DSI Day Symposium
Fall '15 Agenda

November 19, 2015

9:30 - 10:00	Registration & Breakfast Opens in Grand Ballroom
10:00 - 10:25	Introduction by DSI Leadership
10:25 - 10:50	Keynote Presentation by Dr. Panos Pardolos, Distinguished Professor of Industrial and Systems Engineering
11:00 - 11:25	Breakout Session 1 (20 minute presentations, 5 minute Q&A)
11:30 - 11:55	Breakout Session 2 (20 minute presentations, 5 minute Q&A)
12:00 - 1:00	Lunch Social and Posters

Breakout Session 1
(3 talks)

Grand Ballroom - Dr. Eakta Jain, Computer and Information Sciences and Engineering

Computer Graphics, Visual Perception, and Cinematography in Algorithms for Re-Editing Widescreen Videos via Automatic Pans, Cuts, and Zooms

Today, there is a huge variety of digital displays that we can use to view videos: many of us spend more time on our phone screens than large displays. But movies are originally created for widescreen format. How would you present a widescreen movie on a small screen? How would a computer algorithm do this? We'll discuss how insights from computer graphics, visual perception, and cinematography come together to create algorithms for re-editing widescreen videos via automatic pans, cuts, and zooms.

Salon D - Dr. Charlotte Germain-Aubrey, Department of Biology

iDigBio: Using Museum Collections Specimen Data to Improve Biodiversity Measures

Florida hosts several biodiversity hotspots and is home to over 4,100 species of plants. Using, amongst other sources of data, herbarium collections, and took advantage of the historical data linked with the specimens to improve on the current methods for species distribution models. From those, we could recover plant communities at the landscape level, and project the effect of climate change on the Florida vegetation. Moreover, we reconstructed the regional phylogeny for those species for which we built models, investigating similar questions through the lens of the evolutionary history of the region. From those data, we were able to recover large-scale patterns of biodiversity well known to local experts. This gives us

hope that these methods and metrics will allow scientists and policy makers to take advantage of museum collections to explore patterns of biodiversity in lesser-known regions of the world.

Salon H - Andry Skripnikov, Department of Statistics

Estimation of Multi-Granger Network Causal Models

Network Granger causality focuses on estimating Granger causal effects from multivariate time series and it can be operationalized through Vector Autoregressive Models (VAR). The latter represent a popular class of time series models that has been widely used in applied econometrics and finance and more recently in biomedical applications. In this work, we discuss joint estimation and model selection issues of multiple Granger causal networks. We present a modeling framework for the setting where the same variables are measured on different entities (e.g. same set of economic activity variables for related countries). The framework involves the introduction of appropriate structural penalties on the transition matrices of the respective VAR models that link the underlying network Granger models. An ADMM algorithm is presented for joint estimation implementation and the model is evaluated on simulated data.

Breakout Session 2
(3 talks)

Grand Ballroom - Dr. Robert Guralnick, Florida Museum of Natural History

Salon D - David Harris, Department of Wildlife Ecology and Conservation

Salon H - Victoria Zdanovskaya, Department of Industrial and Systems Engineering

Value-at-Risk Support Vector Machines (VaR-SVMs): Mixed Integer Programming (MIP) Representations

SVMs is a widely used data classification technique. A class of Var-SVMs is known to be robust to the outliers in the training dataset. Unfortunately Var-SVM is a nonconvex optimization problem. We consider MIP representations of Var-SVM, that can be solved by standard Branch&Bound algorithm. We also consider different techniques that help to dramatically improve computational performance of such formulations.

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