

Connecting the Dots

Network Visualization Symposium at Harvard University

Friday, October 22, 2010

The Institute for Quantitative Social Science, Harvard University
1737 Cambridge Street, Cambridge, MA, 02138

Organizers

Samuel Arbesman, Postdoctoral Fellow, Harvard Medical School

Michael Barnett, MD Candidate, Harvard Medical School

Jukka-Pekka Onnela, Postdoctoral Fellow, Harvard Medical School

Supported by the Christakis Lab at Harvard Medical School, by IQSS, & by the National Institute on Aging

Program

9:30 AM *Registration*

10:00 AM *Opening Remarks*

10:15 AM **Keynote I: Ben Fry (Fathom)**

11:00 AM **SocioPatterns**
Wouter van Der Broeck, (ISI Foundation)

The SocioPatterns project developed an active-RFID based sociometric platform capable of sensing mutual proximity in a distributed, scalable fashion. This platform enables a large-scale, real-time assessment of the dynamics of person-to-person interaction network with a fine temporal and spatial granularity. The initial focus of this project was on empirical data collection in support of research on dynamic social interaction networks and infection dynamics. Various experiments also explored the potential of the platform for more service oriented applications, and artsience contexts. The SocioPatterns platform has been deployed in more than a dozen settings, ranging from conferences and trade-shows, over primary schools, long-term public exhibitions, artsience projects, and domestic settings.

11:25 AM **Visualizing Countrywide Traffic Dynamics**
Wen Dong (MIT)

It is often a challenge to reveal the human mobility patterns in multi-gigabyte vehicle tracking data spanning a whole country and many years. We address this problem through a Markov model of how people drive in the road network, and animations of road-traffic conditions on top of Google Maps. We welcome researchers to use our visualization tool set.

11:50 AM *Light Lunch (provided)*

- 12:50 PM **Keynote II: Alessandro Vespignani (Indiana University)**
- 1:35 PM **Network Visualization Using Processing**
Sergiy Nesterko (Harvard University)
- Network, or relational data are becoming of increasing interest to researchers in different disciplines, partly because related problems are very hard to solve due to complex structure of underlying datasets. It is well known that a picture is worth a thousand words, and especially for networks related problems, visualization has become an invaluable tool in gaining intuition that helps tackle them. As an example, we consider network visualization using Processing as applied to problems in respondent-driven sampling, which is a variant of link tracing process to explore social networks of hard-to-reach populations. We emphasize the role of a compelling visualization in a successful research endeavor and briefly describe how Processing can be used to make it.
- 2:00 PM **Analyzing Social Media Networks with NodeXL**
Ben Shneiderman (Univ. of Maryland, College Park)
- NodeXL is the free and open add-in for Excel 2007/2010 that supports network overview, discovery and exploration. Supported by Microsoft External Research for 3+ years, this effort has produced a game-changing software tool that enables students, researchers, and professional community managers to extract and download networks from email, Twitter, YouTube, Flickr, WWW, etc. Then they can compute network analytic metrics, filter out less relevant features, apply multiple layout algorithms, and produce compelling yet comprehensible displays that reveal actionable insights about complex social processes.
- 2:25 PM **FacetAtlas: Multifaceted Visualization for Rich-context Networks**
Yu-Ru Lin (Harvard University and Northeastern University)
- FacetAtlas is a multifaceted visualization technique for analyzing interconnected text documents. FacetAtlas combines search technology with advanced visual analytical tools to convey both global and local patterns simultaneously. The power of FacetAtlas is demonstrated through a case study that targets patient education in the health care domain.
- 2:50 PM *Coffee Break*
- 3:10 PM **TBA**
Edo Airoldi (Harvard University)
- 3:35 PM **Pathline: A Tool for Exploring Biological Data in the Context of Molecular Networks**
Miriah Meyer (Harvard University)
- Pathline is an interactive tool that visualizes the biologically interesting relationships between multiple molecular networks, the activity levels of multiple genes, and the evolutionary relatedness of multiple species. Working in close collaboration with a group of genomics scientists we designed Pathline around a

representation of a linearized network that provides appropriate topological information and supports the comparison of quantitative data. We validated the efficacy of Pathline to both confirm existing knowledge and discover new scientific insights through a series of case studies.

4:00 PM

Is Network Visualization Even Useful?

John Dila (*Innocentive*)

Our company, InnoCentive Inc. (innocentive.com) is an Open Innovation marketplace, which connects Seeker companies (that have tractable problems they have not been able to solve) with our Global Solver Community of experts, specialists, and generalists who sign up to solve tough, meaningful problems. As part of a website redesign, we wanted to update the way we graphically display data about our global Solver network. By "eating our own dog-food" we posted a challenge on our platform asking for solutions to how we can best visualize a selected data set about our global Solver population in order to drive traffic to our site and add value to customers and the business. We received 10 solutions and they are currently under evaluation. We will present our challenge process, the results of the visualization challenge, and how we plan to use them moving forward.

4:25 PM

Conference Closing Remarks

4:40 PM

Coffee & Pastries