BIOSTAT 2015

22nd International Scientific Symposium on Biometrics
Dubrovnik, Croatia, 28 June - 1 July 2015

20th SCHOOL OF BIOMETRICS

Lynne Billard
University of Georgia,
Department of Statistics
Athens, GA 30602, USA

http://www.stat.uga.edu/people/faculty/lynne-billard

Topic:

Multiple Sets of Multivariate Time Series

Abstract:

The focus will be on multiple (S) sets of multivariate (p) time series. In particular, it is frequently the case that there will be dependencies across the S sets of series, as well as across the p variables within each series. A key feature will be that the distinctiveness of these two sets of variables needs to be retained while simultaneously dependencies within and between the S sets need to be measured, along with the usual dependencies over time for time series. Therefore, vector time series (here of order S·p) are inappropriate. For example, it is reasonable to assume that adjacent pixels in an fMRI data set (from measurements of p different stimuli, say) are correlated, or meteorological data (measuring p different weather conditions such as temperature, moisture, pressure, …) for different cities can be correlated across nearby cities, or financial data for S different economic sectors, or network traffic, or communications; the list is long.

Initially, we will look at two approaches (canonical correlation analysis and principal component analysis) for clustering subsets of the S series. Then, we will look at how the data overall can be set up as a matrix time series model, and consider some properties of this new class of model.

Much of this research is done jointly with Yaser Samadi.