Knowledge Discovery from Graphs
(Invited Talk)

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Abstract. Knowledge discovery is the process of discovering useful and previously unknown knowledge by analyzing large databases. Knowledge discovery is also sometimes called "data mining" or "applied machine learning." A new generation of knowledge discovery tools are beginning to address data that can be expressed as large graphs. Example applications include fraud detection in telecommunication networks and classifying Web pages based on hyperlink structure. These new technologies for knowledge discovery are becoming increasingly relevant to graph drawing. Specifically, graph drawing can aid the process of knowledge discovery by providing visualizations that reveal useful patterns in the data. Conversely, knowledge discovery can provide guidance for graph drawing by identifying recurring substructures or by classifying nodes into distinct types. Attempts to exploit the synergy between the two fields raises interesting new research questions. How should knowledge about a domain affect the drawing of graphs about that domain? What types of knowledge are most easily discovered using visualization, as opposed to automated statistical algorithms? These questions were posed in the context of several examples of knowledge discovery applied to large graphical data sets.

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