Targeted Dynamic Interventions in Networked Epidemic Models

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Epidemic spread models are playing an increasingly central role for understanding and policy making in the context of the COVID-19 pandemic. Many of these models consider homogeneous populations, thus failing to capture rich heterogeneities in terms of risk factors, vulnerabilities, economic participation, location, and social interactions. In this talk, we will present networked SIR models that capture groups of agents with different characteristics and interaction patterns. We will then discuss targeted dynamic interventions in terms of testing and lockdown policies that minimize spread of infection while also containing social and economic damages. Our focus will be on dynamic time-varying policies that adaptively adjust as a function of the infection level in the community.

Asuman Ozdaglar received the B.S. degree from the Middle East Technical University (1996), and the S.M. (1998) and Ph.D. (2003) degrees from the Massachusetts Institute of Technology. She’s the Mathworks Professor of Electrical Engineering and Computer Science in the EECS Department at the MIT. She’s the Department Head of EECS and the Deputy Dean of Academics in the Schwarzman College of Computing. Her research expertise includes optimization theory, distributed optimization and control, and network analysis. Her awards include a Microsoft fellowship, NSF Career award, 2008 Donald P. Eckman award of the American Automatic Control Council, Class of 1943 Career Development Chair, inaugural Steven and Renee Innovation Fellowship, and 2014 Spira teaching award.

Francesca Parise joined the School of Electrical and Computer Engineering at Cornell University as an assistant professor in July 2020. Before then, she was a postdoctoral researcher at the Laboratory for Information and Decision Systems at MIT. She defended her PhD at the Automatic Control Laboratory, ETH Zurich, Switzerland in 2016 and she received the B.Sc. and M.Sc. degrees in Information and Automation Engineering in 2010 and 2012, from the University of Padova, Italy, where she simultaneously attended the Gallilean School of Excellence. Francesca was recognized as an EECS rising star in 2017 and is the recipient of the Guglielmo Marin Award from the “Istituto Veneto di Scienze, Lettere ed Arti,” the SNSF Early Postdoc Fellowship, the SNSF Advanced Postdoc Fellowship, and the ETH Medal for her doctoral work.