Deloitte TECHTalks | EPISODE 24 | Humanoid Robotics
With Franz Gilbert, Growth Leader for Human Capital Ecosystems

Raquel Buscaino: Welcome to Deloitte TECHTalks. I'm your host, Raquel Buscaino and I lead Deloitte's novel and exponential technologies team where we sense and make sense of emerging tech. Today on TECHTalks, we're diving deep into the world of humanoid robotics and physical AI, a technology set that's transforming from sci-fi fantasy to everyday reality, faster than you might imagine. If you've ever wondered how robots could move from beyond assembly lines and into our daily environments, this episode can provide some insight.

On today's show, we're going to unpack, not just where robotics technology is today, but how businesses and employees can integrate these intelligent machines into their workflows. So, whether you're a tech leader asking, "How can physical robots enhance my team's capabilities", or you're simply curious about the future of human machine collaboration, by the end of this conversation you'll have a fresh perspective on the robotic revolution happening right now.

I'm thrilled to be joined on today's episode by Franz Gilbert, the Growth Leader for Human Capital Ecosystems, to discuss where robotics are today and where the future is heading tomorrow. Franz, welcome to the podcast. It's so great to have you here.

Franz Gilbert: My pleasure. Thank you so much for having me.

Raquel Buscaino: So, the topic of the day is humanoid robotics. What does that mean?

Franz Gilbert: It sounds incredibly elementary to say it, but I mean, it really has to do with at one level: the form factor. Right? "Does it have arms?" "Does it have legs?" "Does it look like something that we think is a human?" The second piece is a little bit more: "Does it interact with us in a human way?" "What's the interaction model look like?" "Is it able to talk with us?" "Converse with us?" "Co-work with us?" And I think the industry right now is still at the form factor layer. And I think it's going to be more of just, "how does it work with us?" And I think that's going to be the future of the humanoid side.

Raquel Buscaino: But, why a humanoid form? What might be some of the reasons people might want or need robots to have that human that human-esque form or resemblance?

Franz Gilbert: Yeah, that's a brilliant question. So, there's 2 reasons for it. The one idea is, everyone thinks we just did it because we just want replicas. The reality is, if you think about the market for robots if you're going to go through all the capital expenditure. I mean because companies invested millions upon millions in terms of developing this. There's a huge army of mechanical engineers, electrical engineers, AI scientist that are making these robots work. Right? So, the question is, then, "How do you get the most of the market as a result of it?" Well, in a lot of places you have to have a humanoid capability to operate in the physical spaces that we do, right? So, if you think about a manufacturing environment: we've got wires, we've got stairs, we've got different rooms that we've designed our world around humans. And so, if you want your market potential, if you want to sell robots you either have to get a market that's going to redesign their buildings and the way they do work for this new form factor, or you create a robot that can use existing tools.

Raquel Buscaino: No, I mean, it makes so much sense, we've designed our world for humans. Therefore, human formed robots would be the best and most suitable to be able to navigate the world that we've created.

Franz Gilbert: And it's fun. Because the industry has also learned because there's an assumption of we have to follow the entire humanoid form. And there's this amazing person. Her name's Melonee Wise. She's really one of

the frontier scientists in terms of how humanoid robotics are. And she came upon this where she goes, “Okay. We have to follow the humanoid form, but do I have to do it exactly?”

So, I'll give you an example in a company that does warehousing. Well, when we bend our knees, our knees go forward. Right? So as a result, if we're bending down to go pick something up at a lower level. We have to be stepping back 20 to 24 inches, because we have to allow the knees. And that's just the human form, the way it's operating. Well, she went “Well, what if I turn the knees backwards?” Right?

Raquel Buscaino: So interesting…

Franz Gilbert: Because now she can actually move the body up and down, be 6 inches away, bend her knees, and actually go down by changing it. So, I think that's the next stage where they're kind of figuring that out.

Raquel Buscaino: Yeah. Is part of the conversation also on how humanoids might interact with other robots? Because today, I actually think that robots are a part of our lives in very meaningful and significant ways sometimes. What do you think that future looks like between robot- to-robot communication, if you will. Let alone the robot to human communication that I think we're focusing on.

Franz Gilbert: I think we're gonna get there quickly. In this case, I'm specifically talking about the humanoid robotics environment. The majority of the industry is focused on: “How do we truly make those robots work?” There's some technical challenges they're still working through; battery power, power-lift ratio, balance in terms of falling down, some safety issues, that they're working on. The next piece is “How do we do fleet management?” How do we get the robots deploying a “go do this”, “go do that” kind of a situation. They haven't gotten to “what I'm going to start connecting the robot into a broader environment?” So like, “How am I connected into a physical plant CCTV?” “What does that look like?” “Am I connected into other systems?”

And so, I think that's the, once we get the robots deployed in a service environment, this is also where the industry is going to change. If you think about the industry, most of them are the manufacturers. “How do I build the car, right?” What you're now talking about is, “Okay now, how do I integrate the car into the work environment?” “How do I integrate the robot?” And I think there's going to be another wave of technology firms that are doing that type of system integration work because a lot of it is “How do we tie robots into all those operational systems?”

Raquel Buscaino: I'd love to get a sense from you, what are the industries that you think are most prime to use humanoids in the near future? Maybe even a follow up question, if I'm an executive decision maker at a company, what would be the questions I'd ask myself to determine… should I be thinking about human robotics as part of my strategy?

Franz Gilbert: The 1st piece is… Right now, it's really being driven by the manufacturers. And what they're looking for is use cases that allow them to continue to finalize what the humanoid robotics do in terms of form factor, capability, and so, they're looking for highly repeatable use cases, like, “can I pick up a piece of cardboard?” “Can I pick up something that's squishy?” “How do I move it?” And so, as a result, warehouse and logistics are kind of the 2 primary sectors. And it has nothing to do with actually warehouse/logistics, it has everything to do with the use cases highly repeatable motions. And they know that industry had already done co-bots and the AMRs (Autonomous Mobile Robots). There's a lot of other things they did. So the humanoid robotics, they know, will be accepted in that industry. But it has to do more proving it.

The second wave is going to be, you know, where can we deploy robots in sectors that have a massive workforce shortage, where it's one where you need to optimize the mix of “am I using human talent in the right way?” And I think sectors like healthcare, clinical healthcare, is going to be a major place where we can do this.

“Do I want an RN (registered nurse) doing bed checks?” “Can it be a humanoid or ambulatory, or some other sort of hybrid version?” But let's use the humans for the highest value purpose. Now your other question of “If I'm an executive, should I be thinking about this?” And the answer is yes.

So, the way think about it is, and these numbers aren't perfect but it's just kind of paints the mental picture, right now, the number of humanoid robotic robots in the United States is in the tens. Next year we'll be in the hundreds because they are handmade. So, it's “how do I start doing contract manufacturing?” In 3 years from now, it's gonna be in the thousands. Well, if you go, the horizon for this being deployed in some scale version is in the 3 to 5, what clients are going to be building physical plants? They're like, “okay, I’m building new warehouses, building new buildings. Should I be thinking about what I need to do to adopt robotics in that?”

Second thing, as I look about innovation and deployment, “How can I accelerate robot adoption better?” Third thing is, “What's my workforce look like?” “Do I need to be thinking about where am I placing buildings?” “What type of talent am I doing?”

And the last is really understanding what that adoption plan would look like. Every company is going to be different on where should you be exploring your robotics first? And what does that mean in terms of your long-range workforce plan?

My opinion is, every company should be thinking about it now, developing an understanding of, you know, when they think they could be planning, and in some places, they be integrating it into their long-range plans, but not every company is going to have a robot in play next year.

Raquel Buscaino: It's so helpful to hear about the time horizon, because I think part of the conversation we're having right now is “what's hype?” and “where is it all heading?” because sometimes you get caught up with the technology buzzword of the year, and you want to know when's it going to come down the pipe and should I be thinking about now? But it's good to hear your perspective that thinking about it now, and it will continue to grow.

Franz Gilbert: That's the piece that I'm entirely confident about, which is, yeah, we as Deloitte, we have the pleasure of working with a lot of manufacturers, and when you look at the scale problems that they've got, you have kind of a couple of them. So, one is they've got a safety issue that when robots they fall and they're 175 pounds. And they don't want it to fall on a human, right. So, a key piece of our scale is I need to have a robot that can work next to a human to make this happen. So, how do we make them fall safely? The second is the battery charge. They need bigger charges, longer charges. Well, the normal way do it is you do a bigger battery. Well, that just increases the weight which increases the drain. So, they're looking at how do you optimize the battery and the charging systems? And there's a number of a couple of other ones. When you look at the industry, they are solving it, right! And as a result, the scale is gonna happen. It’s exciting!

Raquel Buscaino: Paul Graham has this quote I like “the best time to invest in an exponential is when it feels a little bit too early” and I feel that quote applies here.

Franz Gilbert: Exactly

Raquel Buscaino: You know you have mentioned a couple of considerations for robots, you know, making them safe when they fall, the battery charging life so that they can integrate seamlessly into our lives. I think a big piece of this is also trust. So how does trust factor into the equation here? Franz, how might organizations drive adoption here?

Franz Gilbert: When I talk about humanoid robotics, realize most of that's the form factor: Can it work? Can it do things? Most of them still are going to be supervised robotics. They're going to be autonomous, you know, 70% of

the time, 80% of the time. But they're still going to get stuck. And so you're still going to see people remoting into the robot and literally driving the robot behind the scenes. When you think about the trust layer, there's actually 2 versions of it. So, for the next 5 years, most of the time, most of the robotics are going to have a human backup behind the scenes. So, are enterprises okay with having a robot, in their environment, that can see everything, which means there's a remote human behind it?

Think about, like, a hospital environment. It's one thing if I were to tell you, the robot is 100% self-contained electronically, all data records digitalized. But if you have a human somewhere elsewhere that remotes in to provides support, well, how do you trust the person remoting it? And I think that's going to be the environment that we're gonna have to figure out over the next couple of years. "What's that remoting and fleet management operations look like?". I think longer term is "Are we okay with, a robot that's fully autonomous in our environment?" And I think [as] long as you are making it clear as to —just like anybody else— who's doing what job, right, then, it's no different than if you bring in another employee. Right? I mean, if you're a 4-person shop, and all of a sudden, a 5th person shows up at work, everyone's like "do we have a problem?"

Buscaino, Raquel: Yeah! Exactly!

Franz Gilbert: I don't think it's going to be any different than, you know, you've got a 4-person shop and all of a sudden a robot shows up.

Buscaino, Raquel: Is the robot making my life better, easier?

Franz Gilbert: Yeah

Raquel Buscaino: Just as a new colleague might? Of course I'm going to love a new colleague if he's gonna make my life a little bit easier or better in some fashion.

Franz Gilbert: Exactly!

Raquel Buscaino: Okay? So, we've covered quite a bit. We've got use cases. We've got industries.. time horizons. We've done a lot on this podcast. Now, I want to stretch a little bit into the future. Imagine it's 10 years down the line. What are the second- and third-order effects of this adoption that people might not be thinking about? Like I would just love to hear your initial thoughts on what are some of those impacts you might not even be thinking about if we were to have a decent adoption?

Franz Gilbert: So what's the long-range implications here? Right now we're focused on how are robots going to do the work. The second piece is, there is a workforce shortage across the United States and around the world that robots are going to do. And as we get into the future this is where the theorists start, you know, having some interesting questions, there's a whole lot of scenarios that people have been trying to think through. But they're really long range. So, from a scenario planning, we as Deloitte, we're focused on more of the short term of, you know "How do we serve our clients?" "What does that look like now?" And then the futurist, the theorist of the world, you know, will be kind of figuring out those long-term implications.

Raquel Buscaino: So interesting. As we wrap up here, I would just love to hear some final thoughts from you. What do you think is most exciting about the time we're in right now, for the industry? Why is now the best time to be having this conversation.

Franz Gilbert: I think there's 2. One is for people in the industry. I'm so excited to see the combination of software engineering, EE's (electronical engineering), ME's (mechanical engineering) … a whole bunch of engineering

disciplines are coming together to make robotics happen. So just one for those in the profession, it's just really cool to kind of see them have their day.

Piece number 2 is, I think, for, you know, operations innovators, you know, folks that are kind of on the business side, it's an amazing time to reimagine what a mechanized environment looks like right? In this regard, it's not just humanoid robotics, but where do drones fit in? What does that do to, you know, how do we deliver things? There's just a lot of fun times to reimagine business models. And so, for those individuals, we're now in that time. We're going to reimagine. We've got to do the modeling. How do you do the innovation? So, it's the perfect time to start playing with this.

Raquel Buscaino: Franz, thank you so much for such a great discussion. I really feel like I learned so much in just our time together to all our tech savvy listeners out there.

If you enjoyed this episode, please share, and subscribe. And if you'd like to learn more about humanoid robotics, you can follow myself and Franz to stay up to date. Our socials are listed in the episode description.

Thanks for tuning in, and I'll see you on our next episode. Until then. Stay, savvy?