

Abstract

The scope of the research presented in this thesis is fairly broad, touching upon areas like social network analysis, information and behavioral contagion models, and social data science. As the world becomes increasingly digitalized, it becomes crucial to better understand interactions in the digital sphere.

The proliferation of online communication allows interaction between people with more diverse backgrounds more varied areas of knowledge than before. However while increased digitalization carries the potential for an explosion of diversity in communication, that is far from the only conceivable consequence. The same diversity offers anyone online a multitude of different communities and sources of information. This carries the risk of individuals choosing disproportionately often to connect to individuals that are similar to themselves, and to consume exclusively information which supports their preexisting convictions.

Fortunately fields such as network science, computational social science, and machine learning are developing rapidly, and an increasing amount of interest is being taken in understanding online interactions. The common theme for the research on which this thesis builds, is a preoccupation with the aforementioned aspects of online behavior. The research includes work on quantitative modeling of information flows in social systems, attention dynamics/economics models, techniques for analysis of polarized discourse/echo chambers, and the influence of language on collective behavior.