

Unveiling human interactions

Approaches and techniques toward the discovery and
representation of interactions in networks

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2022

What does it mean to unveil a network of interactions? In this dissertation, we will enrich the field of network theory by studying innovative approaches and ideas to reconstruct missing elements and connections in networks. Starting from theoretical approaches and methods to infer uncaptured links and nodes, we will contribute with our probabilistic techniques. We will implement state-of-the-art analysis on big data extracted from social networks to discover unexpected connections in the opinion dynamics of a population in relation to epidemiological events. Finally, open-source software will be developed to perform intuitive and affordable experiments about face-to-face interactions, a field of research almost untapped. Guiding us in this journey, there will be the common thread of network reconstruction to unveil human interactions at different levels of the scientific process.

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