care, where they were not necessarily produced by Ai in the past right?

14:32:35 But we've had risk scores. and restratification and things like that that. we're not always built on balanced data sets as well.

14:32:42 So I think I think we're getting better I think we are realizing that there's different ways We can integrate data.

14:32:51 That is across the spectrum of care and across

14:32:56 You know the data that is, you know, even outside of care.

14:32:59 That then affects How care is delivered so i'll have to say I think I think we're getting there.

BERGER-WOLF: I would say that's an aspiration but I I would say that we're still in the process, and probably early in that process.

14:33:21 You know, only recently they we agreed on--

14:33:27 Well, for example, only recently we switched from the main genomic data sets that were initially to understand population level associations in genome with diseases.

14:33:40 The, those the biggest data sets initially where one from Iceland, one from Japan, initially, intentionally collected to minimize the variation of all other factor other than the genome sequence right?

14:33:55 The clearly, not a very great data set for a lot of the questions that we want to ask.

14:33:59 A lot of data right now about covid for example, is coming from Europe because they're the collection policies of most distantly sort of most genetically diverse people from Europe.

14:34:21 --genetic variation in Europe is much smaller than in the US.

14:34:27 And certainly in Africa, for example, so they they even at that basic level.

14:34:33 No, we don't have the same system we don't have good processes.

14:34:35 Yes, for data enterprises was mentioned, and for transitioning as Dr.

14:34:40 Jehi said. And I was heartened to see that cleveland clinic has a position of somebody who ensures that the clinical data can be used for research, and the research can be deployed right away.

14:34:53 It's It's they're very very very few examples of that like less than 5 pure than 5.

FERGUSON: Okay, as this as this commission learned in Austin I'm, the bad guy So I want to thank our second panel this was fantastic, very much appreciate your testimony and answering questions.

14:35:12 It is 2, 35 and at 2 40 i'm gonna gavel in the third panel, whether you're here or not.

14:35:20 So at 2 40 we're gonna get going we'll take a quick break.

14:35:23 Thank you to our second panel very much. Thank you.

14:40:10 It's 2 40 and i'm gonna keep my promise thank you very much to our third panel.

14:40:18 I know. rest of our commissioners we'll see in shortly I'm just gonna go again and the order of the piece paper in front of me. first

14:40:26 We're gonna hear from Cheryl Oldham She's the Vice President of Education Policy at the US

14:40:32 Chamber of Commerce, Senior, Vice President of Education and Workforce at the Chamber of Commerce Foundation.

14:40:38 The Education Workforce program quote, connects the best minds in American business with the most innovative thinkers in education and training,

helping them to work together to preserve the strength of America's greatest economic resource-

14:40:49 It's workforce. She has 20 years of experience in public policy, development and implementation, as well as in project management and government relations or previous experience include serving for 8 years, and President George W.

14:41:02 Bush's administration. i'd be interested to know how many people did all 8 years,

14:41:09 Somebody told me they were 11 who survived 8 years in the White House, but I don't know in in Let's see. Where was that?

14:41:19 Sorry in July, of 2008 there.

14:41:22 Okay, Cheryl, go ahead. We gotta get this down.

OLDHAM: Thank you so much, Mr. Chairman and and commissioners for it.

14:41:31 Having the US Chamber here to testify about.

14:41:36 Our work in workforce obviously is the largest organization representating

14:41:39 The interest of business in the world. We are looking focused on the issues that are most important to the employee community.

14:41:45 And workforce right now is front and center As you all stated in your request for information last week

14:41:53 The future of work is here. Ai will certainly disrupt the workforce change.

14:41:59 Some jobs, create new ones, and yes, displace some. And so, we need to do 2 things.

14:42:05 We need to minimize any negative disruption and Then we need to put Ai to work *for the American workforce, and that's how i'm gonna frame my remarks around those 2 buckets. In terms of minimizing any

14:42:19 negative disruption. I wanted to spend 1 min and just a plea to you all, I guess.

14:42:27 To not forget about the importance of our K. through 12 system

14:42:29 in this conversation. planning for the future or frankly planning for the now starts in our schools, and if we're trying to address our workforce challenges by starting post high school

14:42:41 We're failing. we've taken our collective eye off the ball when it comes to reading and math and measurement and accountability for the academic achievement of all kids, regardless of income or race many of our kids are behind

14:42:54 they were before the pandemic and they're falling further as a result of the last 2 years, we know, the biggest challenges have been in minority communities low-income communities and for students with disabilities… it's

14:43:07 hard to think or talk about the high-skilled tech jobs of an Ai world.

14:43:12 When we're not meeting the basics for so many of our kids. As has already been said, and acknowledged technology certainly has an impact on jobs.

14:43:26 Those jobs and our tasks that are easily routinized and new jobs are emerging and fast.

14:43:31 And so we ask our question ourselves. The question of the Chamber-

14:43:34 Do. we have a talent development system in this country that can keep pace with the change?

14:43:40 Is it nimble enough to respond when skill requirements change and new jobs are created?

14:43:46 Is it able to train Americans for the jobs available today, and then pivot and train them for the jobs that become available tomorrow?

14:43:53 We need a system that develops the talent companies and communities need and ensures that Americans have the skills required for the jobs of today and tomorrow.

14:44:03 One that is actually fit to minimize that disruption.

14:44:07 The work of the Chamber and Chamber Foundation, the work that we have been leading for a number of years under what we call “America works” is focused on ensuring

14:44:16 We have that talent development system and we've done So by addressing 3 key challenges: one in partnerships been who we can employ employers and the education system, two in the data that allows for better communication between the 2 and

14:44:32 third in financing the education and training that American workers need i'm going to focus on the first 2. In order to be truly agile and able to pivot when disruption occurs, it's our belief that employers must play and

14:44:45 much larger role than they have traditionally played in workforce development.

14:44:50 This is more important than ever, as we begin to integrate emerging technologies like Ai into jobs and industries, we need to proactively lean into workforce development and make it more authentically employer-led If we're going

14:45:03 to minimize any labor market disruptions while also building new and effective pathways that will lead to ai related jobs using the Chamber foundation’s approach.

14:45:16 We're positioning employers as end customers of talent supply chains, and when jobs change and skill requirements are adjusted, it's the businesses that employ the workers that must signal those changes more clearly and rapidly. this means

14:45:31 taking a whole new approach to Hr. talent, acquisition, and talent. development.

14:45:37 8 years ago the Chamber Foundation, conceived of a pilot initiative called Talent, Pipeline management, a set of strategies and training for business intermediaries and employers based on the principles of supply chain

14:45:49 management, a data driven, end to end process for creating pipelines of talent, for new hires, for upskilling and rescaling and for diversifying the workforce.

14:46:00 It is this type of intentionality around ensuring that the training delivered aligns with the needs of the job that will ensure that when Jobs change, employers are able to signal to the education, system those changes and they are then able

14:46:13 to adjust their programs to better serve the student or job seeker.

14:46:18 This issue of signaling is really important and while the hard work has to be done by the humans within the companies and the partnerships with preferred providers of talent need to be built, and cultivated there's also this

14:46:32 very important data component. the labor market's changing fast, the data we rely on to determine which jobs are open, what industries are growing, what skills are needed is outdated and slow… bad data means inaccurate information, about what

14:46:48 our economy needs. American workers need current and reliable information about job opportunities and which education programs best.

14:46:56 prepare students for success. Modernizing education and employment records can improve job search outcomes and match job seekers with open jobs.

14:47:06 Today, the public and private sector together can develop the infrastructure that will allow for the collection and use of jobs and employment data to improve labor market information and empower people to use their own

14:47:19 records to pursue opportunities and career advancement the Chamber Foundation leads what's called the T3

14:47:25 innovation network. it's an open network of hundreds of organizations and professionals committed to building the data infrastructure necessary to make all learning count, to enable skills to function like currency and to empower learners and workers

14:47:40 with data. Technology, including Ai when applied in the right way can help unlock and connect people to opportunity including ensuring people, are matched to the right jobs and the right education and workforce pathways.

14:47:55 We'll also give employers and their hr systems the tools they need to hire, based on skill, and to better assess an individual's fit for a job or career advancement. Shifting quickly to making America have making ai work for

14:48:11 the workforce. they're certainly many opportunities with Ai and machine learning. but we have so much more to do to unlock those opportunities.

14:48:19 We believe technology is going to make our workforce development system better, particularly for the individuals who may not have a degree.

14:48:27 The veterans, an adult worker who is looking to move on or up in their career in a desperate need of a system that can see their value, assess the skills they have, translate them across new jobs and match them to a

14:48:39 new career. We have long seen the role seen the role of technology and Ai as a major asset in transforming education and workforce development.

14:48:49 We've led the private sector government agencies, education and work for stakeholders and helping to facilitate the digital transformation of the talent marketplace.

14:48:58 I mentioned the T3 innovation network-- through that collective action. both public and private partners are working together to unlock the potential technology and Ai to bring about a more equitable system. this year we're working with partners to document

14:49:15 high priority use cases for how data standards and ai technology can help improve education and Hr workflow processes.

14:49:25 We're also investing considerably in supporting public and private stakeholders in improving data held by employers themselves – its called the "jobs that employment data exchange" supporting the implement to implementation and adoption of data standards for

14:49:40 jobs and employment records. through this widespread adoption and use of of data standards. we can positively disrupt how employers organize and share data with government agencies, and even with workers themselves, and when

14:49:57 we're successful, we will produce more and better data than ever before on the labor market and its outcomes ushering in a new generation of talent, analytics for the public and private sectors as well as producing new data that

14:50:09 can support and improve applications and services. Not only could you Ai use this data to deliver new services and predictive analytics, but such rich structured machine actionable data can also be leveraged to train and improve ai tools

14:50:26 for the education and workforce. so sectors I think i'm gonna stop there because I feel like I might have been going on, and we we got a lot to get to so much more to say sheryl thank you very much next

FERGUSON: Next is Richard Cardwell. he's the vice President of Infosis, head of innovation, and delivery in the midwest region.

14:50:45 He has an Mba from Indiana, Wesley, and University. Richard, go ahead.

CARDWELL: Thank you so much. So, I have the I I think the privilege of evolving my career from being, let's say, a domain expert and a technology expert to Now, more of a generalist.

14:51:04 And you know I I kind of say that because I work for an organization now-

14:51:09 Emphasis, which is a technology company it obviously provides, you know, business consulting and it services and outsourcing services. globally.

14:51:17 We're a multi-national company we employ over a quarter of a 1 million people, globally.

14:51:23 And when you think of a traditional it company, you think hardware software, and we're not we're services company through and through.

14:51:30 So what I affectionately say is, we sell brain power by the hour So we hire train and deploy our own people to work with nearly 2000 clients across the globe, and some of the biggest and best brands

14:51:42 you know, across the world, and and we helped them as part of their digital transformation journey.

14:51:48 And we do so while we remain you know domain let's say industry platform software agnostic.

14:51:57 So we do make our own tools, our own software. We try to stay solution and software agnostic as much as possible.

14:52:06 And we understand there's a lot of confusion and hesitancy and and misunderstanding about ai.

14:52:13 It's been rather anthropomorphized if you will, and link to human beings but really it needs to evolve beyond what a human can do, and what it's with the problem we're capable of doing.

14:52:24 And we know that you know, as we've heard today. ai can impact Actress walls are already started to but it's still in its infancy.

14:52:31 And so, if I use a baseball analogy, this is the first pitch of the first inning of a 7 Game World series.

14:52:36 So this is a generational transfer. it's not a destination.

14:52:42 Ai is not so, you know. Just want to make sure that we kind of put that out there, and what our philosophy is about

14:52:47 Ai, but no industry vertical will be safe.

14:52:53 Sorry sure that's all right so no industry vertical will remain say, from its capabilities, or or to at least remain competitive.

14:53:03 So everyone will be impacted by it. And what makes Emphasis

14:53:07 You know our situation a bit unique, is that we're not just consumers of Ai.

14:53:13 We're also builders of it, We implement it We have our own in-house educators and training curriculum to train our employees on how to design, develop and deploy those tools.

14:53:24 And so that said we're constantly looking internally and externally forth, thought leadership and for guidance

14:53:31 and perspective, while he simultaneously relying our, you know, on our people and some of our ecosystem of partnerships.

14:53:41 You know whether that be data scientists or software engineers and others.

14:53:44 To actually build those tools that are necessary to make Ai possible.

14:53:50 And given that, I think I have this puview.

14:53:55 Now of looking across multiple industries, whether it be manufacturing, healthcare, pharma life sciences, retail.

14:54:01 There's a lot of common themes in terms of problems that are in those industries, and there's a lot of rigidity in systems today, and much like human beings, hardware/software erodes that decays, It

14:54:14 breaks no one's walking around with an iphone threeg anymore from 2007.

14:54:20 And that's for a reason. it is the technology is involved it's gotten better.

14:54:24 It's added more value and capabilities to our life and so we think enabling ai you know if you power that within the ecosystem of an industry, and we can pick on health care since we're

14:54:36 here, but really connect that to a digital platform and it and that can really unlock a lot of value around managing risk, lowering cost of healthcare and looking at an array of delivery of health mechanisms in terms

14:54:52 of patient treatment. And really what that does is it provides a different experience for patients,

14:55:00 It gives you better access to data and insights it unlocks.

14:55:05 Your ability to innovate more and further and accelerate time to market of, you know, filling the blank, whether that be a a medicine or treatment, access to a particular healthcare provider.

14:55:21 But one of the items we've talked about and and hinted at,

14:55:25 Yes, we've said data privacy but what data is digital and what we're not saying is cyber security.

14:55:32 There has to be Cybersecurity is part of the conversation with respect to Ai and any of its subtools.

14:55:40 Whether it be machine learning, you know, neural networks, etc.

14:55:44 And so we you know, from my point of view and I can speak on behalf of emphasis that you know we want to have a hand, and it's. and in the in the destination of where this is headed and if

14:55:54 you think about let's say on one end of the spectrum

14:56:00 Yyu have social media and sports and entertainment on the left, and you have health care, and let's say wealth, management, or banking finance on the right.

14:56:07 I kind of like to close with with these 4 points, you know, in in one side of that spectrum your personal data, and

14:56:17 what you're willing to give up is rewarded, it's incentivized to post to share to like

14:56:24 Geo. Locate how you transact interact and how you what you're learning about real time whereas on the other end of the spectrum

14:56:33 You know the data is locked down and there's a lot of different varying degrees of policy around it in laws and language.

14:56:43 Keep in mind that there needs to be an evolution of best practices from left to right, and there's going to be some overlap, but not completely.

14:56:53 But the guiding principles of how Ai is designed and developed and deployed

14:56:58 there will be some overlap as you move. from left to right because the tools will generically be the same, even though the language might be different in which it's written.

14:57:08 And so what I think is also critical, put up, but should be universally applied across that spectrum Are the ethics around it.

14:57:17 And what are you using the data for I don't think that should be nuanced by industry.

14:57:24 You're given i'm willing to give up a lot of data privacy

14:57:25 if I have a Facebook page versus if I go talk to my wealth, manager, and all of my asset classes, I want that lockdown and no one to be able to see it.

14:57:36 I'm not going to post and share that; but I would employ the group to think about this.

14:57:43 Leave room for creativity. This is still way in its infancy.

14:57:47 Leave room for us to make mistakes. you know we need to have capacity to learn and experiment.

14:57:54 And I think that's okay, yeah i'll close there.

FERGUSON Thank you, Richard. Next is Rick Carfania.. i'm part Italian, did I get that right?

CARFANIA: Yes, fine, like Lasagna.

FERUGSON: Rick is a senior Vice President. The Ohio Chamber of Commerce he oversees All Government affairs and public policy is currently in his third term the Ohio.

14:58:20 House of Representatives, I would say, God bless someone who's want to put their name on a ballot.

14:58:27 We represent. The 60 Eighth House district includes parts of Delaware County, and all of Knox County.

CARFNIA: Rick Great, thank you, appreciate the opportunity to be here I'm.

14:58:35 Now with the Ohio Chamber of Commerce I'm just under 2 months removed from serving in the Ohio House.

14:58:41 I was a member of House leadership at the time, and during my 5 years my 3 terms in office, I sponsored a variety of technology-related bills.

14:58:50 So being here and listening, some of this conversation it's it's very refreshing.

14:58:54 So I appreciate the opportunity to be among all of you today.

14:58:56 So when I offer up my remarks, just bear in mind it's going to be more from what I believe is a snapshot of Ohio, but also kind of relating as as a policymaker and I think some of

14:59:08 the more fundamental areas that I think we need to focus on to make

14:59:13 not only are State, but also our country. I think, more conducive to Ai into any forms of innovation out there.

14:59:21 When we canvas art chamber members on immediate challenges, I mean again to echo what's already been said--

14:59:28 The universal response continues to be workforce and we recognize that workforce anymore.

14:59:35 It's beyond job credentialing it's beyond job training to have a qualified reliable and stable base of employees available to Ohio businesses.

14:59:44 Any discussion of workforce has to include access to transportation to childcare to affordable housing.

14:59:51 Now, Granted, those are all topics for another day, but you know I have to get.

14:59:55 I have to get that out of the way, because I usually offer that up anytime.

14:59:58 I speak these days. As a Statew e have a lot working in our favor and welcome all of you to the Buckeye State.

15:00:05 By the way, we have a low cost of living a high quality of life, and if Ohio were a separate country, it would be the world's 21st largest economy, and we have plenty to leverage-- We We have great higher education

15:00:18 options, transportation systems, ample costs of low cost, ample sources of low cost, electricity and amount climate, and with the increased use of technology like ai 3D printing, virtual reality and with emerging field

15:00:34 such as Fintech, blockchain, biohealth, Ohio needs to remain future focus, to stay competitive.

15:00:42 And, as was just said, you, know we also need to leave the way when it comes to cybersecurity, because it's everyone's responsibility, we stand to lose, regardless of even if we're consciously aware we have foreign countries actively

15:00:52 looking to compromise our defense systems our intelligence networks and our economic security. but when we look in the mirror of what we need to do to lure innovation to our states, we feel it's important to assess some of

15:01:05 the opportunities that we do have in place. And here in Ohio we are uniquely situated post pandemic to capitalize on the surge in online commerce and the proliferation of cloud based services for example, So

15:01:19 we have here in Ohio more than 120 data centers.

15:01:24 At least 50 of them are in central ohio and those represent billions of dollars in investments and while they don't supply many jobs

15:01:31 the construction of the typical project can create 1,000 jobs or more.

15:01:34 And once finished, those data centers often need about a 150 electricians, plumbers, and other skilled traits to maintain operations.

15:01:42 So we're ideally suited for data centers because there is a little risk of earthquakes, hurricanes, fighting or tornadoes.

15:01:49 We've also welcomed a variety of fulfillment centers in the warehouses across the State to the point where in the central higher regional loan, where i'm from we are the

15:01:57 eleventh largest distribution center in the US. and we can do this when we have a highway system.

15:02:03 That positions us within a 10 hour drive of about half the US

15:02:07 population. But again, you have to put all these pieces together it's location.

15:02:11 It's infrastructure it's workforce and it's transportation.

15:02:15 I can't go anywhere, being from central ohio without at least talking about bragging about the Intel investment that was recently announced. so there's been much excitement about their announcement to invest 20

15:02:27 billion to upwards of 100 billion to manufacture semiconductors in Central Ohio.

15:02:34 And we anticipate construction. Start this fall with the goal of opening those plants in 2,025.

15:02:41 It would make it really one of the largest semiconductor sites in the entire world.

15:02:46 I can go over all the job. details. but I won't bore you with that. but I will say that the pandemic has really changed

15:02:52 how we do business. not just as a state but really as a country, and it's also laid bare a lot of the technological disparities that we have. And here, in Ohio. one of those was broadband availability. You know we can

15:03:06 talk about all the great strides that were made in telemedicine throughout the pandemic.

15:03:09 But if you don't have a high speed Internet connection in order to apply those services, especially in areas where you lack healthcare resources, healthcare personality is frankly a wasted resource.

15:03:20 So I was able to champion a piece of legislation that got through, and proud to say that recently 232 million dollars was awarded in state grants to offset a lot of broadband construction and

15:03:32 non-served areas. But really 2 areas I want to go into our our 2 areas that were frankly already mentioned, one being computer science, other one being data privacy.

15:03:44 because I did do some work in those areas. But if we want to be a technology proficient workforce, if we want our children to be prepared to compete in a 21st century advanced manufacturing economy and equipped with the skill

15:03:55 sets for jobs that have yet to even be invented,

15:03:58 we have to do a better job in Ohio and throughout the Us.

15:04:03 To integrate computer science offerings at the K 12 level.

15:04:07 Nationally, just 51% of high schools offer computer science while 67% of all new jobs in stem are in computing, and only 11% of stem bachelor's degrees are in computer science. So we

15:04:20 need to change the narrative in our education system that computer science isn't vocational,

15:04:25 It's foundational and it's not just about cultivating workers for intel, which you certainly need it's for Scott's Miracle Grow it's for Ernst and Young it's for Krogers

15:04:36 for Procter and Gamble and every other major employer throughout our State, because every industry, as I need right now and in the future for computer programmers for IT, personnel. There was a piece of legislation that I

15:04:49 sponsored when I was fresh, and it got signed into law that created K-

15:04:53 12 computer science standards and model curriculum, but beyond that it gave high school students the flexibility to take a computer science class and apply that towards the 20 units that they have to take in order to receive a high school

15:05:06 diploma. So, for example, you have to get for you

15:05:09 Take 4 years of math through units of science for 5 units, and of what of an elective.

15:05:14 So now, if you wanted to take a web design class instead of say, astronomy, you can do that, and it'll count towards one of your science units.

15:05:23 If you wanted to take a coding class in lieu of, say algebra 2, you can do that, and it will satisfy

15:05:29 your units of math. It's been it's been very, very well received, and you know i'm happy, because I think it it exposes our kids to an expanded menu of options, but also to options quite frankly that are

15:05:42 going to be challenging, and creativity and innovation again.

15:05:48 I think, better prepared them for. the economy that lies ahead. Code.Org was an organization.

15:05:53 I worked very closely with and around the time that that led legislation took effect, 63% of our public school, our public K, 12 school districts had zero, zero offerings of computer science classes

15:06:07 at the high school level, and as of 2020 we're at about 50% of Ohio high schools that hack that teach a foundational course in computer science, and that frankly puts our kids at a very severe skill set

15:06:22 disadvantage. And so, in the most recent state budget that was passed last year we inserted a number of computer science measures in there, but I think the challenges seeing those through and coming up with some more

15:06:33 permanent solutions. you know, for example, computer science education licensure.

15:06:41 You know that's one of the big impediments we just simply don't have faculty members to teach coding classes, or do teach, you know, app development and all these other courses.

15:06:50 So you know, we extended the ability for a teacher that has a valid educator license in grade 7 through 12 to to teach a computer science

15:07:00 course, if they complete a professional development program that's approved by the district superintendent with the school principal.

15:07:07 But you know that's a band-aid on the problem.

15:07:08 We have to adopt a more permanent approach to cross train existing teachers, to teach courses or do outright develop more computer-science dedicated faculty, and we have a variety of partners, ranging from Mattel to jp

15:07:22 Morgan, Chase, Cleveland State University. here in town, and other partners that are committed to a more permanent solution to that

15:07:32 Also in the State budget. We put forward a state plan for computer science education.

15:07:36 And so our Department of Education is working in consultation with the Department of Higher Education to come up with the State plan to incorporate more computer science curriculum by September 30 when the the plan has to be done by

15:07:52 September 30 this year and There's a lot of topics that need to be considered best practices and challenges associated with implementing more curriculum at the K 12 level, benchmarks to create

15:08:04 a more sustainable supply of teachers, a potential requirement for all students to complete a

15:08:09 computer science course, prior to to their high school graduation…

15:08:15 So so on, and so forth. I don't wanna bore you with all those details. but one of the other things that we did do was to try to ensure more alignment at the higher ed level you know as I

15:08:26 said we. we put the law in place to allow high school kids to take more computer science offerings in lieu their math or their science, or their elective requirements.

15:08:39 They want to make sure, though, that there's more of a seamless transition when going off to college, and so, beginning with the 2022-23 academic year,

15:08:48 we required every State university to recognize a student's successful completion of an advanced computer science course in high school as a unit for admission to the university under under certain circumstances.

15:08:59 So if if a public university announced Ohio requires a general math requirement, and you've satisfied that through a computer science class again, it'll translate over to the higher end. I wanna shift, now to data of privacy

15:09:16 This was a fairly large, complex bill that I was working on before I parted for the Ohio chamber, and i'll just preface it by saying that our data is obviously more exposed now than ever.

15:09:28 And that digital exposure is only growing. our info is correct, collected by a variety of entities used either for their own purposes or to sell to other entities in certain circumstances.

15:09:38 So. you know we recognize that as that data continually gets exchanged,

15:09:44 it's vulnerable to identity theft to financial fraud, and do other costly consumer problems.

15:09:50 if it's not, if it's inadequately protected there is no national standard regarding the regulation or the or excuse me for regulating the collection and use of personal information.

15:10:04 Ohio has zero protections on the books and as many of you may know there are only 3 States, California, Virginia, Colorado, that have actually enacted data privacy statutes.

15:10:13 Many more of those are in the early stages of development.

15:10:16 Here in Ohio. It was House Bill, 376

15:10:21 And what we did was we wanted to create kind of a list of certain consumer rights, including the right to access their personal data and obtain a copy of such an affordable format.

15:10:32 The right to correct any inaccuracies, the right to delete any personal data provided by or obtained about them, and the right to opt out the sale of their data or use that data for targeted advertising.

15:10:43 We also created a consumer right to appeal at the Ohio Attorney General's office, who we are designing? Who we propose designating as the exclusive authority to enforce that that statute. We did

15:10:57 have a variety of exemptions for businesses that are already subjected to or regulated by No.

15:11:02 Gramm Leach Bliley, HIPAA, the fair Credit Reporting act, you know, in a variety of other frameworks that are already in place.

15:11:10 We wanna be firm, but we wanna be fair, and you know that. And and on the the business side of things. there are 2 things that we wanna do. first is that we wanted to have no private right of action again.

15:11:21 We were going to have the the our state Attorney General's office and their consumer protection bureau consumer protection.

15:11:28 bureau will be the one to to enforce this. But we also wanted to provide an affirmative defense.

15:11:34 If if a company that was subjected to this is compliant with really the NIST privacy, framework, we identify NIST as kind of that gold standard. for when it comes to cyber security standards so as long as a

15:11:49 company was compliant with NIST, kept it up to date, that it was scalable.

15:11:57 Given their entity, size, and in nature, it would be provided with those those lighting liability protections, and it was very well received across the the business community.

15:12:05 But frankly, it's the bill we got it out of committee on a party line vote.

15:12:09 We were hoping to get some floor action on it and it got hung up in in in caucus, and i'm a Republican, and it got hung up in my own caucus because we had

15:12:20 individuals that wanted a private right to action there are some that have an aversion to doing anything perceived as helping quote unquote big tech

15:12:32 There's a perception about these being unnecessary corporate giveaways and you know a variety of other things, but i'll try to wrap it up here.

15:12:40 And I apologize for rambling. You know we really have a void at the State legislative level when it comes to tech policy, and we need to elect individuals who embrace technology and innovation has vehicles for growth and

15:12:54 prosperity as opposed to demonizing it; and there was a lot of great momentum in our Governor's office, particularly particularly through the endeavors that our Lieutenant Governor is working on through innovate Ohio Cyber Ohio and

15:13:07 Broadband Ohio, and finally, with regards to Intel.

15:13:12 You know I I spoke with the We spoke with company representatives, and they said Ohio was not the most lucrative when it came to their our package of incentives, but chief among the variables that sold them on our state,

15:13:25 including land availability and the lack of seismic activity. what's the degree of coordination and solidarity that they witnessed at the local, county, state, and Federal levels of government.

15:13:34 So at the end of the day, if we want to promote our artificial intelligence,

15:13:39 Fintech, blockchain, bio health, we need to have that same alignment upload.

15:13:45 So thank you for indulging me and I can take any questions while we're done.

FURGUSON: Thank you, Rick. Elizabeth Hyman is the as chief executive officer of XR.

15:13:55 Association, a trade Association, representing the technology manufacturers that power, the virtual, augmented and mixed reality industries.

15:14:01 XRA is dedicated to the responsible development and thoughtful advancement of XR technologies across the globe. Elizabeth.

15:14:09 Go ahead i'm just gonna give my commissioners quick morning when she's finished.

15:14:14 We're gonna have time, maybe for 2 questions i'm gonna prioritize folks to have that and ask a question.

15:14:19 We're gonna have about 5 min to do both of those So Elizabeth going.

HYMAN: Okay, i'm ready. I'm gonna try and make this a fairly concise and brief. but i'm a use case here… the virtual augmented and mixed reality technologies more and more will be interrelated with artificial intelligence machine-

15:15:01 learning to power a lot of the applications and we're seeing amazing applications.

15:15:04 I actually really appreciated being here to hear the folks from Cleveland Clinic. I just recently went to a conference around virtual reality and health applications, and it is absolutely inspiring to see how this is being applied for therapeutic

15:15:11 purposes. and wellness overall. There are also wonderful use cases across manufacturing and retail and education, and you name it, but sort of a through line is how the leading edge right now is in workforce training.

15:15:17 And development. And so I wanted to talk a little bit about some of the research that we did just with Hr.

15:15:23 Professionals, just to see what were they thinking about? XR.

15:15:26 and how it might play into their needs; and they're really focused on no surprise, training, and upskilling, finding and retaining top talent, and doing so with diversity equity and inclusion,

15:15:38 those are some top line results that we got. We also got very encouraging results in terms of the use of XR to achieve these purposes.

15:15:50 More than you know. 45, 48% of those Hr professionals are saying that they're already using XR.

15:15:55 Or they want to use XR. for these for these purposes.

15:15:58 So that was great. and I think, it it you know we're at a point now where XR is sort of the ultimate tool for people to be able to learn.

15:16:08 See and do all at once. and by the way, XR is an umbrella term in case I sort of jumped off there for Vr.

15:16:18 Ar and Mr. It gives a direct benefit to the worker when you're using the technology there's been some initial studies, for example, the University of Maryland looked at the retention of information by people who are using

15:16:31 virtual reality when they're trying to pick up information good retention marks; PWC.

15:16:36 Did a study that found 275 people were 275% more.

15:16:44 Confident in applying what they learned when they learned it through the benefit of XR.

15:16:50 It also helps to help create safer workspaces.

15:16:54 So, for example, if you're a construction worker and You're able to go into an immersive reality through Vr.

15:17:01 And you can learn what some of the hazards are on the on the workplace, and what some of the expectations are

15:17:09 once you get there, it makes it a much more efficient and safer workspace.

15:17:13 Really, when you're thinking about repeatable lifelike scenarios in sort of low stakes environments, we're seeing some tremendous results. I'll give just a few examples not necessarily in the healthcare space

15:17:27 although if you think about emts or nurses that do have to do this type of training, or how to interact with patients, I think that is very, very valuable.

15:17:36 We saw Delta is using this technology for ramp operation personnel.

15:17:42 They can do all of this in a virtual environment and They don't have to take up the ramp space,

15:17:48 they don't have to put themselves in a dangerous situation in order to learn, but they know what the process is for.

15:17:53 Ramp operation. So Delta is embracing this. I find this one really kind of fun and interesting.

15:18:01 Lockheed Martin is the prime contractor for the Orion

15:18:04 Space Program, and they've partnered with Microsoft and the whole lens to help their technicians as they're actually building new Orion spacecraft.

15:18:16 So if you think about some of the very sort of repetitive measurement processes that have to take place, to build this spacecraft by using augmented reality or mixed reality in the hologram that overlays

15:18:30 where a particular rivet or fastener needs to go they've seen tremendous results.

15:18:36 So, for example, they said that the work has gone 90% faster for these types of tasks, and that they've had zero reworks on what had to be administered,

15:18:48 so the errors have diminished significantly.

15:18:53 So this is really great. and I think also we saw, you know, that it can help

15:18:59 in many, many different environments. We did a caucus hearing with the medical technology caucus, and we had some emergency doctors who talked about how to train in virtual reality in the time of Covid.

15:19:12 They could kind of create that stress that we're all experiencing in these ER scenarios and prepare the staff, so that they were able to better perform in the real world, because they had this opportunity to train in a virtual environment.

15:19:27 So there's all kinds of benefits I think to be had in using virtual and augmented reality for workforce training.

15:19:36 One thing that I do want to point out is the ability to attract a more different talent.

15:19:41 pool. The Chamber Foundation actually has talked about.

15:19:45 Operations, these sort of populations that have historically been underrepresented in workforce, training, recruitment, and reduction.

15:19:56 And I wanted to just sort of draw a little bit on the accessibility population, because we've spent a little bit of time as an industry trade association--

15:20:05 we created a best practices guide to help developers understand how to build more accessible experiences in virtual and augmented reality.

15:20:15 And then we went and partnered with PETE, which is the partnership for employment and accessible technology,

15:20:20 it's a program funded by the department of labor and we did a white paper with them on the future of work. and I think where you start is there's a 2018 study by Accenture that pointed out that when

15:20:33 you hire persons with disabilities your economic output actually goes up, but they're historically under-hired.

15:20:44 And so they are the epitome of this opportunity nation.

15:20:46 So what if you have technology that allows, for example, voice commands eye, tracking gesture control, which is what augmented in virtual reality enable an individual to do and that overcome some of the disabilities that they

15:21:00 had that would have prevented them from doing a job. what if you have a tool that allows collaboration in an incredible way, for example, having real time assist, or perhaps somebody who has the knowledge

15:21:13 but some sort of disability is able to collaborate immediately with a person in the field

15:21:20 fixing a wind turbine, they can get that real-time assist to do that job.

15:21:25 And even just sort of the overlay of information I mentioned earlier.

15:21:30 the Orion spacecraft example. when you are able to sort of physically, see where the task at hand has to be completed, it makes it a lot easier, maybe if you have some sort of cognitive disability

15:21:46 that all of a sudden you're Now, empowered so I wanted to keep my remarks relatively short, because I know we're getting towards the end of the day.

15:21:55 And really what i'm here to talk about is this this power of this type of technology, the way that Ai will help make that even more engaging

15:22:05 and you can go through all kinds of interesting training scenarios.

15:22:09 But we are seeing some tremendous update in the workforce for this type of technology rather than a disruptor

15:22:16 we believe this is actually an additive technology that will help the American workforce.

FERGUSON: Super Elizabeth. thank you very much who's got our questions.

15:22:27 I know you had a question, Jerry. You have not had a chance today.

15:22:29 Go ahead

JONES: keep my finger down, So here we go, the privacy, culturally, legally regulatory.

15:22:44 And technology vis a vis Artificial intelligence is a critically important intersection.

15:22:50 we all know that because data is foundational to Ai systems, and so how the US

15:22:57 Deals with the notion of individual rights vis a vis data about them and their environment

15:23:06 Is critically important, and whether or not the United States is going to be a leader or a follower in developing artificial intelligence

15:23:14 we have basically 3 different systems that are in competition:

15:23:19 Now we have Europeans who have been able to find political consensus around the utilization of data. with GDPR.

15:23:28 We have State governments trying to fill the void that comes is absolutely than awol.

15:23:37 despite a lot of effort, over the last couple of decades.

15:23:41 And then we have China. where any data that the government wants the government get. As we move forward into the future, I'd like to get some of your

views about you know the the international competitive aspects of the importance of getting

15:23:57 data rights right in the US.

FERGUSON: I would just ask you, keep your answers as tight as possible.

15:24:07 And it may take a book or 2 well I mean I i'll.

CARFGNA: I'll go and i'll try to be really quick but I mean you hit it on the head

15:24:18 we don't have a national standard.. and we have to get to there, and if Congress is going to act on it, then we have to take the piecemail approach, which I hate quite frankly, because you have you know, California here on this end of the

15:24:31 spectrum in Virginia on the other end spectrum. We in Ohio

15:24:34 were trying to be kind of that just right bullet port.

15:24:36 You know that we were providing some consumer rights, but we were also providing some, some incentives and some some carrots, some positive reinforcement for businesses to do the right thing, and to implement those cyber security

15:24:48 protections, and we still aren't there and you know we're getting hung up on the enforcement measures primarily private of action versus having the AG enforce. But I I mean I I think though that we need

15:24:59 to have more and more states implementing doing the piecemeal approach in order to reach some kind of a critical mass or some kind of a tipping point where at least we'll get a national standard or at least a model in place, at

15:25:12 a state level. then that can be adopted more broadly that's that's my quick, quick answer.

FERGUSON: Anybody else want to add that

CARDWELL: we may not win at the AI game

15:25:27 but we definitely want to be competitive. Data privacy has to be embedded into the value of what we're trying to do, and if it's not going to be

government led, it has to be industry lead I mean there there's no probably other way.

15:25:39 Around it and getting to heard those cats is a different set of challenges or get it.

15:25:43 But there's enough large companies out there that are getting the data.

15:25:46 The issue is data is gold, it's just gold right now and everyone sees a an opportunity to monetize it, and by putting restrictions around it, you know in some cases prohibits

15:25:58 It's a business model, or two from occurring but from my vantage point to kickstart it It it it just may have to be ended.

FERGUSON: Do we have a second quick question. Anyone who hasn't had a chance yet.

15:26:10 Okay, go ahead. . have you i'm trying to No. go ahead then. Sorry.

COMMISSIONER (undetectable) Sorry, thank you. So speaking of monetization and our theme today is, do no harm.

15:26:22 I wonder what your thoughts are on how those intersects.

15:26:26 So you mentioned, Vr. XR. you know something that maybe in the interest of the consumer.

15:26:34 May also be detrimental to the long term if they become addicted to just existing in that space.

15:26:41 So, how do you? How do you? What are your thoughts on?

15:26:44 How to reconcile the profit incentives.

15:26:47 They do no harm for the consumer

HYMAN: i'll kick it off.

15:26:52 I think we're always trying to figure out the equities right? and i'll come back to the accessibility argument, or example that I use, you know, when it comes to privacy for example, the forward facing cameras on an

15:27:06 augmented reality set of glasses afford somebody with low vision an opportunity to see in a way that they never have seen before.

15:27:15 And so we need to understand that that's a positive right? but obviously there's by standard data there's all kinds of information, and so we have to try to iron out the equities of the positive and the maybe not so

15:27:31 positive but our organization overall is really trying to figure out the responsible development of the technology, and we're having similar conversations, I think, to the Ai industry.

15:27:44 you know we favor a federal approach to data privacy.

15:27:47 We want to try to be very transparent about these equities and try to work through with all kinds of stakeholders.

15:27:55 We just issued a report partnering with them - They issued the report.

15:28:00 The Bipartisan Policy Center, but we partnered with them for a year and a half to try to surface.

15:28:04 Many of these opportunities, but also the challenges that are before us.

FERGUSON: We are ready to get started. We have 3 panelists for this panel, one in person and 2 virtual.

15:29:31 So we're gonna start with Erin Henninger. did I say that properly, Erin? Erin is the panelist who's here in person, and we're gonna get to our other 2

15:29:40 panelists a virtually after she has her turn. Erin is the executive director of the interactive Commons at Case Western University.

15:29:52 That is, was established in 2014 as the center to connect individuals from across the University campus and its region through advanced those visualization to further research and education.

15:30:04 Erin, Take it away.

HENNINGER: Thank you. Good afternoon. My name is Erin Henninger, and I am executive director of the Interactive Commons at Case Western Reserve University.

15:30:11 Here in Cleveland, Interactive Commons is really an innovation lab where we call cultivate ways of thinking differently.

15:30:18 We have a team of computer programmers artists instructional designers and conveners who bring people together to solve problems and bring ideas to life.

15:30:27 I'm gonna structure my remarks today in 3 parts first a little background about we're doing in relation to future of work, and then a couple of minutes to explore the opportunities, and risk that we see in ai combined with other

15:30:37 future tech and some concluding remarks and requests for policy recommendations.

15:30:43 So a little bit more about our lab, the Interactive Commons (IC).

15:30:46 One of our charges is to think about the future of education and what will make a student want to come to case Western Reserve in 10,20, 30 years from now, and if we're going to imagine the future of education we have to think

15:30:56 about what are the future jobs? What jobs are we preparing our students for?

15:31:02 And what will society look like? And this directly relates to artificial intelligence, or, as we often frame it, what jobs do humans do well and what jobs will

15:31:10 Computers and robotics do better. So to predict this future, we try to think in decades.

15:31:16 We often try to keep a price of the emerging technology.

15:31:20 And consider how, when we combine these technologies

15:31:25 They will come together to affect society. So while this hearing is focused on the term artificial intelligence, e like to think of it as “computer assistance.”

15:31:33 How can a computer's ability to process information be used to help us as humans and our work in our daily lives?

15:31:39 So at the Interactive Commons, We've spent the most time thinking about the future of work related to mixed reality in the Microsoft Hollow lens. and I promise I will get this back to Ai.

15:31:49 So I'm gonna spend a moment just defining mixed reality in case you aren't familiar.

15:31:53 Most people are a little more familiar with virtual reality where we put on a headset device, and it closes us off from the real world and immerses us in a virtual place.

15:32:01 Mixed reality is a headset with a transparent visor that maps your environment and lets you see holograms in your world.

15:32:08 You can see the room around you the hall. the furniture The people in that space along with digital information so mixed reality truly blends the real world with the digital world.

15:32:21 It's mixing them together. So at IC we got the opportunity to start programming for Microsoft Holland's back in 2,014 as case Western Reserve was Building our New Medical School in

15:32:30 collaboration with Cleveland Clinic. we had to make a decision about whether we would put the tradition of a cadaver to Section Lab into that building or explore.

15:32:38 emerging technologies. So we decided to break from that 100 plus year tradition of cadaver based dissection and created a bespoke in house made hollow anatomy curriculum Today 370 of

15:32:50 our medical students are using and relying on mixed reality to learn their anatomical structures and the relationships to each other through a holographic human.

15:32:59 They do this in groups of up to 50 students at a time, and it, in fact, our software networking enables the largest shared group experiences in hollow lens.

15:33:08 So you can have multiple people, seeing that same object if you point in an object.

15:33:12 I can see where you're pointing and It's just a very natural way of communicating together.

15:33:17 Even Microsoft isn't doing these large groups shared experiences at that level.

15:33:20 Our record is a 100 devices in a shared group.

15:33:23 Our work has been featured at the World Economic Forum in Davos, Switzerland. and today hall anatomy is license to 14 partners outside of Case Western Reserve medical school.

15:33:33 So all of that is to say that when we imagine the future of work, we picture a combination of multiple technology platforms,

15:33:39 specifically, we think a lot about mixed and virtual reality as well as ai

15:33:44 So the examples that i'm going to mention can be and likely will be enhanced with ai or computer assistance in the future.

15:33:51 These examples of mixed reality. So i'm gonna spend a couple of minutes talking about opportunities that we see certainly in education I can speak to the effectiveness of the learning outcomes.

15:34:01 We had to establish a platform of knowledge to say that HaloLens was an effective tool for education.

15:34:08 So we did some of the earliest comparison.

15:34:09 Trials where one student group would learn in the cadaver lab.

15:34:12 Another group would learn in HaloLens they would take a test, and we found that the students would earn similar scores.

15:34:18 But those who learned in holland's learn the material at least twice as fast.

15:34:23 We then tested groups at the 8 month mark, which is a marker of learning retention, we found those that learned in HaloLens retained the information almost 50% better.

15:34:33 An additional benefit that we discovered in mixed reality, happened during the pandemic.

15:34:37 We were able to ship 185 HaloLens to our first year

15:34:41 Medical students, so that they never missed a day of instruction.

15:34:44 We surveyed the students during this time, in fact, that not only did they enjoy the tool, but 58% actually preferred remote hall anatomy to in-person class, And that was a little disappointing because we really believe

15:34:55 in connecting humans at the same space we're seeing similar outcomes in industry.

15:35:01 The last panel covered some wonderful examples so i'm going to skip through these. but Honeywell Lockheed Martin, Chevron. all are using the unique abilities of HaloLens to enhance safety to

15:35:14 accelerate their training and to improve skill, retention.

15:35:18 And there's multiple tools within the device that enable that I also want to mention that we see HaloLensand Ai combined as a means to provide virtual coaches or assistance, so in the absence of a

15:35:31 human expert. Can a person wearing a headset receive help or instruction on how to handle an unfamiliar situation?

15:35:38 You could imagine a US special forces group providing better emergency care to an injured team member on the ground through Ai, supported by mixed reality.

15:35:49 The other thing that we can consider is, how do we assess learners through these technologies?

15:35:53 People get test anxiety. And is there a more accurate way to measure what people are doing rather than writing an answer on a piece of paper?

15:36:03 So imagine a better way to assess a surgeon in training, or how well a person performs a maintenance task, or even the act of teaching itself.

15:36:11 So now that We've talked about some of the opportunities i'm gonna move on to some of the new risks facing the feature of work related to Ai and mixed reality or virtual reality.

15:36:22 There are many, but I will focus on those related to privacy, identity, and ownership.

15:36:26 So let's start by considering all of the privacy issues. We have now.. now imagine wearing a headset that detects your environment through cameras in the device.

15:36:36 It can track your movements, your head, your hands, and how you move around a space all of the time.

15:36:41 So then you can bring in by biometric data such as eye tracking to a device that you're wearing all day for work.

15:36:49 Can someone make a medical diagnosis about you based on this tool?

15:36:52 For example, the tech in today's had not a displays could flag to an employer that a staff member has Parkinson's disease tremor even before the employee himself could be aware of it.

15:37:03 So what do we do with this information? and how do we prevent discrimination associated with that?

15:37:06 And can we observe gender or racial bias based on how an employee is interacting with others as they're wearing that headset?

Shifting gears a little in terms of in terms of privacy when the content is digital how do

15:37:18 we determine what is private? when we wear these types of headsets they're kindly mapping my room the inside of my house and my workplace.

15:37:27 So who has the right to that digital world or is this new level of digital footprint that i'm creating,

15:37:34 who does that belong to? So do I have the right to my own digital wall in my own house with the digital spaces I see when I walk around in the world,

15:37:42 Can someone post a billboard or pop up add to my wall in my house, or every time I open my refrigerator?

15:37:50 Can a person write hate speech on my/another person's wall I mean there are examples of mixed reality being used in gorilla art exhibits where they're augmenting art in a museum or in a public art kind

15:38:00 of space. How do we opt out of these interactions and do we get to opt out of seeing a traditional billboard today?

15:38:07 So we're still we're grappling with these in alternative medias not just emerging media.

15:38:14 Lastly, I want to talk a little bit about. How do we compensate individuals for the knowledge that they're imparting to the computer assistant or those who train the Ai.

15:38:21 So can we consider a royalty economy for those whose knowledge base are informing the Ai and potentially making some workers obsolete?

15:38:28 We also need to understand the risks and benefits of anonymity in the mixed reality space.

15:38:33 We've seen that when users are unaccountable, it can lead to nefarious and even fragile and activity in the form of Internet trolls, fake user profiles and fake product reviews Furthermore, an

15:38:44 algorithm that drives a certain result can isolate our frame of reference.

15:38:50 And that is fundamentally bad for innovation. So i'm Referring to how my Twitter feed is going to look different than your Twitter feed my New York Times Page web page will be different. Mine

15:38:59 probably has more cat videos. So we have to be careful about who's designing Ai and going back to our innovation lab at case Western we're founded on a body of research that shows we get better results

15:39:10 when we combine multiple perspectives, backgrounds, academic interests, ethnicities, gender ages, and cultures, this diversity of perspectives is essential to creating holistic solutions that serve many.

15:39:24 So let me summarize some of the opportunities and as I mentioned, and offer some final thoughts.

15:39:28 I'd recommend for policy like any technology we can use ai as a webinar tool.

15:39:33 Some of the opportunities that excite us about the future work.

15:39:36 Is this ability to combine Ai with other tools like mixed in virtual reality, to hands, education and learning, retention, training that takes a novice to an expert faster?

15:39:45 The ability to be helped by virtual coaches or assistance and better methods to assess learners, especially high stakes, learners like surgeons, and training.

15:39:53 Some of the risks involve all of the usual issues of privacy, identity, and ownership in the digital space.

15:40:01 With a bit of a new twist, because the types of data are devices are detecting are from the interior of our homes or even biometric data.

15:40:09 So some requests for policy. let's ensure a variety of perspectives are being engaged to develop solutions.

15:40:15 Let's respect individuals, privacy, and ownership of their own data and knowledge bases.

15:40:20 Let's consider the economic dignity that of those affected by Ai, especially as combined with virtual reality and mixed reality.

15:40:27 There are multiple business models beyond the add-based model that can benefit many stakeholders.

15:40:33 Considering a royalty economy for those knowledge base those who knowledge, base or physical spaces, are informing the Ai and potentially making

those workers obsolete or sacrificing the privacy of their own home environment let's also identify who is

15:40:45 accountable for the full life cycle of what we create, and how we deploy it.

15:40:49 In this feature of work, from cradle to grave, in manufacturing, we know cradle to grave goes from sourcing materials to producing materials to recycling or disposing of materials so

15:41:00 in technology or with artificial intelligence. We need policy to make creators accountable for their Ai from cradle to grave.

15:41:07 What are the implications for users? can we responsibly dispose of the Ai.

15:41:10 If we find it isn't serving society and what body will govern this?

15:41:13 How do we make the benefits accessible to all, and how we compensate for the negative impacts that we may not predict when we create it?

15:41:21 Who is accountable. Thank you for this opportunity to share these thoughts and i'll welcome your questions. Erin.

FERGUSON: Thank you very much. is Alex Kotran on the line.

15:41:33 Virtually. Hi! , Can you guys hear me? that you, Alex?

15:41:38 Great. Alex Kotran is the CEO of the Ai Education project.

15:41:45 Prior to that he helped launch the Future Society, which is an Ai governance.

15:41:48 think tank which is spun out of the Harvard Kennedy School. Alex.

15:41:52 Take it away.

KOTRAN: Yeah, Thank you so much for having me

15:41:56 And yeah, it's been I I really concur with all the remarks that I've heard before has been a really good overview of, You know, the myriad of different issues.

15:42:06 That artificial intelligence is gonna is is creating and and requires action on I'm gonna focus specifically on ai literacy.

15:42:12 And and what we're teaching our students in high school so a little bit about AIED, so we're a nonprofit and our permission is to inspire and excite students to explore

15:42:23 artificial intelligence, and we want to equip students ultimately with the skills that they need to thrive as workers, creators, consumers, and citizens.

15:42:32 So we were founded 3 years ago. in 2019 we've reached 30,000 students in 9 States.

15:42:39 Ohio is the first state that we launched in I'm actually from Ohio I went to Ohio State,

15:42:43 my mom is a math teacher in Akron, Ohio

15:42:46 at an early college High school, but we've grown to to to reach students all over the country, and our funders include the Patrick J. McGovern Foundation, AT&T, Intel, Nvidia

15:42:58 Booz Allen Hamilton, the J.S, Smucker Company, based in Ohio,

15:43:01 Google and many others. and we've also been part of some of the leading accelerators for technology nonprofits, including AT&T Aspire and Fast Forward.

15:43:11 I share my bona fides just because you know, we're relatively new onto the scene, and and really the work that we're doing is is you know, a surprisingly you know, in

15:43:22 many places the first time schools have actually interacted with artificial intelligence.

15:43:27 And one of the first projects that we did was actually a partnership with the Georgetown Center for Security and Emerging Technologies.

15:43:34 And this is really to look at, how are students learning about artificial intelligence today?

15:43:40 what are the meet, the methods, or the opportunities available to the students?

15:43:44 And so this is a landscape analysis across the country that looked from K.

15:43:46 Through 12 and beyond, what curriculum exists, and what we found is that most ai curricula that are out there are relegated to after school programs and summer camps,

15:44:01 and schools that have the resources to actually deliver technology education through the through the lens of computer science.

15:44:08 And the challenge of that is as I think we've heard earlier today is that computer science is it's an imperfect delivery vehicle for learning about ai because many schools don't have computer science teachers

15:44:20 whatsoever, and even schools that do have computer science teachers lack equitable access to those programs.

15:44:26 My mom teaches it back in public schools. and APS, for example, has 10,000 students, and they have one computer science teacher for the entire district.

15:44:34 So we were fundamentally under a resources at the moment.

15:44:37 to teach students about what Google is calling the new electricity.

15:44:41 I wanna talk a bit about. What does this really mean?

15:44:44 So you know, when we say every single student in America needs to learn about artificial intelligence.

15:44:50 You know the first thing I would say is you know we're seeing the earliest forms of these tools, you know, creeping out all around us.

15:44:58 If anybody seen the Boston Dynamics video of their spot robot or the new John Deere autonomous tractor, or if you live in San Francisco like I do you see self-driving cars all

15:45:10 over the city. You can't go one or 2 blocks without staying one.

15:45:16 And then some of the really sophisticated deep fake technology and Vr technology has been has been discussed.

15:45:21 we're in the early days of these tools and yet they're advancing at a rapid pace.

15:45:26 And so it's hard sometimes to take you know these individual instances of really advanced and interesting emerging tech, and hen understand how that's gonna actually impact the economy as a whole

15:45:40 But i'll share a few things so some quick stats:

15:45:43So the Oxford Martin School found that, you know, in a study that 47% of us employment is at high risk of automation over the next decade or two.

15:45:52 McKinsey did a similar study and found that

15:45:56 About 50% of work activities (not jobs, tasks) are automated.

15:45:58 and the World Economic Forum said that by within the next several decades Ai is gonna eliminate 75 million jobs and you know there's a lot of there's an

15:46:11 agreement about what this really, what this really means and whether this means that we're like the net number of jobs is gonna disappear, or if there will be new jobs created.

15:46:22 Oftentimes we ignore the problem by just a assuming that well, Ai is going to dramatically increase productivity and create more jobs and

15:46:28 Jobs that we can't even anticipate you know similar to the transition from

15:46:35 the horse and the horse and carriage to cars but it's not for certain that's going to be the case.

15:46:41 You know the nightmare scenario could be that and what we're actually seeing now is that the forms of artificial intelligence that are being implemented,

15:46:50 they're just barely good enough to replace human workers, but they're not actually significantly more productive.

15:46:57 So they're cost effective, but they're not necessarily unlocking the levels of the productivity that you would want to see, to create wealth that could then be let's say redistributed or otherwise re-purpose to

15:47:08 new types of consumption. and that's reflected in productivity.

15:47:13 numbers. You know, productivity is not increased as much as people would expect.

15:47:17 given the pace of technology advancement. you know another way to look at how artificial intelligence can impact the economy is to look backwards.

15:47:25 So. there's some work done. by Darren smo glue (not intelligible) of it, and pestwell risk repo (not intelligible) at MIT, Who were basically we're looking at

15:47:35 what the impacts of productivity are, how does technology affect productivity?

15:47:41 And essentially the issue is that between 1987 and ,017. the displacement effect of new technologies far outweighed their productivity.

15:47:51 effects. and still the computer revolution. So far it's lacked the productivity impacts that previous industrial revolutions resulted in and the US

15:48:03 Government through the tax code is actually giving companies extra encouragement to automate jobs, and it's taxing capital at a lower rate of labor.

15:48:10 That provides all sorts of incentives to purchase machines and software equipment rather than hire people. Separately.

15:48:17 And this is interesting that there was research on my Brad, her fine (Not intelligible), and Lisa Khan

15:48:21 I found that recessions are inducing the induced the most notable increases in routine task automation.

15:48:28 And so this was especially evident after the great reception, but it can be traced back to prior sessions as well, and the takeaway is that we should anticipate that when the next recession comes whenever it may

15:48:38 come it. it's gonna spur another push for automation this time leveraging significant advances in artificial intelligence

15:48:45 since the last recession, which is, you know, over a decade ago.

15:48:50 And automation is one of the principal reasons that we've seen the stratification of our labor force, and I can't share i'll I I can't share my some slides but if you look at

15:48:58 a graph of earning potential from the US workforce what you see is that between the nineteenth seventies and the minute 2,000 the early 2,000 visited the stratification based on the level of education.

15:49:12 That you have. There was previously the ability to. Obviously, if you were in manufacturing you were able to get a not just a living wage, but actually a middle class wage.

15:49:22 As mechanized automation pushed those workers out of manufacturing

15:49:26 they were moved into service roles which were harder to automate. because they're the non routine tasks.

15:49:32 And and those jobs are while they're harder to automate they're also lower paid.

15:49:36 And so you have this stratification, where some people who are in the services, industry and consulting, or legal services, or in healthcare, being very highly paid.

15:49:44 But most people who are in services are actually being underpaid or low piad, and and n issue now is that Ai is increasingly putting those low-age service jobs in the crosshairs.

15:49:54 You know many of the tools that are being rolled out now to date.

15:49:58 You know, Ai tools that companies can buy. They replace customer service agents.

15:50:02 They replace sales, agents, they replace food service workers,

15:50:08 And while these technologies so quite rudimentary they're just good enough as as I said before to displace people and that's and that's the nightmare scenario, that we're

15:50:16 going into and you know what's the word on Ohio, and I would just say, you know, if you look at the top.

15:50:20 The most common jobs in in Ohio. the number 2 job is retail salespeople, and we've seen firsthand how those jobs have been displaced.

15:50:29 Not just by automation, by Ai, but frankly by e-commerce and the Internet, especially during the pandemic

15:50:35 The third most common job is fast food and counter workers.

15:50:37 The fourth most common job is cashiers. The fifth, most common job is customer service representatives

15:50:44 And and the list goes on. And when you look at that list, you know many of the most common jobs on the list are careers that are directly in the cross hairs of companies that are trying to automate and frankly displace

15:50:56 workers. And so this brings us to Ohe students. So students need to learn about Ai because they need to be making informed decisions about what they're gonna do after high school.

15:51:04 They need to know that there are certain technology enabled careers that are hyper potential careers are also certain careers that while they may not be technology careers, they're still resilient for example, the most common job in the

15:51:13 us is registered in Ohio rather are registered nurses.

15:51:17 And it's actually very hard to automate the work of a registered nurse.

15:51:21 And so that's the that's the reason why we need to be in implementing ai literacy and ai education in high school in large part, to guidance towards these more resilient pathways and so you know

15:51:34 Some recommendations to close with you know. Firstly, we just need clear standards around Ai education at the State level.

15:51:42 We have actually been advising the Ohio Department of Education on the rewrite of the computer science standards.

15:51:49 And what ODE is doing enrolling out. I believe this fall will be a new set of senators that includes Ai education within the new computer science standards.

15:51:58 We think more States to be following Ohio's late and we're really proud that Ohio is gonna be setting the setting a precedent to national level to show how this can be done. But we also need Federal dollars

15:52:09 dedicated to supporting community efforts to pilot new education programs like the ones that AIEDU is providing to schools.

15:52:16 And then we also need to rebrand the role of community college away from this fallback option and to into something that can actually really empower workers who are trying to think about how they can blend technology learning within their existing set of

15:52:31 interests. So I knew that we've been going long So i'm gonna close now.

15:52:37 But if anybody has any questions I would like to learn more about the curtain i'd be happy to follow up after the the session.

FERGUSON: Thanks, Alex. Thank you very much that's some fascinating stuff, a lot of good information there.

15:52:50 Next and last on our panel is i'll look what Almutwakel Hassan are you there online?

HASSAN: Yes, I'm here do you hear me great thank you for your patience.

FERGUSON: You are that and clean up here on our program morning.

HASSAN: My commissioners. Now we are unfortunately not going to have time for questions on this panel, but we will be welcome to follow up with our panelists with questions afterwards.

15:53:16 Go ahead. Hello, Members of the US Chamber of Commerce Ai.

Commission

FERGUSON: I'm sorry I didn't actually properly introduce you.

15:53:25 So I apologize student at Carnegie, Mellon University, that was quick sorry.Go ahead.

HASSAN: Yeah, my name is Alasan and I am the student at Carnegie, Mellon University, and i'm studying statistics and machine learning, and I would concealed call myself for a fledgling researcher in the field

15:53:48 of Ai, and will be in the field for years to come.

15:53:52 Professor Conrad Tucker on this Commission, is actually a professor of mine at Carnegie Mellon, and he teaches my designing better human ai futures class, and as such I've talked with Professor Tucker about

15:54:05 this topic often in the past, and he did mention that there is a lack of young people testifying to the Commission, and we both agree that this could be problematic.

15:54:16 So I hope my opinions may be of use, especially under the perspective of the student.

15:54:21 And young researcher. firstly, yeah, I wanted to find out that the setting seems not really geared to younger people.

15:54:30 As I mentioned earlier, I believe that there are underrepresented groups of people who are highly relevant to this discussion, and which can have consequences not only for them, but everyone, specifically asset you also reach out to university students as

15:54:47 well, both the undergraduate and graduate. level because these students are the future leaders of the field, and we'll be the ones researching innovations for the technology in the future.

15:54:59 I believe, focus groups. it's potentially in academic institutions with high Ai research activity are especially helpful as these institutions have a lot of influence over the field, and I feel that it is imperative that their input about how to best

15:55:15 regulate the field while allowing their intellectual curiosity to flourish, is hurt.

15:55:21 We also would not want to limit the areas of research on artificial intelligence.

15:55:28 We believe that intelligence itself is there, biological or artificially created, is neutral in nature, and only its applications are inherently good for the bed before we are dense regulations being opposed against the research and of ai

15:55:45 system/ Deployment of these systems, especially for private sector usages that should be regulated. On workforce issues.

15:55:59 in history. new technology often displaced people and their occupations.

15:56:03 but the population eventually points adapt, and society has benefit because of this.

15:56:09 So I believe the automation, many tasks we'll need to tangible long term improvement in society.

15:56:15 but the caveat is that short term effects. These systems can be bad for the average person.

15:56:21 If the effects are not properly mitigated, automation is starting to improve the GDP over time, and it's very likely the Ai systems would help society as a whole by increasing our productivity.

15:56:34 But we must be mindful of where the game from these systems go. The wealth gap in the country has been increasing, and mass deployment of Ai systems will almost certainly widen in the Gap between the most wealthy and the

15:56:51 Median American if steps aren't taken to prevent it this is especially true because it's potential jobs lost in the short term for lower income Americans.

15:56:59 But we can hope that the people shift higher skilled occupations of lower ones become automated. But in the end we should ensure that the economic pain of these systems is universal.

15:57:13 We have seen the average productivity, and out of workers rise over the past few decades similar to statistics that Alex Kotran has shared.

15:57:22 And we must ask ourselves if, as a society we want ai automation to meet, trained as a way to replace people's jobs to drive off the margins, or if we want ai automation to be framed as a way to

15:57:36 improve working conditions and quality of life for people and highly skilled fields, such as Madison Ai.

15:57:45 Systems are being used to the widen the burden on doctors which is exchanged for everyone, and I hope that as low skilled jobs become more automated, that people will be able to move towards more skilled positions. If

15:57:56 this is gradual, then it may be a natural transition in the economy.

15:58:03 However, I asked that you closely monitor the situation and the lives of the people who are affected by this automation.

15:58:10 If economic conditions become burdens in and some for those displaced people, it may be necessary to consider managers like tags on do automations that cause these work or displacement attacks like this could serve to both correct the

15:58:28 rate turnovers, and it could also create a fund that directly serve those people affected.

15:58:36 It could be used to help the training of people from more skilled positions for more economic mobility, or to mitigate the temporary impact on families.

15:58:47 i transition periods. Oh, this is short, but that concludes the list I want to talk about.

15:58:52 Oh, thank you for listening for having me here.

FERGUSON: Oh, thank you very much.

15:58:57 My apologies. However, I did not pronounce your name properly, but that was a tough one, .

15:59:04 But pretty much appreciate you being here. and certainly appreciate Professor Tucker for encouraging you to do that.

15:59:11 We're delighted that you were able to participate with us.

15:59:15 And I want to thank you and Alex and Erin our our fourth panel panelists, and our apologies that we don't have time built in here at the end to ask you questions.

15:59:25 But I would ask if you are willing. If our commissioners have questions, follow up questions for you, we can submit them to you, and if you are able, we would love to hear your responses to some of the questions that our commissioners have as well as

15:59:36 we continue to do our research and gather information. I want to thank all of our Commissioners for being here today.

15:59:46 Our next hearing will be in Palo Alto, and a couple of weeks.

15:59:50 I think it is. Look forward to seeing you all there, thanks again to the Chamber of Commerce for helping us.

15:59:57 Continue along on this path. This is a very exciting, and today was amazing.

16:00:01 Hearing from a lot of really worthwhile experts as we're continuing down this path of gathering information.