

Tractable Interesting Pattern Mining in Large Networks

Jan Ramon

University of Leuven – INRIA, Leuven, Belgium

Abstract. Pattern mining is an important data mining task. While the simplest setting, itemset mining, has been thoroughly studied real-world data is getting increasingly complex and network structured, e.g. in the context of social networks, economic networks, traffic networks, administrative networks, chemical interaction networks and biological regulatory networks.

This presentation will first provide an overview of graph pattern mining work, and will then discuss two important questions. First, what is an interesting concept, and can we obtain suitable mathematical properties to order concepts in some way, obtaining a lattice or other exploitable structure?

Second, how can we extract collections of interesting patterns from network-structured data in a computationally tractable way? In the case of graphs, having a lattice on the class of patterns turns out to be insufficient for computational tractability. We will discuss difficulties related to pattern matching and related to enumeration, and additional difficulties arising when considering condensed pattern mining variants.