[Introduction]
With the rapid behavior changing disruption of recent years, and the ongoing stream of corporate governance failures. ACCA has been digging deep into how interconnected risks such as climate change and geopolitical issues are influencing the way we approach risk management. This podcast series will look at what risk culture means and to what extent risk and accountancy professionals understand its impact on performance.

[Rachael Johnson]
I'm so happy today to welcome Frank Schuler and Ignacio Fuentes from MIT's Jameel Clinic, which are doing some amazing things on AI and healthcare. Thanks for coming to the podcast series today. Ignacio, let's start with you. I was wondering if you could begin by telling us about the Jameel Clinic and what you're discovering at the intersection of AI technology and healthcare.

[Ignacio Fuentes]
Excellent, absolutely. Thank you very much. Rachel, such a pleasure to be with you in this fantastic series that you're putting together. So our MIT Jameel Clinic is a research center at the Massachusetts Institute of Technology here in in Cambridge, Massachusetts, and since 2018 thanks to a generous gift of Mohammed Jameel and this is community Jameel. He's been a very supportive and impressive philanthropist for our work. The way we've been thinking about this is how it could have an impact on millions, of lives, on millions of lives, right? So you've seen that today artificial intelligence, and more specifically, machine learning, these kind of technologies are very pervasive because we see them in all the areas of life, right? So the way we organize this here at the clinic is three different lines, one that is more on epidemiology and clinical AI if you want, another one that is more like on the drug discovery and life sciences, and on the on the clinical AI or epidemiology, those two lines follow the way that you know disease progress in society, and a very clear case was during the pandemic. And the way we're like collaborating with a number of companies and trying to find what were the strains that could be more pervasive during the pandemic. So try to minimize the impact of the of the virus, but you can think about this in many different applications that may have a societal impact on the clinical AI, most of our work has been on oncology for early detection of cancer, and this would have applications on breast cancer, lung cancer, those are our most mature models. But you can also think about other types of cancers that we are working in, but not limited to oncology. There's other type of conditions that we've been actively working and I would say the third bucket, or the second big one, if we combine the first two, is more on the drug discovery, which is kind of like the therapeutics, right? Like how understanding some of these biological concepts vehicles, we can decipher, right? We can crack some of those life codes, right? And one of our most recent works has been released last week, which is bolts, one it basically help you, helps based on the sequence of protein to explain the characterization the folding and the binding right, which is comparable at level of performance of what alpha fold is doing today, right? But with the advantage that we have released the code, and it's even commercial, right. So this is something that we consider being very impressive, and it's going to impact and it's going to help many resources that can immediately use this type of algorithms, right? And I'm getting a little bit long in my introduction here, but, but you also ask about like, you know, like coming with with a financial background, I think, probably similar to Frank right in today's life you know, economics is that the basics of everything, and like transitioning to different areas, or walks of life, having a good foundation is something very helpful. I'm an engineer myself, but eventually I move into more this financial world. And I was interested, after being a number of years in corporate banking and financial institutions, on some of the technologies that were like coming at the time, and I'm thinking about back in in the years 2014, 15, 16, especially on blockchain, this is something that was very interesting to me. And start building on this ecosystem of innovation that we have here at MIT. And immediately I saw opportunities when AI was really like in in a very. sweet spot, right? And getting to know some of the amazing scientists that have been leading this effort during those years here at MIT, and how we could bring together those efforts of helping in different capacities to take this, this effort to the next level, right? And this is what we've been trying to do here at the MIT general clinic, try to make this shorter, but Rachel, please.

[Rachael Johnson]
That's great. No, thank you for sharing all of that. Ignacio, it's very exciting to hear how AI automation and all the different types of AI tools can can be transforming something so important to society as healthcare. Frank, you also have a financial background, and I thought it would be great for you to to continue on about how you believe the role of accountancy can can facilitate progress, and, you know, move things in the in the right directions, and then also maybe tell us a bit about what the challenges have been In terms of getting things progressing a lot more seamlessly and at a faster pace.

[Frank Schuler]
I'm Frank Schuler, and I appreciate your inviting us to be in your podcast as a point of disclosure either Ignacio nor I are robots we haven't been implanted with artificial intelligence. So what you hear is going to be natural. The interesting thing about AI is that it's, for the most part, misunderstood. People think that it is going to be panacea and it's going to be perfect in every case, and it's not. What AI will do, particularly in clinical AI, is to be able to make a prediction, and it will help to define, and portray the probabilities, or the likelihood of a person developing either breast cancer or lung cancer. Or in the future, we're now looking at prostate and pancreatic cancer, and that's very daunting to have a machine come up and say you have a 70% chance of getting breast cancer or 80% chance of getting lung cancer. It is more accurate than a physician's or radiologist interpretation of images. So in fact, it is quite reliable, yet it also has inherent risk, because it gives probabilities, and a probability means that there is some chance, though slight and less than physicians interpretation of being wrong. So AI has been developing with the understanding of understanding risk incorporated in it. That has engendered, in so me cases, mistrust within hospitals and clinics that may want to use it. So it's been very, I won't say, difficult, but it's been challenging to overcome the trust, and that's where I see that accounting, the accountancy can help with the implementation of AI, and particularly the accountant is very often viewed to institutions, hospitals and organizations, as the doctor is to patients, it engenders trust, and what the accountants determine help to provide a sense of confidence and credibility in the institution and what's going on.

[Rachael Johnson]
Yeah, thank you. I think that's also when I'm talking to our members around the world, the exact role they they know they have, and building that trust and transparency, and, you know, getting everyone to understand the good and the bad scenarios, so that they're confident in how things will be used and debated and assessed and tested and so on. So as we go on, Ignacio, I thought you might want to talk a little bit about what regulation is out there. I know that there really isn't much on AI around the world, apart from over here in Europe, but if you could give us your thoughts on how the accountancy profession can help maintain trust on the, you know, the type of disclosures that will be required. And you know, in how maybe that kind of scenario analysis can help move things to the next level in a more responsible and trusted way.

[Ignacio Fuentes]
Yeah, absolutely. So the idea here is that because technology is advancing more than what the society is ready to digest, right? And I like Frank's comment about us being humans, because today, you know, you may even have doubts about this. We're going through some exercise over the weekend with Frank on one of our recent publications that we. Decide to use one of the LLMs to, just like one of those large language models, to create like a podcast version, right? And it was very real. So even to the point that Frank was asking me, well, who are these people that were doing this like, well, it was fake. Don't, don't take it like. So we're going to be exposed to these kind of situations, right? So where are those safeguards? Who is going to be making sure that this what is real from what is fake, right? And especially in something that is as relevant as accounting, right? Where I'm thinking about during the pandemic, when we shut down the whole thing, right? There were, like, basically two institutions or two large groups that were, like, always there, right? It was the hospitals and the banks or the financial industry, right? This is something that you cannot, you know cannot shut down, because people would go, would go crazy, right? And on. Both industries is all about trust, right? When you go to your medical doctor, you want to

have a human explaining what is the condition, what is the situation. And this is all about trust, and when you're going through your numbers, your ledgers to understand, like your financial statements, you want to have, you want to be working with humans that you can trust and understand their business. Now, what is the role of of AI and thinking a little bit on on the regulation question, right? Well, if you can use this for good, right, and how you can enforce your practice, right? We're talking with Frank earlier about how this trust with medical doctors when we know that some of these, these tools, can already outperform some task. And again, we're talking about task is not that AI is outperforming any human, any general capability. We're still very focused, very driven on a very specific task. But for the specific task, when we combine AI and the human, it can be the physician, it can be the accountant, right? Whoever is using the the tool or that these algorithms for a specific for a specific task, I think we really amplify and we enhance the end result. Now, from a regulatory standpoint, it's true that maybe medicine or health has been lagging behind, and this has issues with privacy, with confidentiality, and also because the way that the practice or the medical practice in many different places around the Europe of the US, it's very atomized, I would say. So everybody does it its own way. Here in the US, we have these large electronic healthcare systems, like Epic is one of them. There's other platforms, right? Europe is more diversified. Not everybody use the same the same system. I think the advantage for the for the accounting practices, at least on a country level, you know, you have a set of rules that are the ones that you know, usually institutions and companies play, right? So if you can use also AI to support, enforce and help in this direction, right, you can really minimize error and make you know the practice more more efficient. And the advantage for Europe, I think, is because they've been already, I think they've been ahead on the data and data governance, which is something that is really important in this business, because it's all about data. And when we talk about AI using this advantage is something that you know, like could be, could be a model also for others. So this is something that I believe will play a significant advantage also for these accounting profession, because there's already a set of rules, a set of guidelines that can help in the development of new technologies, around, on AI, around certain practices like accounting.

[Rachael Johnson]
Yes. I mean, I think it's, it's very evident that AI is presenting this opportunity for collaboration in terms of getting, you know, the accountants, the doctor, the innovator, the technicians, but also the governments, the policy makers. There's so many stakeholders to consider. Frank you've talked about how important risk assessments are and making sure these tools get the funding they need and, you know, just to move forward, as we keep saying, but it would be great if you could talk a little bit about what a effective risk assessment is and what insights are important and why, for which type of stakeholder. So, you know, say for insurance companies, or who else do you think really needs to be in the know?

[Frank Schuler]
Well, being in the know is quite important. I just did a trick with AI, and I said, What's AI going to do? And AI predicted AI is going to be AI in the future, and it's going to be as pervasive as the computer and the mobile phone and the call we're on now, so it is going to be a factor in society and in industry and in hospitals and in medical care. So it's incumbent upon the accounting profession to be ready for it and in terms of managing risk, it's important to get the correct systems in place, to be able to report and to evaluate the data as it comes in, in real time, also to collect it for the auditing, I suspect and this is this is not a prediction, but it is a possibility. I would think that probably in the future, accountants are going to be required to audit AI in the hospitals and clinics, and they're going to have to look at the quality of the data, how it's collected, how it's secured, the performance in the hospital, and the reporting of the results of performance of the AI in terms of predicting future diseases and screening. That I think is going to be a change in the in the way it is audited. And so not only will the accounting have to provide a balance sheet and an income statement, but it's going to also have to provide an audit of how AI is working, and to be able to report it transparently to the stakeholders, to the hospitals, to the shareholders, if it's private, to the community, If it's public, to the regulators, and that is going to be a, I think, an important aspect of the accounting profession in the future. And I do believe that it is coming, and that is the way to mitigate risk. Now, with that, with AI coming, the funding and the implementation of AI will be critical, and that's where the accounting profession can

help with informing hospitals and clinics and imaging centers how to implement it and what it takes to be able to collect the data, to be able to reuse the data to improve, over time, the quality of the performance of the algorithm. So to my view, it's going to be a new task for accounting to look at the audits of AI and they should be in the accounting profession. Should be thinking about how that's going to be implemented now.

[Rachael Johnson]
Yeah, really great. Food for thought. Frank, thank you so much. I agree. I think also this type of innovation, and again, being in healthcare, it's so different than being in a bank, being in a hospital, and the high stakes about saving lives, I think that it's really forcing accountancy professionals to look beyond the numbers and take some notes, learn together with the doctors and the innovators about how this is going to transform things, and tell that story.

[Frank Schuler]
It's going to be important for the accountants to understand that in the hospital and the medical profession, safety is predominant and preeminent, and so they have to not only be accurate in what they're doing, but understand what and why the physicians are doing what they're doing, and how that affects patient outcome.

[Rachael Johnson]
Yeah, very important point, and I think that's really about translating the purpose of the hospital or the organization in the right way. Thank you. That's a really great point. Ignacio, I know you guys have said you have is it 43 hospitals around the world? What's actually happening on the ground in terms of collaboration with the consultants, the finance people, and all the different types of people who are working in the hospitals?

[Ignacio Fuentes]
We created, back in 2000 to 20 this hospital network, thanks to a generous collaboration also with Welcome Trust. And Welcome Trust at that time had this, this idea that we with some of those amazing technologies that are created at MIT, and not just MIT, there's great universities in the US and around the world that can create, like very great technologies, but sometimes those technologies get to a publication, to a prestigious journal, but don't get into the real people, to the real life, right? And the way that we thought about this, together with welcome trust worth, well, how about we could take some of these technologies that are going to be open source, which means that we're going to transfer these ready, be available and can be used in any clinical healthcare setting in the world, right? So we said, Okay, we are in a mission. We can do this initially, some of the our models, well, our models were trained based on US data, but then we had to validate, making sure that it would transfer well across populations. And we went, for example, with Mirai, which was our breast cancer model, to the geographies. We went to Europe, went to Asia, and we saw that the performance was like at the same level, so it was diversifying well across population. And based on this same premise, right, we thought, okay, let's. Start seeing how we can expand this. So we went to different regions. We started with Latin America. There's a number of countries that we've been collaborating, like Mexico, Chile and Colombia. We continue expanding our collaborations. Same like in Asia, in India, we work with one of the largest healthcare systems in India, Taiwan, lately, Hong Kong, but, and there's always, like, new countries that will want to be part of this, right? And what you see is always like two patterns here, right? One, when you start interacting with the technical people, which is more like the IT Support Technology, sometimes it's entrepreneurs, because, you know, that's the way that you bring these vehicles to to a new healthcare system, right? Someone that sees an opportunity to for technology adoption, and still, there is this initial implementation, or what we call the retrospective analysis, which is like making sure that the model performs well for that particular population, right? And we know that the model, the way, has been trained generally as well, but we want to make sure that there's not going to be any surprise. And then the next step is how we go perspective right? And perspective is now the clinical adoption right, and this is exactly the the real test, right, when the medical doctors are going to be using the tool for their own assessment, right? And this is like having some of the best trained radiologists here at our best hospitals in the West, available to the

local clinician. Something we've experienced over the years is that in many especially developing countries, because we worked a lot with global South, one of the challenges that they don't have this level of specialty that we benefit in some of the Western countries, right? So this is, like, a key advantage for them. Now this doesn't come so easy, because first that you need to go through this technical adoption, and I even, I even miss another portion, which is like the going to the legalese and all the contractual part, which is also important, because we want to make sure that, as Frank was saying, that we create the legal protections of safeguards for these to be deployed and always in this research collaboration, which are the frameworks that we try to to establish with these hospitals, with the idea eventually that clinicians can use it and helps to detect, in that case, it's cancer. But how we can provide like, an early detection, right? And think about like some of these countries that have, like, for example, imaging centers, but they may have like, a backlog of 1000s of images because there's not enough experts radiology in that case to oversee and to review those images right? Well, now, thanks to an algorithm, you have the means to really like focus on those cases. That model is flagging. Doesn't mean that you don't, you don't need to look at the others, because it's part of the of the normal practice. We don't think about an algorithm that just replace Radiology at all? That's not what I'm saying, but at least it tells you which ones you need to really focus quickly. Because, you know, early detection can really change an outcome, right? And this is something that we are, like, more proud and more satisfied, but we understand. And this is like, why we wake up every morning, like, how many other lives we can impact, and how many other collaborations we can spearhead and have in the hospital network, right? So this is very inspiring for us, and it really makes a difference having in place these tools and the advantage of working with amazing people all over the world, because you're right, here at MIT, we benefit from unique talent, but there's really smart people everywhere that if we give them this opportunity, they're ready to help, they're ready to support, because they care about their people, right? So this is something that that it makes this work very unique and special as well.

[Rachael Johnson]
Yes, that's great. I think that it is important as we assess, assess the potential and do so accurate, embracing the potentials as well. And I think we could have a whole podcast just on how we conduct stakeholder mapping as well. So Frank, I would like to end with you and ask, you know, we haven't really brought up ethics. So how you think accountants can help inform ethical decision making when there are some tough judgment calls. You know, we talked about the regulation, but you know, we can't always wait, wait for the safeguards from regulators. So how accountancy professionals can help promote good governance in the development of AI and healthcare too?

[Frank Schuler]
Well, one of the main issues that the accountants can do is to help define the boundary between the machine and the individual. All of the hospitals and clinics have institutional review boards, and the accountant should work with them to understand what is, what that boundary should be, and it's very difficult, because many people is, as mentioned earlier, they're reluctant to take a result from a machine when they want to hear it from a doctor, and getting that boundary correct, also informing and being transparent of how that decision is being made, the relationship between the machine and the algorithm and the physician and the patient, that's very important to translate and to transmit publicly. Then there's the issue of what is the risk level? And the risk level is it's inherent risk in anything we do. I mean, whether it's a physician or whether it's AI, but there has to be some boundary where that risk level is going to be. Now the accountants can help with this, because they're involved with many hospitals and can see collectively across the spectrum what's going on. Now the risk level is subjective. I mean, physicians may say we want 10% outcome or safety. Others may say we want 15. Others want five. So it becomes very subjective, and what the risk level is, what the level of safety should be. And that informs the accounting profession, helping to set some standard, and being engaged in that process. Of course, the the accountants should also be looking at the data and ensuring that there is no bias in the data, bias meaning that the population on which the algorithm is trained may have certain characteristics that are going to exist in other areas. For example, indigenous population in Mexico may have different characteristics than people in England or London, for example. And I mean, even in the UK, there may be populations difference between Scotland and Surrey. So those are

issues that need to be considered, and those are the mainly ethical issues. And transmitting those ethical issues to the regulators so they understand exactly what the parameters are, it's important that the accountants help define what the parameters are going to be and use the data that they collect to help inform those parameters.

Yeah, that's a really good note to end on. I mean, ethics is part of the accountancy professionals code, basically, so it's at the heart of everything they do. But I think it's very clear from what you guys are saying, how important accountancy will be to creating a lexicon, a common language for everyone involved. I really appreciate you taking time to share all the amazing things you guys are working on, and we look forward to keeping in touch and talking more about all these shared interests that we have on AI and healthcare.

[Frank Schuler and Ignacio Fuentes]
Hope so, thank you so much, Rachel, everyone, thank you.

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