



Prof. R. Wattenhofer

## **Topics in Graph Neural Networks**

We are always on the lookout for talented and motivated students interested in exploring the intersection of graphs and neural networks through our Graph Neural Networks projects. We offer a diverse range of topics and are always open to hearing your own ideas! While prior knowledge of Graph Neural Networks is beneficial, it is not required.

Some of the topics you can work on include:

- **Neural Algorithmic Reasoning:** Training neural networks to solve graph-based algorithms.
- Graph Visualization: Creating optimal graph layouts based on various metrics.
- **GNNs and Cellular Automata:** Combining the discrete nature of Cellular Automata with GNNs.
- **Graph Transformers:** Developing state-of-the-art transformer-based architectures and the necessary positional encodings for graphs to go with them.
- And much more!

Our list of topics is constantly evolving as we continue to push the boundaries of this field. To find the perfect fit for you, we'll discuss the available topics during an initial meeting and brainstorm ideas together.

**Requirements:** Ability to work independently and determined to obtain results, creative thinking, knowledge of Machine Learning and Python. Ideally has worked with graph learning frameworks such as pyG before.

## Contact

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