

Diplomarbeitspräsentation



Interactive Visual Exploration Interface for Large Bipartite Networks

Masterstudium: Visual Computing

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Motivation & Problem

We introduce **BiCFlows**, a novel interactive visualization approach to explore **large** bipartite graphs. We were motivated by the *Media Transparency Database*, a public database established by the Austrian government to provide information about governmental advertising and Current approaches that deal with the visualization of the Media Transparency Database are limited by the fact that they do not offer a sufficient overview of the whole dataset. Other existing approaches that are not particularly designed for the Media Transparency Database, but

Methodology

Aggregation is an often used concept in reducing the amount of data by grouping together similar data objects. Since we are dealing with bipartite graphs in our approach, we use the concept of biclustering.

Biclustering is a technique that simultaneously clusters rows and columns of a biadjancecy matrix to form groups of similar entities.



We use biclustering to establish a **hierarchical structure** within the data that can be interactively explored by the user. The hierarchy is established by allowing the user to subcluster existing biclusters.



For our visual encoding, we used **two parallel lists of nodes**, which are grouped according to the biclusters. The thickness of an edge connecting two nodes is defined by its edge weight.

Evaluation

User Study:

In our insight-based user study, we compared BiCFlows to an unclustered approach, using the Media Transparency Database as input data.

The main research question were: **Q1:** Will users gain more insights when using BiCFlows? **Q2:** Will BiCFlows be perceived as more complex?

Case Study:

We also tested BiCFlows with different data sets that all hold the characteristics of a weighted bipartite graph.

- * Media Transparency Database
- * Author-Keyword IEEE Publication Database
- * Movie-Viewer Database





