



[Dr. Yaser Sheikh](#), Associate Professor at Carnegie Mellon University's [Robotics Institute](#) and Director of Facebook Reality Labs, Pittsburgh, will deliver the Afternoon Keynote Presentation *Social Perception for Machines* at the [4th Integrative Conference on Technology, Social Media, and Behavioral Health](#). He researches computer vision and works to equip machines with the social perception to partner with healthcare professionals in diagnosing disease and delivering therapies.



The [Center's](#) Julia Holber had the opportunity to ask Dr. Sheikh about his research, his Keynote Presentation, and his hopes for the future of machines.

Julia: To get started, tell us a bit about your work at CMU's Robotics Institute and Facebook Reality Labs.

Yaser: My research focuses on an area of robotics called computer vision. This is the broad enterprise to get machines to see as well as we do or even better. In particular, I focus on social perception.

Julia: Can you explain what it means to research computer vision and social perception?

Yaser: It's incredible how much we as humans can extract from our interactions- what someone intends to do, what they want to convey- from just looking at subtle facial expressions, hand gestures, slumped shoulders, or a small twitch. We use all of these cues to collaborate and work with other people. These are all signals that, today, machines are largely blind to. Cameras can record them, but machines have no way interpreting them and don't know how to respond to them. This, I believe, is one of the main reasons why machines today are tools for us, not partners. In the future of AI and robotics, one of the main goals is to endow machines with the ability to understand what we mean when we shrug our shoulders or raise our eyebrows, and that's the general focus of our work.



Julia: What applications of your work do you see in health care?

Yaser: My entrance into this area was through an NSF-funded project a couple of years ago in which we tried to use machines to assist in diagnosing kids who are at risk for autism in a timely manner. In regards to autism spectrum disorders, if a child is diagnosed before the age of two, treatments tend to be much more effective than if the condition is identified later. A diagnosis of autism is made too late in the majority of cases because the folks who are qualified to make the assessment don't see the kids in time. There's not enough awareness of the condition or qualified professionals to give the diagnosis. The objective of the project was to build systems to observe kids' behavior and triage them to determine which kids are at a higher-risk and should be seen by a professional.

Julia: What did you find?

Yaser: Well, at the same time, there was also a DARPA program looking to understand what made some people very good at building coalitions and partnerships with others and why other people struggled to do so. There was a kind of confluence of these two projects, and what struck me was that both of these programs were not terribly successful largely due to the same issue: the underlying low-level computer vision. The outcome of these two projects made me realize how necessary my work was and the impact it could have.

Julia: We're excited for you to speak at our 4th Integrative Conference next week. What do you plan to speak about?

Yaser: First, I plan to scope out the problem of low-level computer vision itself and help people understand the challenges in the area and why they're important. Why is it necessary for machines to be able to understand our behavior and interpret it in some way? What is the social impact of this problem and why do we care about it scientifically? I will also discuss some recent advances in my lab that have had significant impacts in the last year or so. Finally, I will close my talk with both the positive but also the potential negative impacts that technology can have on society broadly. I will focus on how I think we should talk about these impacts, how we can emphasize the positives, and how we can address the negatives.

Julia: Fast forward five to ten years into the future. Where do you hope to see your work?

Yaser: I'd love to see a future where machines and people are working collaboratively for social good. I hope to see machines helping with the diagnosis and therapy of not only psychological conditions like autism and depression but also with physical trauma and disability. I'd love to see animation happening seamlessly with people expressing their ideas through their bodies and then machines reading them and advancing them.



Want to learn more about Dr. Sheikh's work? [Register](#) for the 4th Integrative Conference on Technology, Social Media, and Behavioral Health to hear his Keynote Presentation *Social Perception for Machines!*