

# Dr. Maithilee Kunda '96

Vanderbilt University Professor Named to MIT's 'Innovators Under 35'

For her work in the software field, Dr. Maithilee Kunda has been recognized as a visionary on the MIT Technology Review annual list of Innovators Under 35. She is an assistant professor of computer science and computer engineering in the Department of Electrical Engineering and Computer Science at Vanderbilt University.

"My research began in graduate school when I was working on artificial-intelligence systems and read "Thinking in Pictures" by Temple Grandin, a professor of animal science who talks about how her autism gives her this unique visual way of thinking compared to most people.

Before coming to Vanderbilt, she worked as a research scientist in the School of Interactive Computing at Georgia Tech. Her work in artificial intelligence, specifically in computational cognitive systems, looks at how visual thinking contributes to learning and intelligent behavior with a focus on interactive applications for individuals on the autism spectrum. She holds a B.S. in mathematics with computer science from the Massachusetts Institute of Technology and a Ph.D. in computer science from the Georgia Institute of Technology, and she currently directs the laboratory for Artificial Intelligence and Visual Analogical Systems.

Most AI systems are not 'visual thinkers' like her. Most AI systems use variables, numbers, lists, and so on, and they reason using mathematical and logical operations. These systems are 'verbal thinkers.' What if you had an AI system that used data made up entirely of images and reasoned only using visual operations, like rotating images around or combining images together? If Temple Grandin can do amazing things because of her visual thinking abilities, it seemed to me that the same should be true of AI systems.

People on the autism spectrum are inspiring her novel approach to creating artificial intelligence. "I've been taking what we learn from people on the autism spectrum who have interesting visual abilities and building that into AI systems. It's early, but I expect that they ultimately will be very valuable. If we want to help students learn to solve difficult problems, then we ought to have several AI tutors that can show students different ways of solving the same problem. If we want to help doctors find patterns of disease outbreaks, then we ought to have multiple AI analysts that can sift through the data using different styles of pattern finding." *(Thank you to Brenda Ellis, Engineering Communications, Vanderbilt University School of Engineering for sharing this story.)*

