KNOW YOUR NETWORK: LEARNING SOCIAL NETWORKS ANALYSIS THROUGH MEANINGFUL MANIPULATION WITH NETLOGO

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Abstract
This workshop will be a hands-on introduction to using NetLogo and its recently released networks extension as a tool to explore the social network data we create every day. Using data from Facebook, we will design, construct, and explore network models to make sense of the sometimes counter-intuitive methods of Social Network Analysis (SNA). The goal of this workshop is two fold: (1) to provide a Constructionist introduction to SNA; (2) to use these methods and tools to better make sense our own networked lives.

Keywords NetLogo, Social Network Analysis, Complex Systems

Over the last decade, our lives have become increasingly networked – with online platforms mapping not only our social (Facebook, Google+) and professional (LinkedIn, Academia.edu) lives, but also a vast array of aspects of our personal lives from the books we read (Goodreads) to the places we go (Foursquare), even when and where we jog (Athlinks), and what we knit (Ravelery). With the right tools, this data can provide a powerful resource for understanding, exploring, and reflecting on the nature and importance of the networks we participate in. Further, these networks can act as a productive source of knowledge for learning about Social Networks Analysis. In this workshop we introduce participants to NetLogo's [1] newly released Networks Extension and provide an introduction to social network analysis by guiding participants through an exploration of their own Facebook networks.

Since its emergence as a field, the study of networks, and complex systems more broadly, has become as a major area of research with broad application across disciplines [2], [3], with some going so far as to argue that the study of complex systems constitute an entirely new, fundamental branch of science [4]. Developments in the field of network sciences and complex systems have yielded new insights and an explanatory language to describe everyday phenomena such as traffic patterns [5], movements of crowds [6], and classroom discourse [7]. Due the their broad applicability and explanatory power, complex systems have the potential to unify often disparate subjects and provide cognitively powerful cross-domain connections [8]. Despite this ubiquity, research has found that complex systems are generally difficult for people to learn [9], [10], [11]. To address this challenge, new educational tools are emerging that make the study of complex systems and network sciences more accessible and personal for learners. The idea that learners build on their existing knowledge is widely accepted by education researchers [12], and many scholars have argued that we should design learning activities to include prior knowledge and personally meaningful experiences [13], [14], [15]. This approach has been applied with success in education across a variety of domains include mathematics [16], literature [17], and computer science [18], [19]. We see potential in applying this approach to learning about Social Networks Analysis.

In this workshop we will be using NetLogo, one of the most widely used agent-based modeling languages. NetLogo is used in educational settings ranging from middle schools to graduate programs, and provides learners with a "low threshold, high ceiling" environment for modeling complex systems in a wide range of domains [20]. The Networks extension allows users to easily import their own social network data into NetLogo, visualize it, and calculate standard network measures. Additionally, NetLogo enables learners to explore their networks by providing a language and toolset to dynamically manipulate and experiment with their network. This interaction allows users to become immersed in the network, supporting both a macro view of the network as well as a node-centric perspective, and engenders an understanding of the power and utility of network representations. By introducing people to constructionist tools that enable them to construct, visualize, and manipulate external representations of their own social networks, and to use that as a starting point to think about the networked lives they live, our hope is empower people to take advantage of this exciting, and increasingly important field.

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