SLING Efficient algorithms for sustainable machine learning

July 18th, 2022, 3:00 p.m., Room 706, MaLGa Center - Dibris, via Dodecaneso 35, Genova.

Analysis and Learning

Mortality containment vs. economics opening: optimal policies in a SEIARD model

Abstract

We extend the classic approach SIR to a SEAIRD model with policy controls. A social planner's objective reflects the trade-off between mortality reduction and GDP, featuring its perception of the value of statistical life. We introduce realistic and drastic limitations to the control available to it. Within this setup, we explore the results of various control policies. We notably describe the joint dynamics of infection and economy in different contexts with unique or multiple confinement episodes. Compared to other approaches, our contributions are: i) to restrict the class of functions accessible to the social planner, and in particular to impose that they remain constant over some fixed periods; ii) to impose implementation frictions, e.g. a lag in their implementation; iii) to prove the existence of optimal strategies within this set of possible controls; iv) to exhibit a sudden change in optimal policy as the statistical value of life is raised, from laissez-faire to a sizeable lockdown level, indicating a possible reason for conflicting policy proposals. This is a joint work with Andrea Aspri from University of Milan and Alberto Gandolfi and Etienne Wasmer from New York University Abu Dhabi.

Speaker

Elena Beretta

New York University Abu Dhabi

Elena Beretta is currently a Clinical Professor at New York University Abu Dhabi, she previously was an Associate Professor at the Politecnico of Milan of Mathematical Analysis. She has taught in several Italian universities including "La Sapienza" in Rome, and the University of Florence, and conducted research in research centers and foreign universities including the Mathematical Sciences Research Institute in Berkeley, the Mittag-Leffler Institute in Stockholm, the Institute for Computational and Experimental Research in Mathematics at Brown University, the Schroedinger Institute in Wien, Ecole Normale Superieure in Paris and Rutgers University. She has directed several research projects, has been the organizer of several conferences, and has been invited as the plenary speaker at several international conferences. Her research interests focus mainly on the study of inverse problems for partial differential equations with applications to geophysics, seismology, medical imaging, and non-destructive testing of materials. Other more recent research topics include models for epidemics.

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