

Margaret Flinter: Welcome to Conversations on Health Care with Mark Masselli and Margaret Flinter, a show where we speak to the top thought leaders in health policy, health innovation and technology and the top thought leaders who are shaping the healthcare of the future. This week Mark and Margaret speak with Noelle LaCharite, Principal Program Manager for Applied AI and Cognitive Services at Microsoft, helping developers apply their artificial intelligence technology to develop apps that will advance their business and industry. She's also one of the original voice skills developers for Amazon's Alexa. Lori Robertson also checks in, the Managing Editor of FactCheck.org looks at misstatements spoken about health policy in the public domain, separating the fake from the facts. We end with a bright idea that's improving health and well-being in everyday lives. If you have comments, please email us at chcradio@chc1.com or find us on Facebook or Twitter at CHC Radio. We love hearing from you or you can find us at iTunes, Sound Cloud, or ask Alexa to play the program Conversations on Health Care. Now stay tuned for our interview with Noelle LaCharite, Principal Program Manager for Applied Artificial Intelligence at Microsoft, here on Conversations on Health Care.

Mark Masselli: We're speaking today with Noelle LaCharite, Principal Program Manager for Applied AI and Cognitive Services at Microsoft. She has spent many years as a coder, developer, system architect and evangelist for IBM Red Hat, EMC and more recently a lead evangelist and solutions architect at Amazon, where she was one of the first developers of skills for Alexa, Amazon's voice technology platform. She's also a founder of several of her own enterprises, including Lady Coders podcast also Voice Skills, Inc., where she and other developers have created thousands of skills for Alexa. Noel, welcome to Conversations on Health Care.

Noelle LaCharite: Thank you so much. I'm very excited to be here.

Mark Masselli: Yeah, and as you were thinking about careers, you were early on thinking that you'd like to be an astronaut, but it seems like you've forged your own frontier, as a coder, developer, systems architect in the computer space. I think the public saw this dramatic shift from the mainframes to personal computers. We saw the launch of the iPhone, which really started a huge revolution in the smartphone space and you say you're poised again for another dramatic shift with voice as the next major disruptor in the industry. I wonder if you could just talk to our listeners about the current emergence of voice technology, and applied AI in the computing world and how do you think these technologies will help transform the user's experience.

Noelle LaCharite: I have multiple aged children in my house and one of the things that I see them doing today more than I've ever, just clicking on the microphone button and being able to say, the word bus and the

Wheels on the Bus come up on like YouTube kids. I have this vision and really like proof in the pudding right now of what our life is going to be like 30 years from now, like when my kids are working, they're going to have the same expectation that they're going to be able to click a button or better yet just be able to talk and the world is going to mould around them. You know, when I was six years old, you know, I was reading like Asimov and Bradbury and the Martian Chronicles and Star Trek and the Jetsons. It was so interesting to me to look back out at things, I don't even know at that time, if I thought that was impossible, I now realize that our technology has caught up to our vision and our dream. Literally today, if you have a dream in your heart to build something, it's more than likely that the technology is there to help you build it and that's why I'm super passionate about this space.

Margaret Flinter: You know, I've heard you describe Noelle as an evangelist for artificial intelligence and voice technology. You've led seminars and hackathons all over the world, teaching people how to develop voice recognition skills to meld with Alexa and other digital platforms. Share with our listeners, how the marriage of voice tech along with applied AI technologies are changing the game.

Noelle LaCharite: First, like applied AI is the ability for us to use models that are built by someone else and the benefit of that is that companies like Microsoft, Google, Amazon, they've been building machine learning models for a very long time. So, the ability for us now as developers to leverage those models, and Microsoft, the reason I went there is A, of course, they have this incredible social good philosophy, which I'm a very passionate about, but also because they have this elaborate selection of pre-built models to choose from. I started in voice and I started with kind of speech enablement for applications, which I think is fantastic, but what if I could translate my text based app into 60 languages without actually needing a translation team or data scientist or a machine learning person?

What if I could analyze all the texts coming in from every comment, someone said on my blog and determine if people are mostly happier, mostly sad, and if I need to take action towards that, or maybe I could do texts and analytics on feedback that I got on social media and figure out, are people asking me more about one topic or another and make sure that I guide my podcast down that way. These are all things that even five years ago, I couldn't easily do as a developer. I really think like anyone can learn to build applications today, but now you can actually, as a novice, build elaborate applications, right. Things that can translate and speak and provide natural language interfaces, all without really having to know the underlying technology behind it.

Mark Masselli: You know, I think there's some real aspirations for those of us who

think about AI. We saw IBM Watson and others, with a promise in this healthcare space to really make big changes, but it really, we seem to have fallen short. I wonder if you could just help us understand the difficulties of applying artificial intelligence. When I think about that in healthcare space, I'm thinking about the critical thinking, hope for but not really realized. Where do you see the next transformational point? You probably read too much Isaac Asimov and these entities have this malicious capability of doing bad things, you know, that's not really the case. So give us a sort of the bigger picture.

Noelle LaCharite:

Yeah, you know, my dad would always remind me, even today, when he sees the work I do, he's like, you know, these stories don't end well in most cases. It was funny, because he actually encouraged me -- all the skills that I built for Alexa are all like, mindfulness and kindness based. I was like, at least the AI will be right, like, nice to us about it. One of the things that I think is really important about the time that we're in now is that the AI we are building, at least at Microsoft, our goal is not actually for it to do the critical thinking. We actually think humans are much better at that than machines will ever be. In my early days of building what I call now, like weak AI, you know, to my dad and to my children, they were like, this is amazing, I can't believe you built this voice skill that does this. But the reality was, is I wrote 200 lines of code that did that work, it was literally artificially intelligent because to the user it seems like magical and intelligent, but the reality was, is that me as an engineer, I wrote all those lines of code.

Being part of Alexa, early on, I had that same realization is that artificial intelligence is literally artificial, because there are people like me, sitting at a desk with a computer, writing every decision that these computers will make. A lot of it is creating this magic for our end users but realizing like we are literally training it on how to do that work. I think the more interesting side is the unsupervised side, right? Like how do we get to that point where machines are doing more on their own? I usually walk around the airport, I have a shirt that says I heart AI? Literally people will stop me who are not technical and they'll be like, are you sure? I have to encourage them because there's a recent article, how do we make, you know, artificial intelligence less artificial and more intelligent, and Microsoft is very big about the principles of developing AI, right? How do we make decisions today that will impact how this technology evolves over time?

Now that we're building software that will evolve and potentially get to the point where it evolves on its own, we have to be much more deliberate about the things we enable, the processes that we train into these models, because unfortunately, the world is biased, right? It's one of the saddest things, I go into Google and I type in CEO, and

you know, someone like me, a Latin American woman, I'm sure that there are other, you know, colored women that are CEOs, but I have to go to page three to find one. That's just because the world when we think CEO, we think white male, and that's who shows up for the first three pages, the world is like that. Companies like Microsoft are taking very specific and deliberate, you know, actions to un-bias the world data and make sure that our models are consciously considering this. What that means is that we have to do extra work to create these critical thinking processes. It's not just letting the world learn on its own because if we let it do that, it would actually be wrong, which we found already if you do some research on facial recognition we realized, oh, my gosh, the world actually thinks everybody looks a certain way. So we have to make deliberate efforts of going around the world, and making sure that the world's data includes these perspectives.

Margaret Flinter: I'm going to, if I can, you've led developer competitions and hackathons around the globe, addressing certainly some of the biggest healthcare challenges like chronic disease management, you recently presided over a competition, looking at how to improve the management of diabetes using voice technology as part of the solution. Collecting the biometric data that's been around for a while adding the Alexa speaker, interesting dimension. I'd love for you with your vision to expand upon the role of this in managing complex chronic illness.

Noelle LaCharite: Yeah, this is one of the areas that I'm so passionate about, one because we think about using the world's data to solve to these just very dramatic, large scale challenges that we have. The reality is, is that there is so much that we can do especially with the kind of applied AI technology that we could do to actually impact people today, right now, immediately and one of those is voice technology. Often times getting real time data is difficult and so being able to provide a conversational interface and the nice thing is, you could use Alexa, right? Allowing the user to talk to an Alexa that they probably already have a know and ask questions kind of on a daily basis to make better choices. But then imagine if you don't need an Alexa, this could be on a phone app and that phone app could send a text message twice a day that just says, hey, you know, want to have a quick conversation, click this button and talk to me. We can literally enable chat on any device. You know, the combination of Alexa and Cortana allows us now to use Alexa on any device that has Windows 10. So now you think about like, if you're even a doctor, and you want to be able to do certain types of voice enablement, there are things like business process automation. I will tell you, one of my sad stories, I go into a dentist office, I have four children moving into a new city, and they literally hand me four stacks of paper. Now, I'm like, seriously do I have to fill each one of these.

Margaret Flinter: We'll introduce you to our kiosks.

Noelle LaCharite: I was like, "Can I please buy you an iPad? How can I help you?" Today with things like chatbots, you could get my information, I could be sitting at home, you know, or I can even fill it out at home and you take a picture of it, you could use OCR to pull that into your system and you don't need any special data science or, you know, machine learning skills to do this. This is just standard web application development that you're already doing. So I want to make sure that, you know, everyone in healthcare realizes that yes, there are big problems we're trying to solve, but there's also so many kind of things that we could do to change the lives of people like right now, the value of having voice involved, creates this kind of level of comfort, right with our end users and with our patients. I'm very passionate about custom speech.

Wouldn't it be interesting if we could, you know, create a voice that provides that level of soothing? So when somebody is like, "Hey, I have a stuffy nose, you know, you have a voice that represents your brand, as a physician telling them, oh, don't worry, like that's probably only rhinitis, but it could be something more so why don't you come in or it's called Neural TTS just supernaturally sounding speech, as opposed to the robotic stuff we hear kind of from banks and airlines today and it's conversational. Oh this is my friend, this is someone who cares about me, really underlying we all know it's still tech, but when it starts to sound more natural, we feel more comforted by it. This is something that we've done studies on just how easily we can delight our customers and help them by just creating an interface that's more natural.

Mark Masselli: We're speaking today with Noelle LaCharite, Principal Program Manager for Applied AI and Cognitive Services at Microsoft. She recently served as head of machine learning for Amazon, where she was one of the first developers of skills for Alexa. Noelle, you seem to be all about empowerment and Margaret, I think we've had a couple of fascinating people and you have that same energy on the radio show, Todd Park, liberated data and part of that Vanguard. Let's just open this thing up for people. You've created tutorials for Alexa Skill Development, for anyone to access. I'm wondering if you could just talk to our listeners about some of the tools that are out there for people who want to develop their own voice technology apps. Tell us more about that.

Noelle LaCharite: Yeah, absolutely. The nice thing is you go to Alexa today, and there are dozens of blueprints. I'm a huge fan of learning by doing, and so these code snippets are fully functional, right. You know, they're not about the content, but all the code is there. I always encourage people, like get going. You'll be shocked with zero technical skills. If

you know how to follow instructions, you could build a skill for the first time, publish it to 10 million Alexa users, and I've never built code before. I've many, many people that I work with who do this every day, that are like, "Oh my gosh. I can't believe, I just built a production app." The most important thing today is thinking about how can you create content and create an experience on Alexa that your users will watch, but another place to see speech and voice integrated with other technology is in the AI school.

There's a free online school called AI School at Microsoft.com. We have skill development. All of these technologies kind of coming together to create scenario based applications. The blueprints you can do in an hour. These are more like eight hour projects, but you end up with a portfolio of work that you can literally claim that you built. It helps you refine your resume, add these skills to your toolbox, and just get super excited. Of course, you know, I'm always trying to share all of this, there's a Channel 9 on YouTube with the AI show, anything you can do to immerse yourself in this and you have a desire to build. The technology is definitely available and ready for you to do it.

Margaret Flinter: I can sense your mission drivenness we are very mission driven and our work as well. What I've picked up on is your drive to empower everybody, but especially women through your Lady Coder's podcast. So, share with our listeners, your quest to empower more women tech developers.

Noelle LaCharite: Luckily, the Gates Foundation did this huge study called Reboot Representation. The gist of it was, we've got a great new thing with Girls Who Code and Black Girls Code, and all these things that are opening the funnel of women or girls, really moving into the space of computer science. What then happens is that within your first two projects you kind of start to get this friction. I mean, it's part of this kind of unconscious bias, right, so after your first or second project, you're kind of like, "do I really want to live in this like inherent friction."

We see a massive amount of dropout rates across newly hired and newly graduated computer science women, and they go into things like psychology and teaching, and it's all because they just didn't have a better tribe to be like, "no, no, no you're fine." In my whole career, whenever something bad would happen, I'd always be like, "I am so alone in this." Only now, when I'm more senior, like I feel more confident to reach out to people like, does this ever happened to you? Almost every woman I talk to is like absolutely happens all the time.

I built Lady Coders to do that just to tell the stories, so people know they're not alone, but we also we have an event that we do every year called Harmony Conference, where we bring women together, and we do tech sessions, career building sessions, because sometimes

you're going to be all alone, and you may be the only woman on the team, so how do you not feel that way? We're doing a great job getting women into the field. We're not doing a great job of really nurturing them and keeping them in the field, and you know, as a Latina if I get a situation, where I'm not super happy, or if I feel not appreciated, like I'll just kind of wipe my hands and go to the next thing. The Latin culture is very much like just walk away. I don't want that for my, the Latin women. We went from 4%, which is dismal, as it sounds, but we went to 1% over the last three years. I would really like to help and nurture, encourage, not just my specific demographic, but all women in technology.

Mark Masselli: We're engaged in this all of us project at NIH has set out to for a million lives, and you know, when you were talking about the CEOs, they don't look like us. That's exactly what Francis Collins was saying, "We're really trying to figure out how to reach out to all people, so that they can be part of this opportunity for the new sciences that are being developed." As I think about precision medicine, there's a paucity of genetic counselors in the country. I'm wondering if you see any intersection of the work that you're doing, being supportive to this new field and where you have so many people who have questions to ask, and there's nobody really to answer them.

Noelle LaCharite: It's very easy for me, I talk on like global stages, and I'm talking to multiple entities at the same time, but it's so much more powerful when you can be use case driven. It's something that we are very much focused on let's identify a specific user that we are targeting, and make sure that we are building technology that enables them.

For example, you're talking about geneticist, I have a son who has Down syndrome, and so I had no idea when we first got that diagnosis, what was going on, but worse I was a cytogeneticist, and she was like 75, and done. You know, like, I had no idea, and so there's so much the geneticist that are in seat right now could do to kind of expand the reach of their scope. They could build applications. They can build conversational apps that let users talk to what's in their head without actually having to talk to them. It could [PH] be the far reaching benefit of all of these parents and children and families that would benefit from that. It's totally worth it. I think the precision medicine space is primed to do just that kind of work.

Margaret Flinter: We've been speaking today with Noelle LaCharite, Principal Program Manager for Applied AI at Microsoft. You can learn more about her work by going to noellelacherite.com or you can follow her on Twitter @NoelleLaCharite. Noelle, we want to thank you for your enthusiasm, your innovations, your absolutely groundbreaking work, and good humor, and for joining us on Conversations on Health Care today.

Noelle LaCharite: Absolutely, it's my pleasure.

Mark Masselli: At Conversations on Health Care, we want our audience to be truly in the know when it comes to the facts about healthcare reform and policy. Lori Robertson is an award winning journalist and managing editor of FactCheck.org, a nonpartisan, nonprofit consumer advocate for voters that aim to reduce the level of deception in US politics. Lori, what have you got for us this week?

Lori Robertson: In the past four months, five states have passed laws that ban abortion once a heartbeat becomes detectable during a pregnancy that prompted a reader to ask us when do doctors hear a heartbeat during pregnancy and when is the human heart fully developed? The short answer is that a developing heart has all of its primary structures after about nine weeks of pregnancy. Some forms of ultrasound can detect cardio activity in an embryo in the sixth week, but a heartbeat wouldn't be audible until about 10 weeks on a Doppler fetal monitor.

Since cardiac activity can be detected in the sixth week of gestation or the fourth week after conception abortion rights advocates such as Planned Parenthood refer to these state measures as six week abortion bans. Others including proponents, call them heartbeat or sometimes fetal heartbeat legislation. All of the state laws allow abortion if the pregnant woman's life or physical health is severely endangered and some make exceptions for fatal chromosomal anomalies in the fetus or in cases of rape or incest.

To research this question on when a heartbeat is detectable we consulted multiple scientific reviews, and spoke with experts on heart development and maternal fetal medicine. Heart development occurs over a four week period starting in the sixth week of pregnancy. Based on 3D imaging of human embryos, scientists are able to identify all of the major structures after nine weeks and one day of pregnancy.

Some developments suggest changes to the cardiac muscle continue into the second trimester. Heartbeats are first detectable with a transvaginal ultrasound, usually after six completed weeks of pregnancy. The real-time scan, however, doesn't produce an audible heartbeat. It's visual only, showing a flicker, the slight movement of the developing heart while it beats. What most parents experience as the first audible heartbeat during pregnancy comes from a device known as a Doppler fetal monitor.

Technically, the heart sounds that the machine produces or not the actual sound of the fetus' heart beating. The sound is the amplified version of the difference between the transmitted and received signals. To hear a true heartbeat, expecting parents can turn to a stethoscope, which picks up fetal heartbeats after 20 to 22 weeks. That's my fact check for this week. I'm Lori Robertson, Managing Editor of FactCheck.org.

Margaret Flinter: FactCheck.org is committed to factual accuracy from the country's major political players and as a project of the Annenberg Public Policy Center at the University of Pennsylvania. If you have a fact that you'd like checked, email us at chcradio.com we'll have FactCheck.org's Lori Robertson, check it out for you here on Conversations on Health Care.

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Mark Masselli: Each week Conversations highlights a bright idea about how to make wellness a part of our communities and everyday lives. When Leanne Brown was a graduate student in nutritional science at NYU, she came to understand the enormous challenges of eating healthy foods while doing field work with some of New York city's more impoverished populations. She thought why not write a cookbook of health recipes aimed at the millions of Americans living on food stamps or SNAP stipends of \$4 a day.

Leanne Brown: \$4 a day is sort of the general rule of thumb for around how much a person who is qualifying for food stamps would have to eat per day.

Mark Masselli: So, she conducted extensive research on shopping and healthy cooking techniques and crafted Good and Cheap. A cookbook aimed at, not only teaching these families how to shop for affordable produce and healthy foods, but how to get an entire family to cook in a more healthy way.

Leanne Brown: I really wanted to arm people with the ability to walk into a grocery store and say like, okay, "This is on sale, I can totally make something delicious out of that." Find the deals and find the value in order to really get a buy-on on such a small amount of money.

Mark Masselli: She launched a Kickstarter campaign to make the book available at Soup Kitchens, women's shelters and community health centers.

Leanne Brown: The idea is that this is a cookbook that needs to be put into the hands of someone who really can't afford the cookbook. So, that's where the idea of doing a buy one get one like TOMS Shoes came from.

Mark Masselli: Good and Cheap, a cookbook aimed at anyone on fixed income helping to positively influence their diets and well-being. Now that's a bright idea.

[Music]

Mark Masselli: You've been listening to Conversations on Health Care. I'm Mark Masselli.

Margaret Flinter: I'm Margaret Flinter.

Mark Masselli: Peace and health.

8-19-19 Noelle LaCharite 25 min

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[Music]