

Complex Models and Complex Data for the Social Sciences

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Abstract

Keyword:

Will the social sciences go through a computational revolution like the ones that happened in the sciences and engineering? For this revolution to begin, we need in addition to massive computing power: [1] massive data within the limits set by personal liberty and privacy; and [2] advances in theoretical tools to help connect disparate data sets with holistic models. In particular, it is through interactions between data and theory that simulations helped generate insights into difficult problems in the social sciences. In this talk, I will present two ongoing projects on building complex social models and collecting complex social data. In the first project, we are interested in the use of computational models to understand the problem of youth violence in Singapore, and to test the effectiveness of interventions. We start by examining youth delinquency in general, and building a simple complex agents network model based on Moffitt's theory. We show that Moffitt's dual taxonomy of adolescent-limited and life-course-persistent delinquency emerges automatically from simulations of this model, and also how transplanting a marginally life-course-persistent agent from the network it is found on to another network that has no life-course-persistent delinquency can make a world of difference to the agent in question. I then describe ongoing efforts to build and calibrate a much more sophisticated complex agents network model, whereby agents not

only imitate others in their social network neighborhood, but are also influenced by psychological and socio-economic factors. Finally, I will describe our serious game project for collecting massive social data on the opinions of Singapore residents on immigrants and foreign workers. I will specifically talk about the potential rewards of gamification as a research methodology for the social sciences, and the kind of challenges we face in developing our Facebook game Street Food Tycoon.