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

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploring interface and dispatching mechanism for multiple computational backends</td>
<td>2,000</td>
</tr>
<tr>
<td>Graph visualization performance and scalability</td>
<td>2,000</td>
</tr>
<tr>
<td>Community manager (part time)</td>
<td>250</td>
</tr>
</tbody>
</table>

For more information on NetworkX, including our governance structure and project roadmap, please visit: https://networkx.org/

NetworkX is a Sponsored Project of NumFOCUS, a US 501(c)(3) public charity.

NumFOCUS Sponsored Projects rely on the generous support of corporate sponsors, institutional partners, and individual donors.

For more information: info@numfocus.org | +1 (512) 831-2870