



Large
networks

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Pajek

Expectations

References

Analysis and Visualization of Large Networks

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Pajek – Analysis and visualization of large networks

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In 1996 we started to develop program Pajek for analysis and visualization of large networks.

It is mainly used for network visualizations, but it contains also several powerful and fast tools for analysis of very large networks. For example:

- pattern searching;
- search path count weights in acyclic networks;
- 3-rings and 4-rings weights;
- cores and generalized cores;
- line/vertex cuts and islands;
- network multiplication (analysis of two mode networks);
- (p, q) -cores;
- hierarchical clustering with relational constraint.



Marriages among relatives in Ragusa noble families from 12th to 16th century ($n = 5999$)

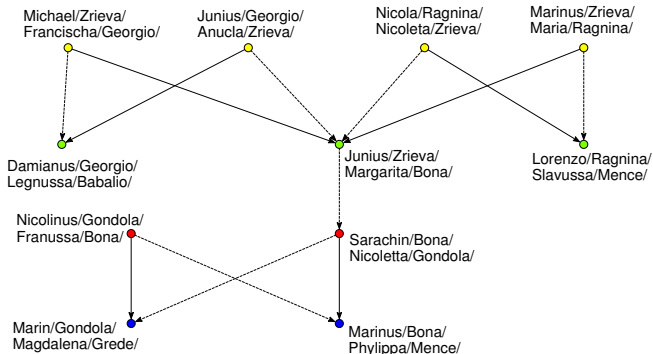
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solid arc – is a son of; dotted arc – is a daughter of.

In all three patterns a brother and a sister from one family found their partners in the same other family.



Cut for SPC weights at level 0.007 in SOM (self-organizing maps) bibliography

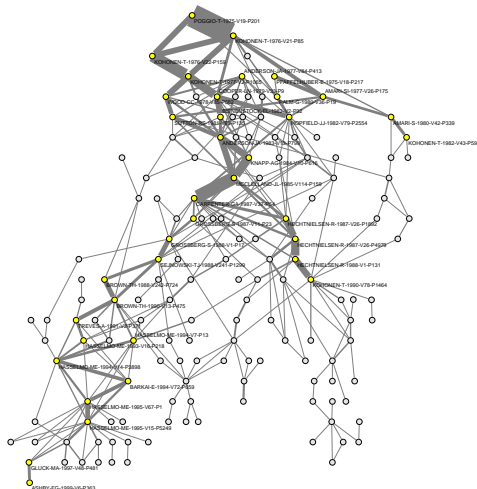
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$n = 4470$, $m = 12731$



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Islands – The Edinburgh Associative Thesaurus

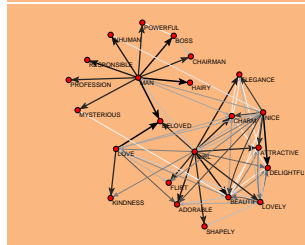
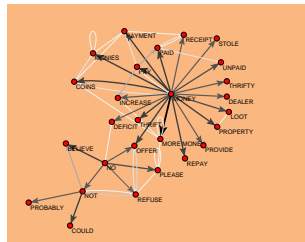
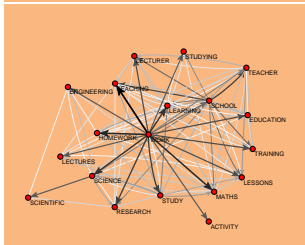
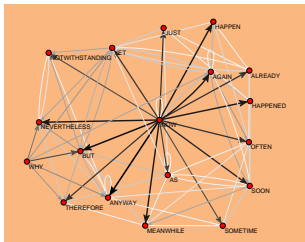
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$n = 23219$, $m = 325624$, transitivity weight

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Ordinary 10-core in Computational Geometry collaboration network

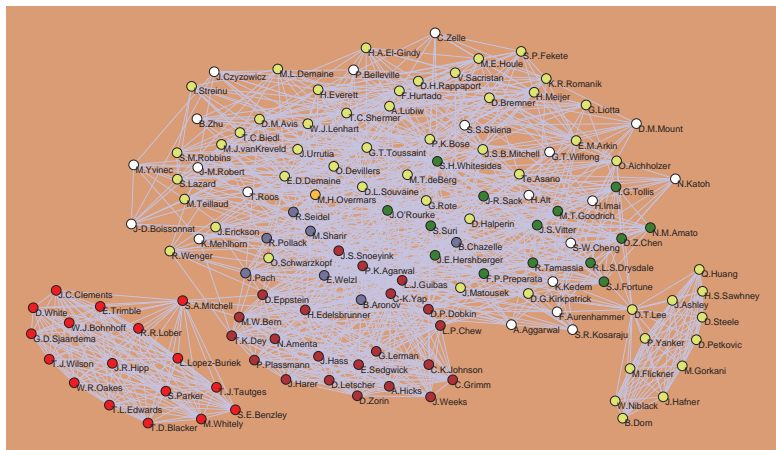
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The figure presents the cores of orders 10 to 21 in the collaboration network ($n = 7343$, $m = 11898$) for the field of Computational geometry – two authors are linked iff they wrote a paper together. The weight of the edge equals to the number of joint papers.



p_5 -core at level 46 in Computational Geometry collaboration network

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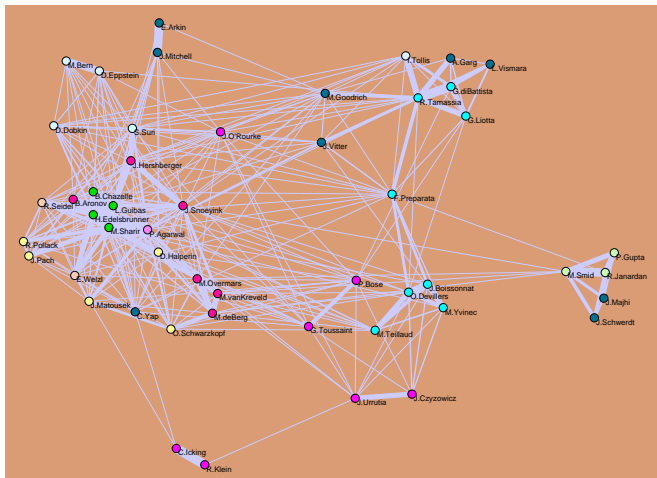


Figure presents the p_5 -core at level 46 of the collaboration network (7343 vertices, 11898 edges, edge weight counts the number of common works) in the field of computational geometry. Note, for example, that R. Klein (lower left) has in-core degree only 2, but its in-core sum of weights is at least 46 – he wrote most of his papers with C. Icking. See [paper](#).



Clustering with relational constraint/maximum: US counties $n = 3111$, $t = 200$

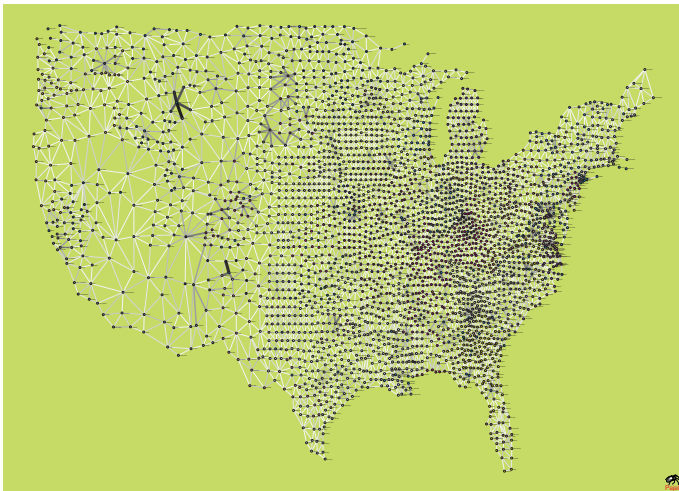
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US Census 2000: V1 – Area, V2 – Population, V47 – Percent of White, V126 – Household income, V125 – Educational attainment 1990; standardized.



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To see:

- what are you doing?
- can Pajek be (made) useful for your community?



References I





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References II






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References III







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<http://vlado.fmf.uni-lj.si/pub/networks/doc/seminar/08391.pdf>