

Workshop: Reduction and Visualization Techniques for Analyzing Large and Complex Systems

General Information

Date: March 13/14, 2006

Place: Universität Karlsruhe (TH)

Chair: Dorothea Wagner

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WWW: <http://i11www.ira.uka.de/algo/workshops/redvis06/>

Registration: until February 26, 2006

Scope

The main focus of this workshop is to share and distribute our knowledge about reduction and visualization techniques that can be used to enhance the analysis of large and complex networks.

Although most complex systems share certain characteristics, like having a power-law degree distribution or a large clustering coefficient, their inherent structure varies a lot. For example, the network of the Autonomous Systems, which models an abstracted version of the physical Internet, is organized hierarchically, in contrast to the Webgraph being defined by pages in the WWW and their hyperlink structure, which has a community structure. Thus, techniques that were developed for the Webgraph and are based on structural properties need not necessarily produce meaningful results for the network of Autonomous Systems. Since reduction and visualization techniques are core tools for analyzing and exploring complex systems, this leads to the problem of finding suitable methods for given networks.

Reduction techniques mainly serve one of the following aspects: cleaning or filtering irrelevant and noisy elements, restricting to specific parts of interest, or abstracting by replacing groups with simple structures. Since these aspects are relevant at different stages of an analysis, a successful evaluation depends on the combination. Similar to reduction techniques, visualization can be used to uncover intrinsic patterns and to implicitly simplify

networks. More precisely, layout techniques have been successfully applied to network analysis, i. e., to compare real and generated networks or to reveal global structures. Still, the interaction between reduction techniques and visualization is not fully understood or exploited.

In this workshop, we want to provide the possibility to exchange information about reduction and visualization techniques as well as their combinations. More precisely, we want to collect, share, and distribute practical and theoretical results, like (successful) applications, proofs of intractability, approximation guarantees, provable properties, and heuristics for fast computations. In addition, we welcome open problems or requests for suitable reduction techniques, or proper (graphical) representations to be applied in the analysis of specific task in the context of large and complex networks.