Title: Can Control Theory Beat the Stock Market?

Speaker: Jim Primbs, Systems Engineering, University of Texas at Dallas

Abstract: This talk describes a new line of research involving a model for stock market trading based on control theoretic considerations. In contrast to finance literature, no stochastic model for stock price variations is assumed. Instead, a classical static output feedback control law is used and robust performance is sought with respect to the uncertain price dynamics. We prove that in an idealized market setting, a trader employing our feedback based strategy can always expect to "win." Furthermore, we relate our strategy to commonly employed trend-following strategies, indicating that their popularity and success may be due to their implicit use of feedback loops. Finally, we address real-world implementation and back-testing of the controller using historical data.

Biosketch: James A. Primbs holds undergraduate degrees in Mathematics and Electrical Engineering from UC Davis, an MS degree in Electrical Engineering from Stanford, and a PhD in Control and Dynamical System from Caltech. From 2001-2012 he served as an Assistant and then a Consulting Associate Professor in the Management Science and Engineering department at Stanford University. He recently joined the Systems Engineering department at UT Dallas as an Associate Professor. He has won teaching awards at both the undergraduate and graduate level, given short courses to industry, and organized numerous conference tutorials and workshops on the application of control and systems methods to finance. He is active both in IEEE and in INFORMS where he is an officer in the Financial Services Section. He has also served as a consultant to Stanford University's endowment fund. His research interests involve the development of control and systems theory for finance.