



LIP Seminar

Thursday, 17 September 11h30

Focusing the microscope: how we can use data to understand behavior

Joana Sá

(LIP/IST/IGC)

Individual decisions can have a large impact on society as a whole. This is obvious for political decisions, but still true for small, daily decisions made by common citizens. Individuals decide how to vote, whether to stay at home when they feel sick, to drive or to take the bus. In isolation, these individual decisions have a negligible social outcome, but collectively they determine the results of an election and the start of an epidemic. For many years, studying these processes was limited to observing the outcomes or to analyzing small samples. New data sources and data analysis tools have created a "macroscope" and made it possible to start studying the behavior of large numbers of individuals, enabling the emergence of large-scale quantitative social research. It has been argued that these tools will open a new era for research in complex systems and at the SPAC research group we are interested in using them to study decision-making, expecting that this deeper knowledge will lead to a better understanding of human nature, and to improved public decisions.

In the past, we have been focusing mainly on three types of problems, strongly dependent on both the behaviors of individuals (in what we call bottom-up collective processes), and of decision-makers (the top-down decisions). The first is related with what we usually identify as political debate and deliberation and we have computationally analyzed the past 40 years of debates in the Portuguese Parliament. The second is disease dynamics, of both infections and non-infectious diseases, and we try to improve nowcasting and forecasting of several diseases and reduce antibiotic over-prescription. The third is much more fundamental and it comes from the realization that the Digital Era is offering us a giant mirror, a macroscope, that will allow us to understand human behavior at a completely new scale. By using both social networks and the spread of fake news as case studies, we are trying to identify underlying principles, both mathematical and behavioral, that can be generalized to different contexts.

In parallel, and recognizing that these tools might also have a very negative impact on society, we try to raise public awareness of these risks and involve citizens in the definition of appropriate ethical guidelines and legislation.

During the talk I will present the group and briefly describe some of these past projects and offer examples of how we can use data science to study "social physics". At the end, I will present new ideas in distributed computing and how it can help us in privacy protection.

Location: Videoconference - Zoom

<https://indico.lip.pt/event/737/>

Connection details

URL: <https://videoconf-colibri.zoom.us/j/93118525564>

PIN: LIPseminar

Or by phone:

Dial: +351 308 810 988 (Portugal Toll) or +351 211 202 618 (Portugal Toll)

Meeting ID: 931 1852 5564

iPhone one-tap: 308810988,93118525564# or 211202618,93118525564#

PIN for phones: 9740003134