

# Workshop on Reduction and Visualization Techniques for Analyzing Large and Complex Systems

2006

## **Archiving of public and private graphs using GraphDB (Sascha Meinert)**

In the field of graph/network algorithms there is an increasing interest to not only share research results but also to exchange the underlying graph/network data. It becomes more and more important to preserve and provide both data and results, to aid researchers in understanding and improving these findings.

We introduce GraphDB an archive- and exchange system for graphs. The system allows users to dynamically create meta data, graphs and graph groups. They can be associated with each other, the generated structure can be queried and the resulting graphs are downloadable.

## **visone - being one step ahead (Michael Baur)**

visone is a long-term research project, in which models and algorithms to integrate and advance the analysis and visualization of social networks are being developed. An important part of visone is the design and implementation of a software tool intended for research and teaching in social network analysis. It is specifically designed to allow experts and novices alike to apply innovative and advanced visual methods with ease and accuracy.

## **Community Quality Measures (Zoran Nikoloski)**

We review the definition of modularity and describe some recent results on its value for d-regular graphs (specifically, 4-regular grids). We then present another community quality measure, called inundation, which is based on the definition of a community in a weak sense. Some results for inundation of d-regular graphs will also be discussed.

## **Comparing Graph Clusterings (Daniel Delling)**

One way to compare graph clusterings is using a function that indicates two completely different clusterings with value one and same clusterings with zero. Existing functions only use the partition of nodes and ignore the edges of the graphs to calculate the distance. It can be shown that this is a disadvantage even when comparing clusterings on the same graph. The talk will give an overview over existing solutions and disadvantages of them. Furthermore a new approach will be presented.

## **Analysis of Overlay-Underlay Topology Correlation using Visualization (Marco Gaertler)**

Taking the physical Internet at the Autonomous System (AS) level as an instance of a complex network, and Gnutella as a popular peer-to-peer application running on top of it, we investigated the correlation of overlay networks with their underlying topology using visualization. We find that while overlay networks create arbitrary topologies, they differ from randomly generated networks, and there is a correlation with the underlying network. In addition, we successfully validated the applicability of our visualization technique for AS topologies by comparing Routeviews data sets with DIMES data sets, and by analyzing the temporal evolution in the Routeviews data sets.

## **Halfmoon - A New Paradigm for Complex Network Visualization (Robert Görke)**

We propose a new layout paradigm for drawing a nested decomposition of a large network. The visualization supports the recognition of abstract features of the decomposition, while drawing all elements. In order to support the visual analysis that focuses on the dependencies of the individual parts of the decomposition, we use an annulus as the general underlying shape. This method has been evaluated using real world data and offers surprising readability.