

Scientific Modeling Computer Laboratory

Project: Time Evolving Networks

Second Presentation

by: Ádám Gergely Szabó

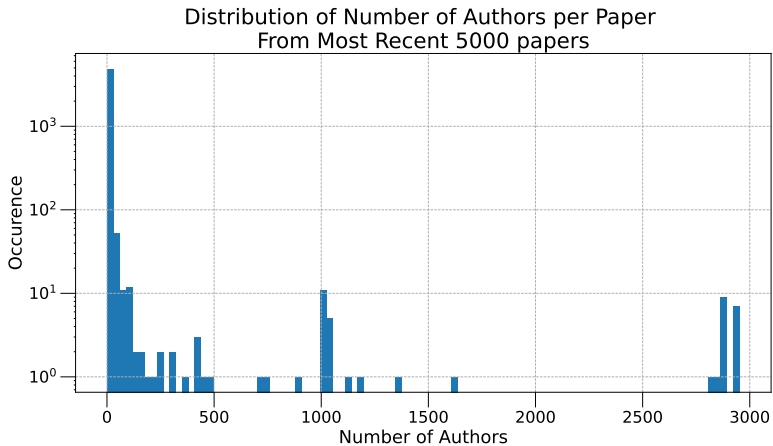
Supervisors:
Péter Pollner & Gergely Palla

2022, Spring Semester

Previously

- ▶ What is MTMT?
Hungarian Repository of Scientific Works
- ▶ How to acquire data?
ReST API Queries
- ▶ What part of the data is needed?
Authors for a given publication

Previously



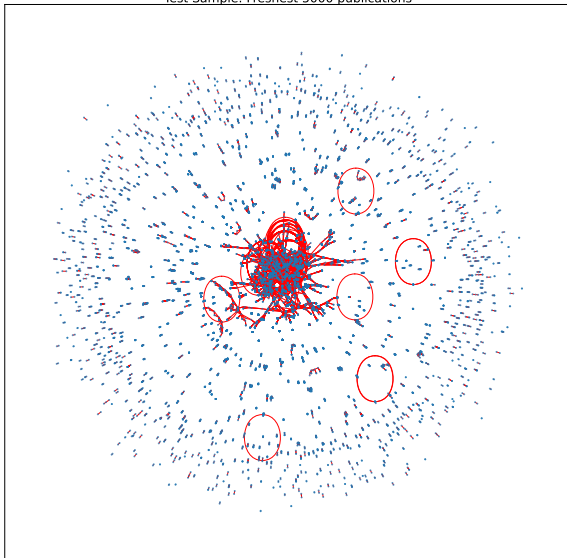
Drawing The Network

Problem with drawing the network:

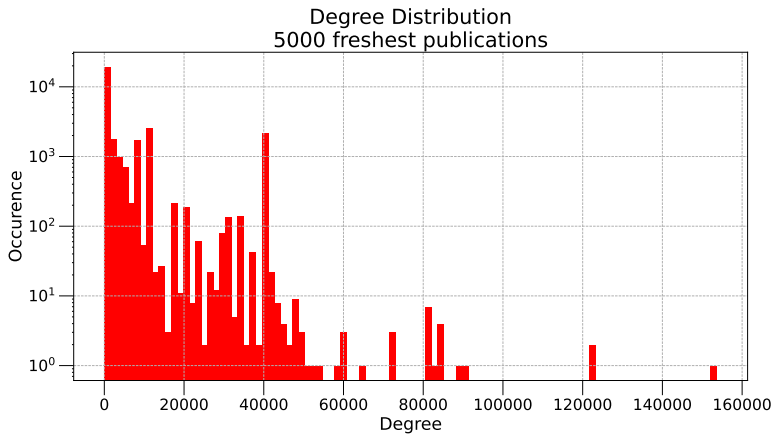
- ▶ It has many connections (around 90 million)
- ▶ Most specialized software/libraries cannot handle that many edges
- ▶ Cut off most happen: What to use and what is the limit?

Drawing The Network

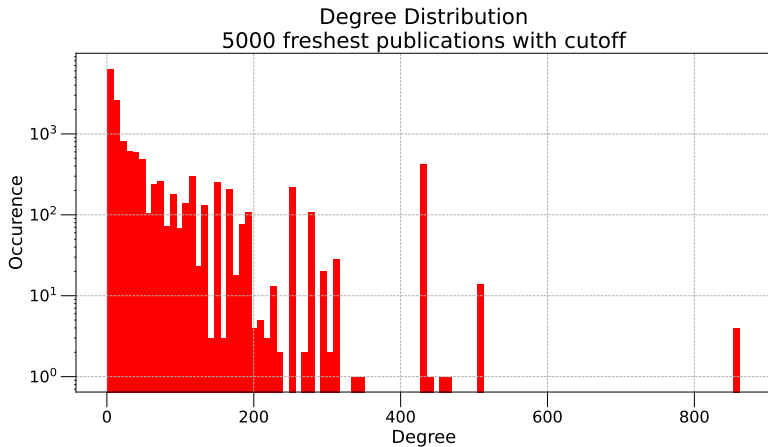
Test Sample: Freshest 5000 publications



Effects of the cutoff



Effects of the cutoff



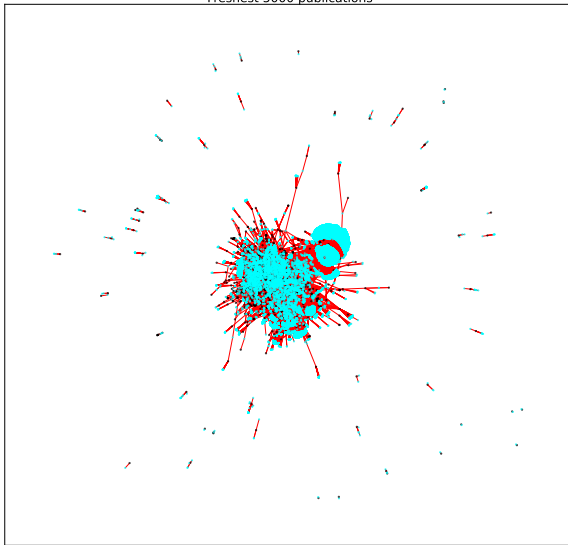
Other Networks

Is this the only network that could be created from the available data?

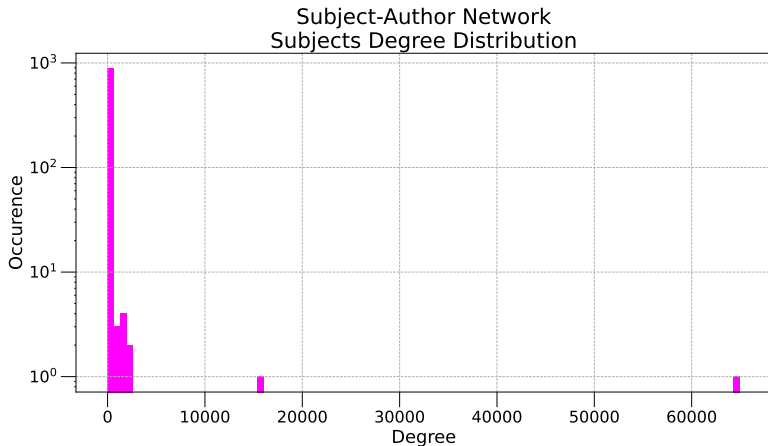
- ▶ Connecting collaborating authors is not the only option we have
- ▶ The publications connect collaborating authors together
→ Other fields of publications for bipartite networks

Subject-Author Network

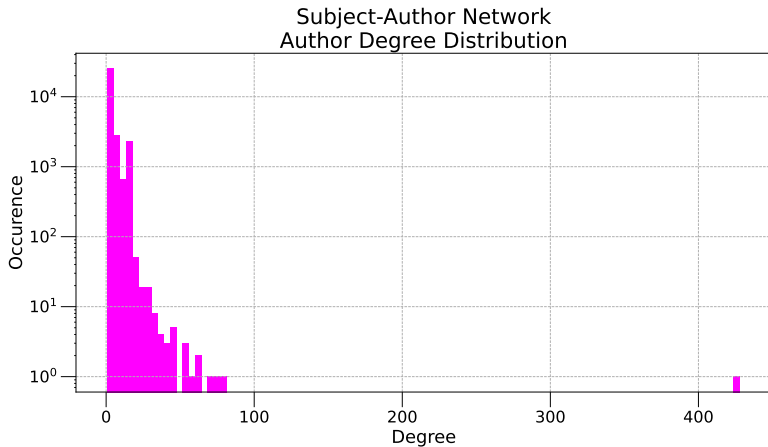
Subject-Author Network from Sample:
Freshest 5000 publications



Subject-Author Network



Subject-Author Network



In the Future

- ▶ More indicators to see different attributes of the networks
- ▶ Time evolving networks and animations
- ▶ Progress in further goals in the project

References

- [1] Albert-László Barabási. "Network Science". In: <http://networksciencebook.com> (2012).
- [2] Aric A. Hagberg, Daniel A. Schult, and Pieter J. Swart. "*Exploring network structure, dynamics, and function using NetworkX, in Proceedings of the 7th Python in Science Conference (SciPy 2008)*". 2008.

Thank you for your attention!