

Melonee Wise: 'Robot adoption will grow faster in semi-structured environments'

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Melonee Wise has two decades of experience designing, building and programming robots. She is the CEO of California-based Fetch Robotics, which works mainly with the logistics industry. The company introduced their robot system in 2015. "There's a lot of bad PR around robots and jobs," says Melonee. Robots actually make people's work days much better, she says. Melonee spoke with LSE Business Review managing editor Helena Vieira on 2 May during a tech conference in New Orleans.

When I order something online, what does it trigger in the warehouse?

When an order is placed what happens is that the people are going to pick that order. Robots are distributed in the warehouse right now and when the picker gets a full cart they put all the goods onto the robot and send it to the consolidation area for packaging. But we also have hot pick robots, so if the order has to get out in less than 60 minutes they'll put it on this special robot that does the delivery very quickly through the warehouse. So that's kind of the space that we deploy robots in. It's not like you order something online and then a robot goes there, gets it and brings it back, although that would be really cool. It really is about making the pickers more efficient. One of the ways we do that is by inserting robots into their workflow.

What is your clients' feedback so far about the impact of robots in their workflow?

The feedback is that it increases their efficiency between 30 and 50 per cent. They can pick 30 to 50 per cent more items per hour using our system. They also improve their safety significantly, because in many of these environments people and forklifts are around each other, interacting with each other. But the robots actually do the transit. They do all the delivery in all the very high traffic areas, so you don't have this challenging interaction between forklifts and people. If you look at the US there are around 800 thousand forklifts. With forklifts, a person dies about every three days in the United States due to forklift accidents. So if you're a warehouse worker you're more likely to die from a forklift accident than you are from a car accident. About twice as likely. And you're seven

time more likely to be injured by a forklift. Our robots not only create efficiency, they also increase safety. And they improve the workers' health in general because there are a lot of back injuries, knee injuries, feet injuries, from doing all this walking. Pickers spend as much as 50 per cent of their day walking doing transit from one place in the warehouse to another. So, four hours out of every eight hours of walking continuously. So that's a lot of walking, and it adds up. There's a lot of wear and tear on the body, and many pickers are older adults, they're not 20-year-olds. So it's a big gain for them to be using the robots, and they like the robots.

About the relationship between people and robots, do they find it strange, at least at first?

Yeah... at first... there's a lot of bad PR around robots and jobs, right? At first people get nervous. They think, 'oh, the robot is going to take my job'. But within the first week they realise that the robot is not going to take their job, one. Two: it's making their day much better, and three: they start naming it, they give it nicknames, they form a bond with their robots. So we actually have been working in a way to allow shifts, I mean teams of people, to name their robots, like their puppies, you know, so that when a shift changes, that shift has their names, because people want to have personalisation with their robots and they enjoy interacting with them.

A lot of the backbreaking job can now be done by robots, but in a way some people do lose their jobs.

Actually in the places where we have deployed our robots no one has lost their jobs. If you actually look at it, there's about 600,000 jobs open in the United States for manufacturing and logistics that no one will take. There's about 25 per cent turnover. They actually are struggling to get people to do the jobs. No one want to do those jobs and the main motivation of companies we work with has nothing to do with reducing headcount. It always has to do with 'how do we make the people who are showing up to do the job more efficient'?

Logistics seems to be the ideal setting for the use of robots. Are there other kinds of industrial settings or other settings in life where you can apply the same system?

Our robots are designed to work in what roboticists call semi-structured environments. These are environments that have certain rules that define them. Warehouses all kind of look the same. They have shelves, they have pallets. Other semi structured environments are hotels, hospitals, elder care facilities. They all have a system of rules, so if you went from one hospital or hotel to another, you'd know what to expect, they're about the same. So when you have robots working in those environments there's semantic understanding of the environment that you can get to the robot. The robot can understand, for a hotel, 'this is a hotel room', for an elder care facility, 'this is someone's hospital room', and then when you're not in those environments, you're in a hallway or a lobby, you can have well defined rules for when you're in those areas, and the same is true in manufacturing and logistics.

So that's where you're going to see a lot of robotics happening in the next 25 years, it's in these semi-structured environments. And that's already playing out. You see a lot of startups entering that space. It's really in completely unstructured environments like autonomous cars, your home, that the timelines are much longer. Homes are very particular because we as individuals are so unique that it's very hard to get a common semantic understanding to people's homes. If you were to compare a Western home to an Eastern home, especially say, a Japanese home where the walls can move, and the mats and beds, that's a lot different than a Western home where people have their individual rooms with beds that don't fold up typically, things like that. So those are harder things to convey and they're on the longer term.

How about the restaurant industry? Food is so personal and yes, there are machines that already can make anything that you want in your home. Do you see a use for robots in restaurants too?

Hmm... I think there's a possibility of that. I think this depends, because one of the things that is also unique about people is that sometimes we like personal experiences, right? We like the idea that someone cooked our food for us. We like that this specific chef who has this history and this culture is providing food for us. I think we're going to see a bifurcation in the market where we're going to see a whole bunch of autonomous food, that comes in a box, and

we'll eat it, and you're still going to have this other set of things that people still want to have, like a personalised restaurant experience with a real chef, you know? I think that's always going to be true. You can see that in a lot of different ways. I mean, people still use travel agencies. Yes, they do. Expedia didn't kill the travel agent.

I'm curious because we call them robots, but how much of it is about individual machines and how much of it is automation, algorithms doing the job?

I'd say that robots are just computers wrapped in plastic, with wheels most of the time. If you look at robots, they're just a physical embodiment of an algorithm in many ways. Now the thing is, we're still at a point where algorithms are heavily tied to the sensors that are in that machine. We're still building full stacks around a single piece of hardware or a set of hardware that is similar. But most of robotics is programming and algorithms and software. Fetch is a software company. Of all the engineers we have on staff, probably 95 per cent of them are software engineers. I think that's a bit of a misnomer with a lot of young people today is that they're learning about mechanical engineering, not realising that the real jobs for robotics are all in software. We get probably thousands of applications from mechanical engineers a month. We have no need for mechanical engineers. I think that that probably is going to be the next tide that is coming for education for robotics is we have to start making it clear that it's a software problem, it really has almost nothing to do with hardware.

Maybe mechanical engineering will be a dying profession soon...

I don't think that's true. I think it's a dying field within robotics, within standard platform robotics. If you're an experimental researcher building cool new innovative hardware, I'm sure there's a lot of opportunity there. And I say this but I'm a mechanical engineering myself. I just learned how to programme.

You went for the right skills.

Well, if there's something you want to do and you don't have the skills to do it, you have to learn.

One last question is if you could draw a parallel between the warehouse and the roads. Because it seems from the outside that it's a very similar thing. Would building self driving cars be a logical next step for you?

Ohh... I don't know.... Software and cars are in a different trajectory. It's a much longer timeline. If you look at the autonomous robots we make today, they're ready to be deployed in commercial environments, we already do that. They use many of the same algorithms. They have similar sensors, but some of their problems we don't have to solve. We don't have to deal with rain, we don't have to deal with snow. We do have to deal with inattentive drivers with forklifts, so there are some similarities in terms of the traffic and things like that, that we deal with.

The other thing is that the methodology for how we're going to use autonomous cars in the future is still not figured out. Are we going to own them? Are they going to be part of a service? Are they going to be part of larger fleets? It's pretty clear how we can use these devices in manufacturing and logistics. Right now it's about creating software and making the robots capable of doing it. The use cases are pretty well defined and we know what we have to do, whereas with autonomous cars there are a lot of unknowns. It's still not clear whether if you live in Michigan and you buy an autonomous car, what do you do with it five months of the year, six months of the year, because it's not clear whether the technology is robust enough to work in weather – rain, sleet, snow . If you noticed, a lot of autonomous cars are being tested in California, where it's always sunny. I don't know. I think that they're very similar but the challenges are different and the use cases are more well defined indoors than they are outdoors. Most likely if Fetch were going to do something next it would be autonomous forklifts or autonomous picking robots. It wouldn't be outdoor vehicles.

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- *This Q&A is the third in a series of 10 interviews done with tech leaders during the [Collision](#) conference in New Orleans, 2-4 May 2017.*

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