[Roch Guerin] 14:00:13

All right, everyone, we're going to get started here shortly. And just a reminder, we are recording this session.

[Roch Guerin] 14:00:26

All right. Good afternoon, everyone. Thank you so much for taking the time to join today's Vision Seminar.

[Roch Guerin] 14:00:39

For UCR's search for its next Dean for the Bournes College of Engineering. My name is Tanya Adams, I'm the Director of Human Resources and Executive Searches.

[Roch Guerin] 14:00:40

And I am pleased to be supporting this search. We are delighted to welcome Dr. Rock Guerin. Dr. Garin currently serves as the Harold B. and Adelaide G. Welch Professor and department chair in the Department of Computer Science and Engineering at Washington University in St. Louis.

[Roch Guerin] 14:00:58

Please be advised that we have provided Dr. Guerin with a prompt for the Vision Seminar, and he'll spend about 25 minutes or so responding to the prompt. The

[Roch Guerin] 14:01:08

following topics are what he will discuss.

[Roch Guerin] 14:01:08

The key opportunities and challenges facing higher education over the next several years, the specific opportunities and challenges he anticipates for the Bournes College of Engineering.

[Roch Guerin] 14:01:19

And his vision for BCOE and how he would work to achieve that vision. At the end of Dr. Guerin's presentation, we'll open up the session for questions. And with that, I'll hand it over to you, Dr. Kern.

[Roch Guerin] 14:01:36

Thank you. Thank you for the introduction.

[Roch Guerin] 14:01:40

Oops, I might need to turn it on.

[Roch Guerin] 14:01:45

So and so on.

[Roch Guerin] 14:01:52

Okay. I

[Roch Guerin] 14:01:58

was hiding the infrared button, which doesn't help.

[Roch Guerin] 14:02:00

Thank you for being

[Roch Guerin] 14:02:17

here. So, I've done my best to try to address some of the comments, you know, the request for the vision seminar. I'll definitely spend time articulating what I think are the challenges, opportunities that I think pretty much all academic institutions are facing today.

[Roch Guerin] 14:02:18

I'll do my best to identify where I see some of those things align with either existing initiative or directions, or potential directions that exist at the college. I don't want to claim that I fully understand the college, and so I think.

[Roch Guerin] 14:02:35

articulating the vision is something that I expect, you know, any new dean would do after sort of extensive consultation with faculty, students, staff at the college.

[Roch Guerin] 14:02:47

So let me very quickly start by a little bit of background about myself. So I grew up in France. It's not on the slide, but I did. I did all of my undergraduate in France, and I eventually came to the US to pursue a master's degree.

[Roch Guerin] 14:03:05

I had no idea that I was going to start a PhD that was not even on my radar screen. I did not know that that was an option, but it did happen, sort of serendipity played a role, and I never regretted it. It was one of the best things that happened to me.

[Roch Guerin] 14:03:22

Um, when I graduated from Caltech, I was sort of knowing that I wanted to continue doing research. I did not want to do it in academia, and I joined IBM Research and I spent about 12 years there. I was fortunate to work with extremely talented people at a time where IBM was working on things that aligned with my own interest.

[Roch Guerin] 14:03:45

Got access to, sort of, resources and talent. Many of those people actually much smarter than me. And so, you know, sort of really enjoyed, and I would not be here today if I had not actually spent those 12 years at IBM.

[Roch Guerin] 14:04:01

I eventually left IBM and did return to academia. I was sort of wanting to continue doing research in a particular area, and I went to the University of Pennsylvania, where I spent about 15 years, um.

[Roch Guerin] 14:04:16

I got exposed to, sort of, different aspects of research while I was there. Started actually interdisciplinary sort of collaborations, something that actually is very close to my heart, at least as a researcher.

[Roch Guerin] 14:04:28

with colleagues at the Wharton Business School, which were working on things totally different than anything that I'd done before. I took a little hiatus from, uh…

[Roch Guerin] 14:04:38

Penn to actually work on a startup that I helped launch Ipsum Network. I did serve as its initial CEO, took it through SEED and Series A funding, and then let somebody a little bit more qualify take over as CO, and then I returned, um.

[Roch Guerin] 14:04:54

to the University of Pennsylvania, where I continue doing research. I eventually left Penn in 2013.

[Roch Guerin] 14:05:04

In part because I think as a researcher, I was looking at, you know, what can I contribute to and that connects a little bit to one of the reasons for why I'm here. And while I could certainly… I was hoping to continue to contribute as a researcher, I also felt that I had other skills now that I had acquired over the years that I could help.

[Roch Guerin] 14:05:23

other wisdom that led me then to take on the position of department chair at Washington University in St. Louis, in the Department of Computer Science and Engineering. I've been there for now about 14 years, and I'm finishing my third term as department chair. That's going to be my last term.

[Roch Guerin] 14:05:40

No matter what happens next, I will not be taking on a new term as chair. And when I joined, it was actually a period where computer science started growing. And so I had to essentially manage the department during about 10 years of extensive growth, tripling of our student population. We grew both on the tenure track and on the teaching track faculty.

[Roch Guerin] 14:06:04

We had only two majors when I started, and we had several additional majors. Most of them actually interdisciplinary natures with other department outside of engineering. We also started a recently a new master in AI engineering and a new minor in computational AI.

[Roch Guerin] 14:06:23

And I'll talk about this a little bit more in a minute when I talk about some of the challenges and opportunities that we are facing.

[Roch Guerin] 14:06:36

Going forward, right, um…

[Roch Guerin] 14:06:39

I'm good, and you know, I want to spend a little bit of time next.

[Roch Guerin] 14:06:43

Explaining, sort of, what I feel academia is facing today.

[Roch Guerin] 14:06:48

And some of the challenges that require adaptation on the part of academia and what they mean, and maybe how we can address them, and then I'll try to pivot on that and then sort of articulate a little bit of the opportunities that this presents, and in particular, how those opportunities might be things that map onto the college BCOE.

[Roch Guerin] 14:07:10

So the challenge is, um…

[Roch Guerin] 14:07:14

I would articulate them, actually, on four thrusts. One of them is pretty obvious. A few years ago, AI happened, and it was pretty disruptive.

[Roch Guerin] 14:07:25

And it continues to be extremely disruptive, and we need to figure out how to adapt both our research and our curriculum. And I'll spend a little bit of more on those sort of perspective in a minute. If you haven't done so, I actually encourage you, there's a report from Cornell University that came about, I think, at the end of September.

[Roch Guerin] 14:07:45

called the Future American University that is pretty much on target when it comes to identifying some of the challenges that I think we are all facing.

[Roch Guerin] 14:07:58

Those challenges are, in some sense, also compounded by the fact that acquiring the resources and mastering the resources that we need to be effective in our use of AI is non-trivial, both in terms of learning about them and affording them. And so I think that creates another set of challenges. And again, I'll spend a little bit of time trying to make that.

[Roch Guerin] 14:08:17

a little bit more concrete.

[Roch Guerin] 14:08:19

Universities also face challenges in terms of.

[Roch Guerin] 14:08:24

fulfilling the traditional mission, which is educating students and researchers. They come from, again, multiple different sources, demographic sources, political sources, international tensions, and the likes. But they are certainly affecting our ability to continue doing our mission, and.

[Roch Guerin] 14:08:42

Those are compounded by — and I don't think I need to paint pictures to everyone, financial pressures that are associated with both changes in the funding models and uncertainty in how funding is going to be available going forward.

[Roch Guerin] 14:09:02

So let me actually try to expand on those challenges along three dimensions, the educational dimension, the research dimension, and the quote-unquote operational dimension. And then I'll pivot on to opportunities and how those opportunities also might map onto.

[Roch Guerin] 14:09:22

The college. So I think the 1st thing that I want to argue, and I've had conversation with many of you, and so in some sense, I feel that I might be repeating things that you've already heard, but for those who were not there, hopefully that will, um.

[Roch Guerin] 14:09:37

Provide some perspective on where I'm coming from.

[Roch Guerin] 14:09:41

AI is transformative. It's affecting, you know, so it obviously has started affecting, you know, computer science and engineering, my own department, first and foremost, we saw significant decline in enrollment after seeing increases year after year, because the job market affected.

[Roch Guerin] 14:09:58

The potential job opportunities for many of our students, but that's, you know, just the beginning, right? It's going to happen across all discipline, right? So we cannot ignore it. And so I think, you know, it is absolutely essential that any academic institution sort of acknowledge that.

[Roch Guerin] 14:10:13

you know, this is transforming both what we teach and how we teach it, and then engage in an effort to figure out how do we need to adapt our curriculum so that our students still acquire the kind of learning skills that are going to allow them to succeed in the long term, and also fulfill the need that that potential employers have.

[Roch Guerin] 14:10:30

for them. So that means that every department needs to essentially engage in a pretty thorough and extensive and ongoing — it's not going to be a one-time fix reassessment of what our curriculum needs to look like.

[Roch Guerin] 14:10:45

That is not easy, and I think it also it means that we need to support faculty through that period of change, right? You cannot just ask everyone to find more time, right? The day has only that many hours, and time is one of the currency that most faculty.

[Roch Guerin] 14:11:02

have in short supply, and so providing an.

[Roch Guerin] 14:11:06

infrastructure that can help them through that transition and assist them both on the educational front. And I'll talk to that in a second, also on the research front, is actually going to be essential. And on the student front, I think the problem that AI is creating, sorry, compounded by the fact that.

[Roch Guerin] 14:11:22

If you look at this, I don't know about your student population, but we've certainly seen that in our student population.

[Roch Guerin] 14:11:29

The post-COVID sort of generation of students is coming not as well prepared for a university.

[Roch Guerin] 14:11:37

degree as the previous set of students. And that makes them even more vulnerable.

[Roch Guerin] 14:11:43

To essentially falling into what I would call the AI trap. And in that process, not being able to develop the learning skills that they need in order to be able to succeed. So we need to figure out ways of bridging that gap and helping them.

[Roch Guerin] 14:11:58

Understand how to use AI, but in a way that does not abdicate their ability to learn.

[Roch Guerin] 14:12:04

Um, and we also have, actually, additional potential, and that is both a challenge and a potential sort of needs in the sense that if you look at students who graduated a few years ago.

[Roch Guerin] 14:12:16

Their job environment, and maybe their company will help them do that, but their job environment is also changing, and the skill that they acquired here, um, may not be enough in order to help them succeed, right? And so, how do we essentially reach out to those students and offer them.

[Roch Guerin] 14:12:31

The ability to quote-unquote upskill or develop sort of new skills that they need in order to continue being successful. So I think these are things that academic institutions are sort of facing and, you know, need to be able to address. A very similar set of problems exist on the research domain, right? So, um…

[Roch Guerin] 14:12:53

AI is transformative, so you don't have to go any further than, say, the New York Times to read about how.

[Roch Guerin] 14:13:02

Mass millennial problems, or more recently, in theoretical computer science, right? Some long-standing conjectures have been either proven or disproven by AI, things that.

[Roch Guerin] 14:13:14

Our researchers have been working on for 10, 15, 20 years, and had made progress on, but not solved. AI systems with, you know, proper directive were actually able to crack those knots in a couple of months, right?

[Roch Guerin] 14:13:28

If you don't know how to use those new tools.

[Roch Guerin] 14:13:31

You can compete.

[Roch Guerin] 14:13:33

And so we have to figure out how to essentially help our faculty.

[Roch Guerin] 14:13:39

you know, acquiring those new skills so that they are capable of leveraging them in their own domain, in their own discipline, and be competitive. The same applies for our Phd. Students, right? And actually, for them, they usually pick up those skills and those tools much, much faster than we do.

[Roch Guerin] 14:13:54

But in the process, they're also often lose their critical thinking ability. We've actually seen that among our own students, right? They come up, they solve the problem, they come to you, they show it to you, and you realize after spending 15, 20 minutes that, nope.

[Roch Guerin] 14:14:09

It's not working, and they didn't really figure out or know why it is not. So how do we essentially allow them to continue to develop as researcher without losing — while still being able to use those tools? So these are challenges that we're facing on the research front.

[Roch Guerin] 14:14:25

We also essentially are facing an unequal battle in the access to the resources that we need to have to be able to rely on in order to be competitive. I was mentioning solving these millennial math problems or theoretical computer science problem.

[Roch Guerin] 14:14:44

Those were run on… was done by…

[Roch Guerin] 14:14:48

research organization in large-scale companies, and they have access to resources that we can't really hope to compete with. So we need to figure a way around that particular problem.

[Roch Guerin] 14:14:59

On top of that, recruiting new researchers, new talent to support our research enterprise is…

[Roch Guerin] 14:15:07

Harder. It's been, you know, sort of, we've all seen it happen. A, you know, funding is harder to get by, and we have fewer students who are applying into our programs. And so we need to figure out how to deal with that particular problem.

[Roch Guerin] 14:15:20

The last thing that I want to end on in terms of the challenges that we're facing is.

[Roch Guerin] 14:15:25

While AI is transformative, and we cannot ignore it.

[Roch Guerin] 14:15:30

We should not make it the end-all, right? I think, you know, there is a risk in saying that it's the answer to pretty much any of our problem, or the source of any of our problem. There is life outside of AI, there is science and research outside of AI, and we need to make sure that we actually don't lose track of that.

[Roch Guerin] 14:15:49

Let

[Roch Guerin] 14:15:51

me move on to the…

[Roch Guerin] 14:15:52

more sort of resource side of things. Um…

[Roch Guerin] 14:15:58

A large part of university, or at least engineering schools revenue have come from tuitions, both undergraduate and graduate tuition. So I'll focus on, say, international master's students, which is one area where we've seen significant decreases, and that has translated into loss of revenue. So we need to figure out.

[Roch Guerin] 14:16:14

How to essentially, if not offset this, at least mitigate that impact that it has. We've seen also changes to financial models for how research is essentially subsidized by the department and things such potential changes on indirect cost and so on, changes in.

[Roch Guerin] 14:16:33

Which areas are being funded by the department, how the decisions are being made to and who gets a particular grant. We've also faced increases in our operations. I don't know about UCR, but, for example, just one example, cybersecurity insurance.

[Roch Guerin] 14:16:48

Right, we've had to actually invest a lot of time and effort in order to be able to afford a cybersecurity insurance at a reasonable price, because otherwise, if we don't have that insurance, we're exposed to things that we just obviously cannot afford.

[Roch Guerin] 14:17:04

Um, and, you know, that doesn't even talk about paying for AI and AI tools, which is something that we need to be able to continue gaining access to. The last thing that I think is challenging us on the revenue front, and it's compounded by potential declines in enrollment and the master's sort of decline that I was referring to is.

[Roch Guerin] 14:17:27

The value proposition of a university degree is also something that many people are nowadays questioning. When the knowledge job, which is what we are typically training our students for, are coming under attack by because AI can do them just as well.

[Roch Guerin] 14:17:43

But obviously lots of people are going to question whether or not it's worth pursuing such a degree.

[Roch Guerin] 14:17:49

Now, so there are ways of getting around that. And I'm going to try to spend a little bit of time addressing, talking about ways to potentially address some of those challenges.

[Roch Guerin] 14:18:00

But before I do that, I want to spend a few minutes as to why I'm here, because I guess the picture that I just painted for the past few slides is sort of not the most positive picture. So sort of a somewhat bleak. And so anyone looking at this who says.

[Roch Guerin] 14:18:15

Why on earth would you want to even stay in academia? There was unfortunately actually a…

[Roch Guerin] 14:18:21

New York Times article just today about.

[Roch Guerin] 14:18:27

which is in the line of actually several articles about the decline of the scientific enterprise, the U.S. scientific enterprise, and that article was actually talking about PhD students deciding that an academic career was not for them. The student who was being interviewed was from.

[Roch Guerin] 14:18:43

Bioengineering, but I think that applies across the board, right? And so, uh, so, you know, the truth of the matter is indeed, right, sort of academia is facing significant challenges. Now.

[Roch Guerin] 14:18:56

And therefore, why am I here? I think that they are actually, together with those challenges, their opportunities. There's also, at least from a more personal standpoint.

[Roch Guerin] 14:19:06

The opportunity to have a positive impact, right? So…

[Roch Guerin] 14:19:11

I'm a part of a researcher, but I've also being a researcher for now. If you've done the math based on the first chart that I had 4 years.

[Roch Guerin] 14:19:19

And, you know, I will probably not claim that my prime is ahead of me. It's probably behind me as a researcher. But I've picked other skills on the way, and I think, you know, I can actually help and contribute in a maybe equally, if not more impactful way in that particular fashion.

[Roch Guerin] 14:19:38

And I think…

[Roch Guerin] 14:19:40

UCR also and the college in particular. So, as I mentioned, I grew up in France, and in France, education is a birthright, right? And access to a free education is a birthright. And I feel that the college can actually… is playing an important role in providing access to high-quality education.

[Roch Guerin] 14:19:58

to, you know, a large student population, and that's something that, if I can contribute to that, I feel is a strong positive. So let me quickly go through some of the.

[Roch Guerin] 14:20:07

approaches that I think we can actually put together to tackle some of those challenges. And I'll try in that process to also highlight how they map onto UCR.

[Roch Guerin] 14:20:20

In terms of, you know, modernizing our curriculum.

[Roch Guerin] 14:20:25

And then how do we go about doing this?

[Roch Guerin] 14:20:28

I think all department will have to engage into that process, and that will require, basically, you know, looking at all our courses, how we teach them, what we teach, and what is the role that AI needs to have. And I feel that, in some sense.

[Roch Guerin] 14:20:44

You know, one of the challenge… so it's going to be an ongoing, um…

[Roch Guerin] 14:20:49

discussion and assessment, because AI itself is changing. I don't know about any of you, but for example, when I incorporated AI in my course, and I thought I'd done a great job, and then I looked at what I'd done 3 months later, it was totally obsolete, and I had to start from scratch.

[Roch Guerin] 14:21:05

So I think, you know, this is not a one-time fix, where we're going to have to do that on an ongoing basis. But I think there, you know, in particular, I think the college and UCR has actually some assets that can be helpful in helping students make that transition.

[Roch Guerin] 14:21:23

I think exposing students to, you know, what happens when you totally rely on AI and you're not able to fully control it in the context of a very concrete experience, whether it's building a system or constructing a simulation or, you know, any type of.

[Roch Guerin] 14:21:40

Things that as a concrete outcome, where you can illustrate, you know, what happens when they're not fully aware of the whys and how of how the AI systems are driving decision. So what we call experiential learning can be a very effective tool in both helping them.

[Roch Guerin] 14:21:56

Learn how to use those tools, but also how not to over-rely on those tools.

[Roch Guerin] 14:22:03

So that is on the student side. I think on the faculty side, we need to also make sure that our faculty are capable of helping those students. And there's an ecosystem that helps them bolster quite those skills and develop them.

[Roch Guerin] 14:22:20

And on the student support side, and I'm running a little bit out of time, and so I might be speeding up a little bit. I apologize for that. There's a similarly, I think, you know, AI can provide solution to some of the problem that it is creating. We've been experimenting with some.

[Roch Guerin] 14:22:36

AI tutors that are, if properly used, actually reasonably effective in helping students who initially have actually a learning gap, um, bridge that gap in a way that both incentivize them to learn how to use those tools and to understand the limitation of those tools.

[Roch Guerin] 14:22:53

And so these are actually two initiatives that I saw at UCR that I feel actually are very much in line of some of the UCR Launch Initiative and the AIM initiative. I picked up some quote from the announcement about them.

[Roch Guerin] 14:23:09

Probably many others, but I want to actually highlight them because I think they actually fall in… they are exactly in line with the kind of things that I think can help us move forward, at least in terms of modernizing our curriculum and our pedagogical approaches.

[Roch Guerin] 14:23:24

On the research front, I feel that AI has actually sped up something that was already happening, namely that interdisciplinary research is of growing importance, and that now AI can actually help as an enabler for in particular for engineering. So I think engineering has actually the potential to impact many other disciplines, whether it's medicine, agriculture, transportation, energy.

[Roch Guerin] 14:23:46

I think, you know, and I really feel that that sort of putting together interdisciplinary sort of research sort of activities is one area that where both AI can help and significant progress can actually be realized. And I think, you know.

[Roch Guerin] 14:24:03

And I'll come to that in a second, but I think they are structures at UCR that are actually supportive of those kinds of things, right?

[Roch Guerin] 14:24:12

Coming back to those exact same question, namely faculty learning how to use AI tools, the same problem exists at the research level, especially since the tools are themselves evolving relatively rapidly,

and you actually need to have support for faculty in terms of being exposed to and learning how to practice with those tools. You also need the resources, whether it's in-house or.

[Roch Guerin] 14:24:36

through access to commercial tools, and on the recruitment side, you actually need to figure out how to, as I mentioned earlier, sort of offset the decline in enrollment, especially in international enrollment, that we've seen by developing sort of a stronger domestic pipeline. Now, and I'll talk, you know, I think the couple of ways of doing that.

[Roch Guerin] 14:24:57

You know, whether by creating, sort of, uh, um.

[Roch Guerin] 14:25:02

new master's degrees or leveraging existing master's degrees, right? And so the last thing, actually, let me skip this one. These are sort of some of the things that I saw at UCR in terms of support for research. You do have sea grants, and I think seed grants are a very powerful tool for.

[Roch Guerin] 14:25:20

Bringing together researchers that can come from multiple different disciplines. You do have…

[Roch Guerin] 14:25:26

And we have actually something very, very similar, and I was actually glad to see that, you know, in some sense, a good idea, uh, popping up in multiple places. A community of practice for research, maybe bringing people on an ongoing basis to discuss how they use AI and shortfalls, benefits, you know, obstacles that they run.

[Roch Guerin] 14:25:45

On the infrastructure side, I did not see as much as I could see, as I was expecting. I think you have.

[Roch Guerin] 14:25:52

Um, compared to, for example, what we have at WashU, I feel that, you know, this might be a need for additional local investment in terms of the compute infrastructure, just in support of a local AI ecosystem, and we can talk some more about that.

[Roch Guerin] 14:26:06

So let me now talk about a couple of approaches that we could actually leverage.

[Roch Guerin] 14:26:12

I think, you know, expanding the domestic masters pipeline is something that can actually be realized by leveraging existing students that you have here. We've done that at WashU, and I know that, actually, uh, you're doing that as well here. It's on my next slide.

[Roch Guerin] 14:26:28

Where you actually help students who are already in your programs earn a master's degree faster, realizing that that master's degree is therefore something that they can benefit from, and they can actually earn that degree in a manner that is actually cost-effective for them, right? So the value proposition is there.

[Roch Guerin] 14:26:45

You also probably need to create new master's degree that are aligned with needs, right? So if you… it's not one thing to say you can do a master's degrees faster here, but that master's degree needs to actually bring you to a better job opportunity, or an opportunity that you might not have had otherwise. And that too often requires creating new degrees.

[Roch Guerin] 14:27:06

There are other forms of degrees that you might be able to leverage. Micro-credentials are one of them that essentially help.

[Roch Guerin] 14:27:13

Students who are not former graduates, or students who are already in the workforce acquire some of the skills that they need in order to be competitive, given the emergence of AI. And if you actually are in the process of updating your curriculum, you might be able to repurpose some of those changes.

[Roch Guerin] 14:27:29

That you're making to your courses for that purpose. Expanding industry partnership is something that is, you know, whether it's through internships for your students or, uh, you know, collaborations on the research front, um, are things that is also really important and potentially useful, and I've had lots of.

[Roch Guerin] 14:27:46

you know, productive conversation in terms of the opportunity that exists in the Inland Empire, right, sort of the… and the region that, that, that is around the university.

[Roch Guerin] 14:27:58

Um, alumni development, I will mention it because that's something that is also… you have a large, now, alumni base and sort of tapping into them, and showing them, you know, the student… the success of your own students is actually often one of the most effective way of.

[Roch Guerin] 14:28:14

getting them to contribute. I know that WashU has been extremely successful in, you know, having scholarships.

[Roch Guerin] 14:28:23

awarded to students over the past 30 years, and then showing what those students have been capable of doing, um, that actually creates, you know, an incentive for donors, as well as produce donors, right? Some of the biggest donors that WashU has today were actually recipients of those earlier scholarships.

[Roch Guerin] 14:28:40

So these are some example that I things that I saw you have, as I mentioned, this accelerated master's program, which I think maps into some of the things that I was looking for. You do have a number of micro-credentials and professional certificates. They seem to be limited to online degrees, and so I don't know exactly how that you could leverage that or map that onto sort of other programs that you could offer to say.

[Roch Guerin] 14:29:04

local industry students or students from companies who could come here and get some additional program. The last two are actually, I think, good examples of.

[Roch Guerin] 14:29:13

the kind of broader partnerships and interdisciplinary research that I think is actually our… very much the future of where academic institutions can be successful. I'm

[Roch Guerin] 14:29:25

going to wrap it up.

[Roch Guerin] 14:29:27

And we deterred what I said at the beginning, namely that, you know, what I've tried to outline, I think the challenges are there. I think they're unavoidable. I'm a firm believer that if we ignore them, we are in deep trouble. But at the same time.

[Roch Guerin] 14:29:42

You know, how do you… and addressing those challenges, I think some of the direction that I outlined are maybe not universal, but actually are relatively generic sort of in nature, how these things actually map onto.

[Roch Guerin] 14:29:57

UCR and the college.

[Roch Guerin] 14:30:00

you know, try to do my homework, and I've tried to identify a few directions for which that could be conducive to that.

[Roch Guerin] 14:30:07

I don't want to argue, you know, paint a picture of saying, yes, I know how you can solve this particular problem, and this is how you need to do it. I would actually need and want to start by talking to as many people as possible and learning about what they think are the right way of doing it.

[Roch Guerin] 14:30:23

Uh, and then sort of have a consultative process to decide how to move things forward.

[Roch Guerin] 14:30:28

And I'll stop here. I'm a little bit over time, but actually not too much, so…

[Roch Guerin] 14:30:34

Thank you so much.

[Roch Guerin] 14:30:39

Thank you so much for that presentation. And with that, we'll open up the session for questions. Just kindly ask, before you ask your question, just introduce yourself. So anyone wants to start us off, just raise your hand and a member of our team will come to you with the microphone.

[Roch Guerin] 14:31:07

Thanks very much. I'm David Oglesby, the Associate Dean of the Graduate Division, and thank you

[Roch Guerin] 14:31:14

very much for your seminar here.

[Roch Guerin] 14:31:16

Uh, with the changes in

[Roch Guerin] 14:31:31

the world of graduate education, I'd like to ask you about between things like the unionization of the graduate students, the research assistants, the teaching assistants, and the stagnation, if not.

[Roch Guerin] 14:31:32

Decrease in funding from the federal government and the state, and changes in the job market subsequent to the PhD programs in particular. What are your thoughts on the future of graduate education, in particular, the PhD programs in BCOE going forward?

[Roch Guerin] 14:31:47

Ideas are… is graduate education going to have to fundamentally change within BCOE? Do you see ways that it can be head on the same track that it currently is now with some minor tweaks? What are your thoughts on that?

[Roch Guerin] 14:31:59

So, okay,

[Roch Guerin] 14:32:14

there was lots of questions that the impact of unionization, the impact of funding, and the potential for employment that PhD students face. So let me maybe try to.

[Roch Guerin] 14:32:15

answer them in that reverse order, in part because.

[Roch Guerin] 14:32:19

We don't have unions at WashU, or we didn't have any at Penn, and so I'm less familiar with the implications that this may have in terms of.

[Roch Guerin] 14:32:29

I think the primary implication might be in setting stipends for students, right? And so I'll try to touch on that in a second, since it's obviously related to access to funding and so on.

[Roch Guerin] 14:32:41

First and foremost, I actually feel that, uh.

[Roch Guerin] 14:32:45

I'm not worried about the job market for PhD in engineering.

[Roch Guerin] 14:32:51

Yes, I think we are facing this a period of uncertainty, like during any period of uncertainty.

[Roch Guerin] 14:32:59

you know, companies sort of clamp down, you know, reduce the hiring that they do, and that applies to PhD students as well.

[Roch Guerin] 14:33:11

The need for the kind of talent that a PhD in engineering has, and that's across discipline, is not going to go away. There will obviously need.

[Roch Guerin] 14:33:22

additional skills. I mean, you know, proficiency in using AI as a researcher or as a top-notch engineer, which is often how PhDs, you know, end up taking on engineering leadership position. I mean, yeah, they'll need those skills, and so far, we haven't necessarily been… I mean, training them in a systematic way.

[Roch Guerin] 14:33:40

And so we'll need to be able to figure that out. But so…

[Roch Guerin] 14:33:44

you know, so to the extent that we'll need to change, that is the part that we'll need to change, right? We'll need to figure out how they, you know, both developed as researcher while acquiring, you know, proficiency and efficacy in using those new tools, right?

[Roch Guerin] 14:34:00

But again, if you look at what has happened with mathematical problems.

[Roch Guerin] 14:34:05

it's sort of, you know, mathematical scientist working at OpenAI or Anthropic, right? Who have, you know, we're hardcore mathematician themselves, and who've learned how to use those AI and leverage them, and are now capable of cracking other problem.

[Roch Guerin] 14:34:22

You know, think about applying that to fusion energy or some other areas. But I think, you know, those abilities will remain. So, as I said, I'm not…

[Roch Guerin] 14:34:32

overly concerned that, you know, there'll be a drastic contraction in, you know, the need for engineers with PhDs, so that we really need to restructure our whole research enterprise to adjust to that, namely that we need to have like in physics, postdocs who spend 8 years as a postdoc before taking on an academic position or on the like. So I think you know that.

[Roch Guerin] 14:34:55

So hopefully that answers one part of your question.

[Roch Guerin] 14:35:01

The funding and how do we support those students?

[Roch Guerin] 14:35:08

You know, I could give you the easy answer, oh, you know.

[Roch Guerin] 14:35:12

Things will be changed in two years because of what happened recently during the last election, and we'll be back to normal. Even if we're back to normal, I think, you know, the impact has been sort of pretty substantial. So I think, you know, again.

[Roch Guerin] 14:35:28

Grooming a stronger domestic pipeline is going to remain important, right? And so that means tapping into students from institutions around, you know, in the region or and so on. But on the funding front.

[Roch Guerin] 14:35:45

You know, I don't have a perfect answer, but there are a number of new programs that have come up. I don't know that they are hitting their target yet, but they are looking at whether it's how do you bring back someone who has been in industry for a couple of years and wants to actually acquire deeper expertise.

[Roch Guerin] 14:36:03

And help them move back into a PhD. I think sort of exploring those kinds of options. And then often those options are in partnership with some companies that are actually cost sharing, right? So that the NSF actually has a recent program.

[Roch Guerin] 14:36:20

rad cert, I don't remember the exact acronym for that program, that essentially looks at coming up with partnerships between universities and industry, and there is some… the student work on a problem that is of interest to the industry, and there's some level of cost sharing between the university and the industry. Again, looking at models of that type where you can sort of a.

[Roch Guerin] 14:36:42

broaden the, you know, where the money is coming from. I think probably helps, and then, you know, sort of.

[Roch Guerin] 14:36:49

Hopefully that will then address, help address any demand from that come from a unionized student body that's asking for more money. I mean, yeah, so I'm not, you know, I don't have experience dealing with unions, so I don't… I can't really.

[Roch Guerin] 14:37:06

And so that part of the question is very effectively.

[Roch Guerin] 14:37:16

Professor at Electrical and Computer Engineering Department. So I like the vision that you mentioned regarding like

[Roch Guerin] 14:37:29

we have to

[Roch Guerin] 14:37:29

figure out how to teach students in the AI era. And I do think you mentioned.

[Roch Guerin] 14:37:31

Uh, that, uh, the faculty members like us, we need to be capable of teaching students in that way. I just wonder, like, from the College of Engineering Dean's perspective, how do you help faculty members?

[Roch Guerin] 14:37:47

To upgrade ourselves to be more capable during the AI era, while at the same time, we have to deal with a lot of administrative stuff, leaving research stuff.

[Roch Guerin] 14:38:00

Yeah, so I think, I mean, yeah, you know, providing that support, I mean, I…

[Roch Guerin] 14:38:05

may not have expanded enough on it is absolutely essential. I mean, I don't think you can expect.

[Roch Guerin] 14:38:11

There might be a few faculty who will pick these things up very quickly and be capable of doing it on their own, but that's not true for the majority. I mean, you know, I know for myself, right, I…

[Roch Guerin] 14:38:21

I tried on my own, you know, I…

[Roch Guerin] 14:38:24

Got my Codex account, I started setting up agents, trying to give them the right context, and use them for a couple of problems, and I failed miserably. It was not working the way I was liking it to be right. And so, um, I…

[Roch Guerin] 14:38:40

was fortunate that I had colleagues, I could go to who had actually additional experience, and, you know, that way I learned. So I think having the ecosystem.

[Roch Guerin] 14:38:48

that allows sharing of knowledge across faculty. So we've held, for example, workshops on an ongoing basis. I think, you know, one of the… that AI community of practice, at least from what I was reading in terms of its intent.

[Roch Guerin] 14:39:04

should offer, you know, the kind of, you know, access to both resources and a mechanism for sharing of information, um, that I think can help bridge the gap. This does not address the, uh.

[Roch Guerin] 14:39:18

Elephant in the room, which is…

[Roch Guerin] 14:39:21

Updating one's curriculum, so let's not talk about research, because let's say research, it's your own incentive to become more productive in research, even though I think it's also important to provide support. But for teaching, you know, updating an entire course.

[Roch Guerin] 14:39:35

Redoing your entire curriculum.

[Roch Guerin] 14:39:39

takes a long time, right? And it's not something that, you know, you can do on the side. Um, so…

[Roch Guerin] 14:39:46

Again, I'll use one example of one thing that we did at WashU. We set up a summer program where faculty ended up being paid, not full-time, but, you know, at least partially paid, for work that they did over a summer to either update course modules, and there was one level of support for that.

[Roch Guerin] 14:40:05

or actually create a brand new or revamp a brand new course to fully integrate it with AI. And so there was a process for assessing that progress was being made, and so on and so on, right? But that provided a mechanism where actually there was explicit support.

[Roch Guerin] 14:40:21

That was made available to faculty, and that came with the whole scaffolding of IT personnel that, you know, show them how to gain access to various tools that the university had made available, or setting up your own local resources, if that's what you wanted to do, because you had.

[Roch Guerin] 14:40:41

you know, a couple of GPUs in your lab that you actually were not using anymore and wanted to… you want to be able to use them for your class, uh, and you wanted to be able to create your own sandbox. So, I mean, that infrastructure was there. So I think, you know, providing that is going to be important.

[Roch Guerin] 14:40:55

Um, and, you know, if you don't, that's yes, it's going to be much harder for faculty to be able to absorb that.

[Roch Guerin] 14:41:04

Did that answer your question?

[Roch Guerin] 14:41:08

More or less. So where's the less?

[Roch Guerin] 14:41:23

Well, I was actually hoping you say we got teaching release or something. I see.

[Roch Guerin] 14:41:26

It's a good try.

[Roch Guerin] 14:41:33

Hi, I'm Lydia Coz, Vice Provost and Dean of Graduate Studies. So I

[Roch Guerin] 14:41:51

won't ask

[Roch Guerin] 14:41:51

about graduate education because David already did. So when you were looking at the college, doing your homework, you looked at the departments, at the undergraduate programs, graduate programs.

[Roch Guerin] 14:41:52

What surprised you the most, if anything, in terms of, oops, they don't have this area or this department, or they have too many programs in this particular.

[Roch Guerin] 14:42:08

field or area, they should have less. Or something that would help you as you come here, that you take as an initiative, for example, something that would.

[Roch Guerin] 14:42:22

So all

[Roch Guerin] 14:42:27

right. So I think let me try to answer that with the caveat that.

[Roch Guerin] 14:42:28

If something surprised me.

[Roch Guerin] 14:42:31

That doesn't mean that it's either good or bad, right? And so, you know, I would want to first to understand why it's different, and, you know, there might be very good reason for why it's different, or, you know, oh yeah, maybe we should do something another way, right?

[Roch Guerin] 14:42:48

And also, I would argue that, you know, for example, in saying too many programs are not enough programs.

[Roch Guerin] 14:42:55

I feel reasonably qualified to make that kind of assessment for things that are close to my area, much less so for, you know, another, you know, something, say, let's say bioengineering. I'm less familiar with the, you know, nuances of different areas of bioengineering than I am with nuances of.

[Roch Guerin] 14:43:14

computer science or computer engineering, right? So, um, one thing that did surprise me, and it may be that I did not do good enough homework, which is quite possible.

[Roch Guerin] 14:43:28

And even ourselves, and I may be sensitive to that because in some sense, I've been blamed for not being sufficiently aggressive on that front.

[Roch Guerin] 14:43:38

But,

[Roch Guerin] 14:43:39

if you look at…

[Roch Guerin] 14:43:40

Many institution, the launching of new AI degrees.

[Roch Guerin] 14:43:47

has

[Roch Guerin] 14:43:47

been sort of…

[Roch Guerin] 14:43:49

Relevy prevalent. Lots of them are doing that. I didn't see too many of those here, and they might be perfectly good reasons. So I think the one place where we did it is we launched an AI MS in AI engineering.

[Roch Guerin] 14:44:05

And a minor in computational AI. And the reasons were — I mean, both, I would say, not purely financial, but largely financial with some obviously intellectual underpinning.

[Roch Guerin] 14:44:21

It helps retain students and attracts students, because, you know, this is where there's a perception that jobs are… and so, for example, in the master's.

[Roch Guerin] 14:44:33

I mean, sort of a space, um, where students are very often driven by.

[Roch Guerin] 14:44:39

How are the jobs associated with a particular degree? It is particularly important to actually figure out.

[Roch Guerin] 14:44:46

How to realign or create new degrees that are going to be associated with where the job opportunities are, right? And so I think, you know, one of the things that I would want to essentially look at is definitely, oh, are there opportunities for creating.

[Roch Guerin] 14:45:02

New degrees or new minors that will essentially appeal and help to students and help also equip them with skills that can allow them to succeed and get jobs that they might otherwise not be able to get access to.

[Roch Guerin] 14:45:16

Um, but whether, you know, that's a good thing or a bad thing, whether it's actually true, I mean, I would say that I would need to sort of…

[Roch Guerin] 14:45:24

First, you know, talk to people and listen and hear, you know, why have been done one way or not done, because without that information, I don't think that I can make a judgment call.

[Roch Guerin] 14:45:40

Hi, I'm Manush Ridhar. I'm a faculty in computer science and engineering. I saw that you mentioned

[Roch Guerin] 14:45:55

that you observed some

[Roch Guerin] 14:45:55

issues around COVID, maybe some learning loss afterward. I think many or all of us have observed kind of the same things, and I think we have.

[Roch Guerin] 14:45:56

some phenomena around even undergraduate admissions, like grade inflation at high schools, like, we can't look at standardized tests right now. I was wondering what your experience was with that kind of thing, and how you dealt with it, and also just generally, uh, what your thoughts are on.

[Roch Guerin] 14:46:13

Kind of what's our role at the university in terms of making up for… maybe gaps in admitted students' education, and what, you know, do we maybe have to do outreach to K-12, or other things where it's… I don't know, it's very difficult to address at the college level.

[Roch Guerin] 14:46:29

Okay. Yes. So I think first, yes, we've observed pretty much the exact same thing, and I think that was, you know, expecting that I was not the only one, you know, so we did see a very significant.

[Roch Guerin] 14:46:43

gap emerge, uh, and it has not…

[Roch Guerin] 14:46:48

resorb itself right? It's there. It's not. It's not…

[Roch Guerin] 14:46:52

diminishing. Now, you know, how do we address it? Is it our responsibility? I mean, our responsibility is to ensure the success of the students we admit, right? So, first and foremost. Um…

[Roch Guerin] 14:47:04

And so that probably means that, I mean.

[Roch Guerin] 14:47:10

So unless the expectation of the job market changed drastically, which, you know, I don't expect, that means we need to actually figure out how to help those students.

[Roch Guerin] 14:47:22

graduate with the right set of skills that they will need in order to be able to succeed in the job market.

[Roch Guerin] 14:47:30

And for those who essentially are struggling, right? Because then the way we are seeing it, first and foremost is when we apply our standard assessment techniques adjusted to account for AI, which obviously is something that we've been doing as well.

[Roch Guerin] 14:47:45

a much larger percentage of students are.

[Roch Guerin] 14:47:50

either failing or struggling than in previous years, right? And so, if you don't address that, what it means is those students won't graduate. And that's not the answer that we want to give, right? And that that applies to any academic institution, whether it's was you or.

[Roch Guerin] 14:48:07

or UCR, right? So, um, what do you do, right?

[Roch Guerin] 14:48:12

They're not… I mean, so… and I think, you know, right now, so in some sense, to your question, is it our responsibility? I mean, we don't have a choice, right? Those students are here, we've admitted them, and so we cannot just say, oops, no, sorry, we made a decision… a mistake, we should never have admitted you, right? So that.

[Roch Guerin] 14:48:28

That is not an option. So how do you go about, you know, addressing that?

[Roch Guerin] 14:48:37

The two sort of approaches that, and I don't know to what extent they will be successful because in some sense, I don't have the data that tells me that whatever, you know.

[Roch Guerin] 14:48:50

Remediation steps we took have actually succeeded, uh, because this is still ongoing, right? I've been actually helping students create.

[Roch Guerin] 14:49:00

Networks of peers that help them, in some sense, rely on each other to actually.

[Roch Guerin] 14:49:09

understand where they have gaps in their skills, and then pick those things up.

[Roch Guerin] 14:49:15

We've actually seen a huge drop in…

[Roch Guerin] 14:49:20

Office hours. I don't know if you've seen that as well. That is, in particular because of AI. And so, we initially thought we're going to be throwing more office hours, even though our budget doesn't really allow it, but we wanted to do that.

[Roch Guerin] 14:49:34

That double sea was not going to be effective, since nobody was showing up, and so we would be paying TAs and instructors for nothing.

[Roch Guerin] 14:49:44

We've actually started having more recitations and more in-class testing, real-time testing, so that the instructor could see that seems to have some effect. We've allowed.

[Roch Guerin] 14:49:59

Uh, retakes, so, um, you know, you give an exam or a test, um, the student fails, you tell them why and how they failed, but you allow them to retake it until they demonstrate that they have acquired the skills. That takes more time and effort on the part of the faculty. You need to prepare.

[Roch Guerin] 14:50:17

Multiple tests and evaluation, but that seems to have some positive effect. So I think you'll need to actually apply a variety of approaches to… there's not a once, you know, size-fits-all solution.

[Roch Guerin] 14:50:34

But is it our responsibility? Yes.

[Roch Guerin] 14:50:49

Sorry for your turn. So do you think that there will be any challenges

[Roch Guerin] 14:51:06

in applying

[Roch Guerin] 14:51:06

what you're planning in a public university versus private universities, especially given that we have.

[Roch Guerin] 14:51:07

More complex shared governance structure. Do you have any thoughts about that?

[Roch Guerin] 14:51:12

So

[Roch Guerin] 14:51:29

I think there's two part, right? So first, let me correct you. There's no such thing as my plan on this point, right? I mean, you know, I've articulated some directions. Any plan will actually have to come from some level — I mean, some shared discussions on.

[Roch Guerin] 14:51:29

what, you know, what needs to be done and how it needs to be done, right? Indeed, you know, the shared governance model that is in place at UCR probably makes certain things that I was thinking about either easier, or in some cases, maybe impossible, or too expensive.

[Roch Guerin] 14:51:46

I, you know, I, you know, this is something that I would need to learn, and in addition to what do we need to do, we'd have to actually be adjusted. But will it require some learning curve on my part? Yep. I mean, absolutely. But at the same time, I don't think that actually a shared governance.

[Roch Guerin] 14:52:04

you know.

[Roch Guerin] 14:52:07

The shared governance is really a codification of a set of values that everybody thinks are important, right? And, you know, I don't think that the values that I've heard being sort of articulated for the UC system, I think, I wouldn't sort of have problem with, right? So I think, you know, that value system is certainly consistent with.

[Roch Guerin] 14:52:27

Things that have, you know, uh…

[Roch Guerin] 14:52:30

followed, you know, for my whole career, um, adapting to the details, yep, it would certainly change, right? I mean, you know, similarly, right, we have… we had, you know, until a few years ago, a different model of admitting PhD students than I think you have here, and so, I mean, all of these things require.

[Roch Guerin] 14:52:49

Some, you know, understanding of why things are different. I mean, you come to a different environment, you can't expect everything to be the same, right? So I think, you know, if anyone comes and, you know, does that, they're setting themselves up for failure. So I'm not coming into… if I were to come, I would not be coming in thinking that, oh yeah, you know.

[Roch Guerin] 14:53:07

Things that work, you know, at WashU or at Penn are not necessarily going to be working here. So, will there be differences? Yeah. Do I expect that those differences are creating, you know, insurmountable obstacle that, you know, uh, no.

[Roch Guerin] 14:53:23

So, you know, that's probably the best answer I can give you to that particular question.

[Roch Guerin] 14:53:33

Hi, thank you, Rock. My name is Michalis Valutis. I'm with the Computer Science Department.

[Roch Guerin] 14:53:39

And

[Roch Guerin] 14:53:54

I will humor me for a second. When I was

[Roch Guerin] 14:53:54

an assistant professor, Rock was the general chair in our best conference. I was part of that conference, and I learned how to run conferences from you, so I've applied the method ever since. So that's a bonus. Don't blame me.

[Roch Guerin] 14:53:55

It worked out okay with my… So the question that I would have is that I really like the plan and the thoughts and the structure. I was wondering if there are some things that you may probably already saw on our campus.

[Roch Guerin] 14:54:12

That make this challenge more attractive to you.

[Roch Guerin] 14:54:17

And the second part of the question, what would be a couple of things that you would like to see, hoping that, let's say, assuming that you are coming, what would be, let's say, some things that we want to see from the department, from the administration, or from the professors?

[Roch Guerin] 14:54:31

Okay, so I think the 1st part is easy, right? I think one of the reason that.

[Roch Guerin] 14:54:39

I actually ended up applying, right, is that I feel that, um…

[Roch Guerin] 14:54:45

The college has a fantastic faculty. They're actually, I think, really good, really strong. They are doing great work. They might be able to get more recognition for the work that they're doing, but I think the strengths of the faculty is something that.

[Roch Guerin] 14:55:00

you know, was one of the appealing factor for applying. So, I think… I think the fact that the college and the university are… have a large.

[Roch Guerin] 14:55:14

Population of first-gen students. That is also something that I find appealing, because, as I mentioned earlier, I feel that education is sort of really an important sort of right, and then ensuring that, you know, others have access to that right.

[Roch Guerin] 14:55:31

is, um, is, I think, something that appeals to me. So these were probably two things. Now, what would I ask? So I think that what you're alluding to is that somebody coming as a dean has a certain leverage that they can try to maximize with, uh… I don't know about that. So, I think one of the things that I… and that maybe dovetails a little bit with.

[Roch Guerin] 14:55:54

previous question about things that I did not necessarily see.

[Roch Guerin] 14:55:59

I would want to see maybe a higher level of.

[Roch Guerin] 14:56:04

And again, it depends at the cost of what it comes, but a high level of…

[Roch Guerin] 14:56:10

investment in your local computational infrastructure. I feel that that, you know, so you… I think you have agreement with Google for some of the AI. I'm a little personally worried that that.

[Roch Guerin] 14:56:26

You know, putting too much dependency on some of the large-scale commercial providers for AI capabilities.

[Roch Guerin] 14:56:34

is a little bit risky and could become quickly very expensive. Having…

[Roch Guerin] 14:56:39

local resources that you can leverage, whether you use your own open weight model and run it locally, or, you know, having access to those capabilities, build the skills in-house to do that. I feel that is probably important for both the educational and the research enterprise.

[Roch Guerin] 14:56:57

And I wasn't sure — it may be there, right? I wasn't sure that I had seen it, and, you know, if it's not there, I think that might be something worth looking at.

[Roch Guerin] 14:57:10

I have one more question, Philip.

[Roch Guerin] 14:57:16

Thanks, Philip Risk, computer science. I want to follow up on exactly what you were talking

[Roch Guerin] 14:57:27

about.

[Roch Guerin] 14:57:27

I appreciate the AI forward vision that you're presenting.

[Roch Guerin] 14:57:29

My concern is kind of what we've seen with cloud. We hire you, we go there, we make the right investments, the contracts come up for renewal, and…

[Roch Guerin] 14:57:41

the

[Roch Guerin] 14:57:42

offer is.

[Roch Guerin] 14:57:43

Same or reduced service, but at two orders of magnitude greater cost out of pocket.

[Roch Guerin] 14:57:50

How do we move forward from that? I

[Roch Guerin] 14:58:04

mean, yeah, I think, you know, there's definitely that risk is present and even maybe at an even larger scale. I think, you know, the cost of AI tokens has been heavily subsidized.

[Roch Guerin] 14:58:05

Um, you know, even if all the new data centers in the world get built, those costs, I mean, they're going to cost a…

[Roch Guerin] 14:58:14

large amount of money, and that cost needs to be recouped, and so the cost of using AI, you know, for whether it's for your own personal, you know, usage, you know, so your own personal account, or, you know, institutional accounts through, sort of, these general agreements, those costs are bound to go up.

[Roch Guerin] 14:58:31

And so, again, I feel that whether, you know, I don't know whether the, you know, the…

[Roch Guerin] 14:58:37

Crossover might be in terms of, you know, but I think, you know.

[Roch Guerin] 14:58:42

It's a risk, it's a huge risk. And whenever there's a risk, you need some level of insurance policy. And this is why I was actually suggesting that having access to local resources, at the very least represents an insurance policy against that risk.

[Roch Guerin] 14:59:02

All right. I apologize. We're having really good conversation, but we are at time. So thank you so much for your time, Dr. Garin.

[Roch Guerin] 14:59:14

Any final thoughts that you have for the audience?

[Roch Guerin] 14:59:17

I think thank you for coming. Actually, I was not expecting to seeing that many people. I think that's great. I do appreciate all the questions. I'm not the greatest speaker, and so I apologize if I… some of the presentation parts of my slides and presentations were a little bit choppy, but uh…

[Roch Guerin] 14:59:36

The intent was there. And again, thank you for coming and for your questions.

[Roch Guerin] 14:59:44

Thank you, everyone. As a reminder, you can provide your feedback via the candidate feedback survey. You can find that on the Executive Search's website. Thanks, everyone.