NetworkX

NetworkX is a Python package for the creation, manipulation, and study of the structure, dynamics, and functions of complex networks. It is an open-source library providing flexible data structures and a wide array of algorithms for creating and analyzing networks. The flexibility of the fundamental Graph objects enables users to construct arbitrarily complex networks, supporting a broad range of problems and applications.

APPLICATIONS

Analysis of social networks such as Twitter, Facebook, or YouTube; including community detection, information flow, and suggestion and recommendation algorithms.

Biology and public health: from protein folding to contact tracing.

Computer science and information theory — many fundamental data structures and algorithms are described in terms of graphs, from tree structures and information codings to search and path finding algorithms.

PLANNED FEATURES

+ Improved interoperability with other scientific Python libraries. This includes tighter integration with foundational packages like NumPy, SciPy, and Matplotlib for improved performance, as well as domain-specific libraries in which network analysis plays a central role (e.g. Geopandas).
+ Improve scalability to better support fundamental algorithms and analyses for graphs with greater numbers of edges and vertices.
+ Increased selection of algorithms, including Leiden community detection, VF2++ subgraph isomorphism, and heuristic-based approaches for solving the traveling salesman problem.
+ Support for emerging algorithms and data structures, e.g. hypergraphs.

PROJECT NEEDS

Exploring interface and dispatching mechanism for multiple computational backends	2,000 hours
Graph visualization performance and scalability	2,000 hours
Community manager (part time)	250 hours / year

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For more information on NetworkX, including our governance structure and project roadmap, please visit:

https://networkx.org/

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