A recently proposed theory posits that multiple aspects of the autism phenotype may be manifestations of an underlying difficulty in prediction (Sinha et al. 2014, PNAS). This proposal, along with a few related conceptualizations from other labs (Pellicano and Burr, 2012, Trends in Cog. Sci.; Van de Cruys et al., 2014, Psych Rev.), has spurred several targeted empirical investigations of predictive processes in autism. This talk will review some of the data accumulated thus far. It will consider both positive and negative findings and also describe efforts currently underway to further test the proposal. Our studies have been situated in three domains: Sensory habituation, motor control (in collaboration with Prof. Dagmar Sternad) and high-level cognition (in collaboration with Prof. Nouchine Hadjikhani). In each of these domains, the experiments have probed whether performance of individuals with autism is affected in a manner consistent with a difficulty in prediction. The picture that has emerged has provided support for the PIA hypothesis, although not unequivocally so.

**Bio-sketch:** Pawan Sinha is a professor of vision and computational neuroscience in the Department of Brain and Cognitive Sciences at MIT. He received his undergraduate degree in computer science from the Indian Institute of Technology, New Delhi, and his master’s and doctoral degrees from the Department of Computer Science at MIT. He was at the University of California, Berkeley, for the first year of his graduate studies. Pawan’s laboratory uses a combination of experimental and computational modeling techniques to focus on understanding how the human brain learns to recognize objects through visual experience and how objects are encoded in memory. The lab's experimental work on these issues involves studying healthy individuals and those with neurological disorders such as autism. A key initiative of the lab is Project Prakash; this effort seeks to accomplish the twin goals of providing treatment to children with disabilities and also understanding
mechanisms of learning and plasticity in the brain. Pawan has served on the program committees for prominent scientific conferences on object and face recognition and is currently a member of the editorial board of the Journal of Applied Perception. He is a recipient of the Pisart Vision Award from the Lighthouse Guild International; the Presidential Early Career Awards for Scientists and Engineers; the Alfred P. Sloan Foundation Fellowship in Neuroscience; the John Merck Scholars Award for research on developmental disorders; the Jeptha H. and Emily V. Wade Award for creative research; the James McDonnell Scholar Award; the Troland Award from the National Academy of Sciences; the Global Indus Technovator Award; and the Distinguished Alumnus Award from IIT Delhi. Pawan's teaching has been recognized with departmental honors and the Dean’s Award for Advising and Teaching at MIT.