

1.022 - Introduction to Network Models

Useful resources

The idea of this document is to gather useful resources for your learning experience. Here you will find other network-related courses with material available online as well as online network data repositories. For resources about Python and networkx, please check the document specially dedicated to that.

1 Network courses

These are existing network courses that we found useful when creating the material for 1.022. Indeed, parts of the lectures, homework, and final project were taken from/inspired by these courses and we want to properly acknowledge them.

6.207 - ‘Networks’ at MIT. Originally taught by Daron Acemoglu and Asu Ozdaglar, and later taught by Devavrat Shah. Material of this course can be found at MIT OpenCourseWare (<https://dspace.mit.edu/handle/1721.1/119628>). The course covers some of the topics that we see from a slightly more advance mathematical overview, and can be a very good source for curious students.

EE 144 - ‘Networks: Structure & Economics’ at CalTech. This course is taught by Adam Wierman, and is based on the same textbook as our course. He has three miniprojects in his course, which inspired part of our final project. Adam also has a very interesting blog that covers a variety of topics, from networks to energy to markets, that you might want to check out (<https://rigorandrelevence.wordpress.com/>).

ECE 442 - ‘Network Science Analytics’ at University of Rochester. This course is taught by Gonzalo Mateos and it is intended as a first graduate level course on Networks (<http://www.ece.rochester.edu/~gmateosb/ECE442.html>). The basic portion of the topics covered overlap with our course, and then it specializes more on the statistical analysis of data in networks.

Econ 440a/Econ 529a - ‘Macroeconomics of Networks’ at Yale This course is taught by Alireza Tahbaz-Salehi and it is intended as an introduction to the field of economic and financial networks. Starting with some of the basic concepts and tools from graph theory, the focus of the course then shift to the frontier research topics, with applications to macroeconomics and finance (<https://economics.yale.edu/courses/econ-529a-macroeconomics-networks>).

2 Network data repositories

Here we list public repositories of network data that you can use to play around and to test the concepts learned throughout the course.

SNAP: Stanford Large Network Dataset Collection. (<https://snap.stanford.edu/data/>) Great repository for *large* networks with graphs ranging from a few thousand nodes to several millions.

KONECT. (<http://konect.uni-koblenz.de/>) KONECT contains several hundred network datasets of various types, including directed, undirected, bipartite, weighted, unweighted, signed and rating networks.

ICON. (<https://icon.colorado.edu>) ICON does not host network datasets, but provides an 'Index of Complex networks' with links to the original datasets. You can search for various categories of networks (just like in KONECT).

MIT OpenCourseWare
<https://ocw.mit.edu/>

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