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 Pardalos, 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. We used herbarium collections and other data sources including 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.

Salon H - Andrey 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).

Breakout Session 2
(3 talks)

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

The Map of Life: Data Sciences for Biogeography and Biodiversity

Given patterns of biodiversity today, and over deeper time, how will the changing environment over the next century affect biodiversity? How do we integrate knowledge about phylogenetics, traits, and geography to better predict biodiversity loss? Addressing these types of questions requires unprecedented access to data, as well as better mechanisms for processing and interpreting those data. New platforms and tools are needed along with a new set of skills that bridge between conceptual ecological, evolutionary frameworks and models, and cyberinfrastructure to handle datasets from hundreds of millions of records to billions. Map of Life is a platform that extends biogeography and biodiversity into a Big Data framework.

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

Simulating Realistic Species Composition With Nonlinear Stochastic Models

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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