

IAQF & Thalesians Seminar Series

Financial Applications of Machine Learning



A Talk by
Terry Benzschawel



Advancing the Field of Quantitative Finance Formerly the IAFE

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The International Association for Quantitative Finance (IAQF) is the not-for-profit, professional society dedicated to fostering the profession of quantitative finance by providing platforms to discuss cutting-edge and pivotal Issues in the field. Founded in 1992, the IAQF is composed of individual academics and practitioners from banks, broker dealers, hedge funds, pension funds, asset managers, technology firms, regulators, accounting, consulting and law firms, and universities across the globe.

Through frank discussions of current policy issues, sponsoring programs to educate the financial community and recognizing the outstanding achievements in the field, the IAQF acts as a beacon for the development of quantitative finance. Throughout its history, the IAQF's pre-eminent leadership has positioned us to respond with savvy to the evolving needs of the financial engineering community. The IAQF's programs- from our area-specific committees to our monthly panel discussions to the Financial Engineer of the Year Award - are designed to provide our membership with uniquely valuable activities to enhance their work in the field and opportunities to network and socialize with their colleagues.

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ABSTRACT

In this talk, I describe a variety of machine learning models that I have built and applied to problems in business and finance. I begin with an historical introduction to neural networks, including brief descriptions of the perceptron, and methods of gradient descent, backpropagation and regularization. I then describe single hidden-layer perceptrons built in the early 1990s to detect fraud on credit card portfolios, identify customers who will give up their credit cards, and later, for trading US Treasury bonds. I then describe recent work with deep learning networks that predict spread changes for corporate bonds, price moves from trade flows, and a natural language processing model that predicts market moves from sentiment data. Finally, I provide some thoughts on how artificial intelligence/machine learning is changing the fixed income trading business.

BIO

Terry Benzschawel has recently left a thirty-year career on Wall Street to start his own firm. Prior to that, Terry was a Managing Director in Citigroup's Institutional Clients Business. Terry headed the Quantitative Credit Trading group which developed quantitative tools and strategies for credit market trading and risk management, both for Citi's clients and for in-house applications.

Terry received a Ph.D. in Experimental Psychology from Indiana University (1980) and his B.A. (with Distinction) from the University of Wisconsin (1975). His Ph.D. thesis concerned development of a neural network model of the human visual system. Terry has done post-doctoral fellowships in Optometry at the University of California at Berkeley and in Ophthalmology at the Johns Hopkins University School of Medicine. He also was a visiting scientist at the IBM Thomas J. Watson Research Center prior to embarking on a career in finance. He currently serves on the steering committees of the Masters of Financial Engineering (MFE) Programs at the University of California at Berkeley and serves there as an Executive in Residence.