ABSTRACT

ABSTRACT: Network science is an interdisciplinary endeavor, with methods and applications drawn from across the natural, social, and information sciences. In addition to theoretical developments, electronic databases currently provide detailed records of human communication and interaction patterns, offering novel avenues to map and explore the structure of social networks. I will talk about the structure of a social network based on the cell phone communication patterns of millions of individuals, and what implications it has for diffusion processes on social networks. I will also discuss the algorithmic detection of tightly connected groups of nodes in networks, a prominent problem in network science known as community detection. After introducing the theoretical framework, I will demonstrate how the introduced multi-slice method can be used to detect community structure in a general setting encompassing networks that evolve over time, have multiple types of links, and exhibit structure at multiple scales.