Andrew W. Lo is the Charles E. and Susan T. Harris Professor at the MIT Sloan School of Management, the director of MIT’s Laboratory for Financial Engineering, a principal investigator at MIT’s Computer Science and Artificial Intelligence Lab, and an external faculty of the Santa Fe Institute. He received a B.A. in economics from Yale University in 1980, and an A.M. and Ph.D. in economics from Harvard University in 1984. His most recent research focuses on systemic risk in the financial system; evolutionary approaches to investor behavior, bounded rationality, and financial regulation; and applying financial engineering to develop new funding models for biomedical innovation. He has published extensively in academic journals (see http://alo.mit.edu) and his most recent book is Adaptive Markets: Financial Evolution at the Speed of Thought. His awards include Sloan and Guggenheim Fellowships, the Paul A. Samuelson Award, the Harry M. Markowitz Award, the Eugene F. Fama Prize, and election to Academia Sinica, the American Academy of Arts and Sciences, the Econometric Society, and Time Magazine’s 2012 list of the “100 most influential people in the world.” He has also received teaching awards from the University of Pennsylvania and MIT.

P-Values vs. Patient Values: An Analytic Perspective

The standard approach to evaluating the statistical significance of randomized clinical trials is to determine whether the difference in measured outcomes between the treatment and control groups is meaningful, where “meaningful” is typically taken to mean a p-value of 5% or less. Why 5%? And why the same value regardless of whether the trial is for acne medication or a potentially life-saving therapy for pancreatic cancer? In this talk, Prof. Lo will describe a different framework for making decisions about therapeutic efficacy using Bayesian decision analysis, which allows regulators and policymakers to weigh the impact of false positives against false negatives using patient values and burden of disease instead of arbitrary p-values. The practical uses of this framework will be illustrated with specific applications in oncology and Parkinson’s disease.