Pajek

Tool presentation
Introduction

- Developed by V. Batagelj and A. Mrvar
  - Department of Mathematics, Faculty of mathematics and physics, University of Ljubljana

- Software tool for network analysis:
  - Social networks
  - World wide web
  - Other networks
Social network analysis

- Main goal is *detecting* and *interpreting* patterns of social ties among actors
  - Cohesion: measures of cohesion
  - Brokerage: centrality, bridges
  - Ranking
  - Etc.

- De Nooy, Mrvar, Batagelj: *Exploratory Social Network Analysis with Pajek*
Example

Network of emails
- node: person
- edge: sent email
- edge thickness: number of emails
Example

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Example
Other examples

- Trade ties between countries
- Football player transfers between countries
- Web site popularity
- Interlocking directorates (who sits on boards of several companies)
- Etc.
Running Pajek

- Runs on Windows platforms (also on Linux with wine emulator)
- Download tool from website:
  - http://vlado.fmf.uni-lj.si/pub/networks/pajek/
  - Tool
  - Documentation
  - Examples (datasets, graphs etc.)
- Download and run pajek117.exe or pajek.be.exe (book edition)
Data preparation

- Input is network consisted of set of:
  - Vertices
  - Arcs (directed edges)
  - Edges (undirected edges)
- Example in *.net format
- There are some other formats we will not use
Input example

*Vertices 3
1 "Doc1" 0.0 0.0 0.0 ic Green bc Brown
2 "Doc2" 0.0 0.0 0.0 ic Green bc Brown
3 "Doc3" 0.0 0.0 0.0 ic Green bc Brown

*Arcts
1 2 3 c Green
2 3 5 c Black

*Edges
1 3 4 c Green
Pajek layout
Basic Pajek concepts

- **Network** is set of vertices, arcs and edges
- **Partition** of network – classification of the vertices, such that each vertex is assigned to exactly one class
- **Permutation** of a network is a renumbering of its vertices
- **Vector** assigns a numerical value to each vertex in the network
Pajek layout
Starting points
Lost?
Get familiar with Pajek

- Download and install software
- Download and try some examples
- Try some visualizations, layouts
- Get comfortable with data preparation (typing, Excel, sql, xslt, ?)
Some other links

Pajek:
● [http://iv.slis.indiana.edu/lm/lm-pajek.html](http://iv.slis.indiana.edu/lm/lm-pajek.html)

Social Network Analysis:

Network Visualization:
The task

ILPnet2
What is ILPnet2

- Consisting of 37 universities and research institutes
- Successor of ILPnet (1993-1996)
- [http://www.cs.bris.ac.uk/~ILPnet2/](http://www.cs.bris.ac.uk/~ILPnet2/)
- Focus on ILPnet2 library
Setting

- Library consists of papers and books
- The papers and the books were written by people
- Authors collaborate
- Library covers different topics within ILP
- Topics and collaborations evolve with time
You walk through the door into an ILP world and some questions rise?

- Who are the most important authors in the area?
- Which topic is hot, which is not?
- Are there any closed groups of authors?
- Is there any person among most of these groups?
- Is this the same person also very important?
Problem

- Is there hierarchy of topics?
- What were the glory days of some topics?
- Who switched the most topics?

- Three aspects (can be combined)
  - Social
  - Content
  - Time
The data

The ILPnet2 on-line library

Welcome to the on-line library of ILPnet2. This library contains ILP-related references from 1970 onwards. It is based on the ILP-bibliography over 1970-1996 that was compiled by ILPnet. A number of references over 1997 and 1998 were added courtesy of the ILP2 project. This live web-database was constructed from those bibtext files and is maintained by ILPnet2. It currently contains more than 1,000 entries by well over 500 different authors. Many, more recent entries include an abstract and a link to an on-line version of the paper. Thanks are due to Herb Muller for providing the necessary software, and to Elias Gyftodimos for maintenance.

We are currently working on a new version of the library with added functionality. This new version will then be extended with post-2003 references.
Watch this space!

You can access the library by

- Author
- Keyword
- Type of publication

BibTeX downloads

- complete BibTeX file
- Gripped BibTeX
- strings used in BibTeX file

ILPnet2 librarian, ilpnet2-lib@cs.bris.ac.uk. Last modified on Wednesday 17 December 2003 at 15:02. © 2003 ILPnet2
The data – authors (482)

Publications, sorted by author

Please note that for technical reasons some of these lists may be incomplete. You may want to perform a global search to find more publications.

- H. Ade
- P. Adriaans
- D.W. Aha
- K. Akama
- P. Albert
- Z. Alexin
- K.M. Ali
- C. Alonso
- J.A. Alonso-Jimenez
- E. Alphons
- J. Alvarez
The data – keywords (31)

Publications, sorted by keyword

Please note that for technical reasons some of these lists may be incomplete. You may want to perform a global search to find more publications.

- Abduction
- Bottom Up Induction
- Data Mining
- Declarative Bias
- Deductive Databases
- Descriptive Induction
- Function Learning
- Genetic Algorithms
- Graphs
- Heuristics
- Higher-Order Logic
The data – publications (?)

ILP publications in 2000

This is the list of all publications in the ILPnet2 on-line library that were published in 2000. The title of the article is a link to the full reference, including — if provided by the author — abstract and URL. It also allows easy access to related publications.

Bibtex file for 2000

- Svetla Rostcheva. *Least Generalization under Relative Implication*. In Stefano A. Ceri and Danial Dobre, editors, *Artificial...*
Problems with Constraints: From Theory to Programming


Abstract

This book provides a detailed overview of Constraint Satisfaction Problems (CSP) and Constraint Logic Programming (CLP) as a tool for solving them. The book has 4 main parts. It starts with definition and examples (with finite domains on one side and infinite domains on the other) of CSPs. Next part of the book describes a lot of algorithms for solving CSPs. Third part explains basic principles of CLP in general and ECLiPSe programming language in particular. Finally, last part of the book gives a couple of CSPs (academic as well as real world) with detailed description how to solve them using CLP on example of ECLiPSe language.

BibTeX entry.

Other publications
The data – external

Additional information about collaboration and reputation can be obtained from:

- Google Scholar (http://scholar.google.com)
- Citeseer (http://citeseer.ist.psu.edu/)
- Web of Science (http://wos.izum.si)