Petter Holme
Jari Saramäki *Editors*

Temporal Network Theory

Springer

Visualisation of Structure and Processes on Temporal Networks

- Claudio D. G. Linhares,
- Jean R. Ponciano,
- Jose Gustavo S. Paiva,
- Bruno A. N. Travençolo &
- Luis E. C. Rocha
- Chapter
- First Online: 30 October 2019
- **1535** Accesses
- **6** Citations

Abstract

The temporal dimension increases the complexity of network models but also provides more detailed information about the sequence of connections between nodes allowing a more detailed mapping of processes taking place on the network. The visualisation of such evolving structures thus permits faster identification of non-trivial activity patterns and provides insights about the mechanisms driving the dynamics on and of networks. In this chapter, we introduce key concepts and discuss visualisation methods of temporal networks based on 2D layouts where nodes correspond to horizontal lines with circles to represent active nodes and vertical edges connecting those active nodes at given times. We introduce and discuss algorithms to re-arrange nodes and edges to reduce visual clutter, layouts to highlight node and edge activity, and visualise dynamic processes on temporal networks. We illustrate the methods using real-world temporal network data of face-to-face human contacts and simulated random walk and infection dynamics.

Keywords

- **Network visualisation**
- **Information visualisation**
- **Edge overlap**
- **Visual clutter**
- **Epidemics**
- **Random W**