Title: Hidden Markov Models for Financial Economics

Nguyet Nguyen
Youngstown State University
ntnguyen01@ysu.edu

Abstract:
Hidden Markov Models (HMMs) are typically used to predict hidden regimes of observation data. Therefore they are used in many different areas such as speech recognition systems, computational molecular biology, and financial economic predictions.

In this talk we use HMMs for both single observation data and multiple observation data to predict regimes of some macro economics variables such as: Inflation (CPI), Economics Growth (GDP), Stock Market Index (S&P500) and Market Volatility (VIX). We use the variables to calibrate HMMs' parameters and then use HMMs with the obtained parameters to predict economics trends and stock prices. We also avoid overfitting by analyzing relationships between macro economics regimes and stock performance to make stock selections.

Keywords: hidden Markov models, hidden states, observations data, economics, regimes, probabilities, forecast, stocks, market.