Spring 2018 Seminar Series

AI For Societally Relevant Problems: Influence Maximization in an Uncertain World

Monday March 5th 2018

10:00am-11:00am – HEC 356

The potential of Artificial Intelligence to tackle challenging problems that afflict society is enormous, particularly in the areas of healthcare, conservation and public safety and security. Many problems in these domains involve harnessing social networks of under-served communities to enable positive change, e.g., using social networks of homeless youth to raise awareness about HIV (and other STDs). Unfortunately, most of these real-world problems are characterized by uncertainties about social network structure and influence models, and previous research in AI fails to sufficiently address these uncertainties, as they make several unrealistic simplifying assumptions for these domains. In this talk, I will describe my research on algorithmic interventions in social networks. In the first part of my talk, I will describe my work on developing new influence maximization algorithms which can handle various uncertainties in social network structure, influence models, etc., that commonly exist in real-world social networks. I will discuss how my algorithms utilize techniques from sequential planning problems and computational game theory to develop new kinds of algorithms in the sub-fields of multi-agent systems and reasoning under uncertainty. In the second part of my talk, I will discuss the real-world deployment of my algorithms to spread awareness about HIV among homeless youth in Los Angeles. This represents one of the first-ever deployments of computer science based influence maximization algorithms in this domain. I will discuss the challenges that I faced, and the lessons that can be gleaned for future deployment of AI systems. Finally, I will also talk about other kinds of societally relevant problems that I have worked on, e.g., raising grievances of low literate farmers to government agencies in emerging market countries, etc. All these problems illustrate the enormous potential of AI in addressing societally relevant problems.

Mr. Amulya Yadav

PhD Candidate in the Computer Science Department of the USC Viterbi School of Engineering

Amulya Yadav is a Ph.D. Candidate in the Computer Science Department of the USC Viterbi School of Engineering, where he is also a part of the USC Center for Artificial Intelligence in Society. His research interests include Artificial Intelligence, Multi-Agent Systems, Computational Game-Theory and Applied Machine Learning. His work in the field of Artificial Intelligence for Social Good focuses on developing theoretically grounded approaches to real-world problems that can have an impact in the field. His algorithms have been deployed in the real-world, particularly in the field of public health and social justice. Amulya is a recipient of the AAMAS 2016 Best Student Paper Award, the AAAI 2017 Best Video and Best Student Video Award, the IDEAS 2016 Most Visionary Paper Award, and the AAMAS 2017 Best Paper Award nomination. His work has also been highlighted by Mashable.com as one of 26 incredible innovations that improved the world in 2015. He was also awarded the Best Research Assistant Award at USC in 2016.

Hosted by: Gita Sukthankar