BRIGHAM AND WOMEN'S HOSPITAL
HARVARD MEDICAL SCHOOL

181 Longwood Avenue
Boston, Massachusetts 02115-5804

Department of Medicine
Channing Division of Network Medicine

Channing Methods Seminar

April 30 (Tuesday), 2024, 11AM (ET)

MCP 5th-floor conference room & Zoom:
https://us02web.zoom.us/j/579497999?pwd=cHNlWHMzWUlFUUVJTG1EeVJmY05aQT09
Meeting ID: 579 497 999
Passcode: 844168

Sune Lehmann

Technical University of Denmark

Using sequences of life-events to predict human lives

Abstract: Here we represent human lives in a way that shares structural similarity to language, and we exploit this similarity to adapt natural language processing techniques to examine the evolution and predictability of human lives based on detailed event sequences. We do this by drawing on a comprehensive registry dataset, which is available for Denmark across several years, and that includes information about life-events related to health, education, occupation, income, address and working hours, recorded with day-to-day resolution. We create embeddings of life-events in a single vector space, showing that this embedding space is robust and highly structured. Our models allow us to predict diverse outcomes ranging from early mortality to personality nuances, outperforming state-of-the-art models by a wide margin. Using methods for interpreting deep learning models, we probe the algorithm to understand the factors that enable our predictions. Our framework allows researchers to discover potential mechanisms that impact life outcomes as well as the associated possibilities for personalized interventions.

Bio: *My work focuses on quantitative understanding of social systems based on massive data sets. A physicist by training, my research draws on approaches from the physics of complex systems, machine learning, and statistical analysis. I work on large-scale behavioral data and while my primary focus is on modeling complex networks, my research has made contributions on topics such as human mobility, sleep, academic performance, complex contagion, epidemic spreading, and behavior on twitter. I have served as a member of the task force established by the Danish government to model the COVID spread in Denmark.*

Hosted by Yang-Yu Liu