



Department of Mathematics, Statistics and Computer Science

## *Mining and predicting complex human systems at scale*



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**1:00 p.m., Friday, January 26, 2018**

### **Abstract**

Decision-making processes regarding human behaviors take place in complex systems. What we eat or whether to exercise depends on many individual and environmental factors, which interact in nonlinear ways, and can vary tremendously across people and places. Understanding and influencing these behaviors is essential both to support individuals in managing their well-being, and to design interventions that improve the population's health. This talk will focus on the use of data science to support individuals and policymakers in making decisions in complex systems. The emphasis will be on understanding the key dynamics of these systems (via data mining), and to leverage this understanding to form predictions (via network- or agent-based models). The talk will conclude with current challenges, including big data (both as input and output of a model) and uncertainty.

Giabbanelli's research interests are in data science, where he develops techniques in data mining and simulation, and applies them to problems regarding human systems (most frequently health behaviors). He has published over 40 articles, and his edited volume *Advanced Data Analytics in Health* will appear this year with Springer. He is an associate editor of *BMC Medical Informatics & Decision Making*, as well as *Social Network Analysis and Mining*.

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Post-Colloquium refreshments served in Room 342 after 2:00 p.m.