

Preface

The advent of large-scale online social networks, web services and systems that are inherently social, and our unprecedented ability to capture “big” meta-data about entities in countless systems have led to a surge of recent developments to discover the **roles** of entities in networks by sociologists, mathematicians, statisticians, and computer scientists. This monograph presents an overview of network role mining and analysis techniques. It organizes methods into five classes, representing methods of varying computational sophistication and interpretability. Techniques within each class are presented with an eye towards their actual implementation in computer algorithms and systems. The monograph also discusses the broad characteristics of methods in each class, enabling high-level comparisons that guide practitioners toward choosing the appropriate technique for a given analysis task. The monograph targets researchers and practitioners with little to no background in network role mining, those with experience in a limited number of methods, or those that feel they have just a narrow perspective of this kind of network analytics.

The structure and components of almost any complex system can be examined from the perspective of the roles its components play. This monograph will serve as a guidepost for computational social scientists, computer scientists, and statisticians to aid in their understanding of these methods, to find the right kind of role analysis to be used in their problem of interest, and to inspire new research directions in this important field.

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