Towards Explainable Complex Network Analysis

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Abstract

Over the past decades, the study of complex interaction networks has emerged as a prominent research direction. Examples of complex networks include interactions through social media, co-authorships between researchers and connections of smart devices [5]. Social network analysis is concerned with mining structures and patterns in these novel and complex networks [6]. Moreover, with the emergence of Internet of Things as well as ubiquitous devices, we have access to multi-modal social interaction datasets which can be modeled as networks. The analysis and mining of social interaction patterns and their dynamics, e.g., [1] is an important task. In particular, it also requires appropriate explanation-aware techniques e.g. for increasing the acceptance of the patterns and their evaluation [4]. The large resulting set of interesting patterns that the user needs to assess, for example, requires further exploration and interpretation [2].

We outline and discuss concepts of explicative data mining in the context of complex network analysis, relating to different kinds and goals of explanations [7,4]. Moreover, we present explanation examples on social interaction networks [3] and we conclude with first results on the explainable analysis of a real-world social interaction network in the context of a student career day.

References