

Performance Evaluations of Computer Networks with Graph Neural Networks

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Processing network topologies and their properties is a difficult task with traditional machine learning approach. These techniques are not always able to cope with the varying size of computer networks, which can range from 10s of nodes, to thousands or millions. To overcome this issue, we propose in this talk to look at Graph Neural Networks (GNNs), which are neural networks able to process graphs regardless of their size. GNNs gained momentum in the late 2010 due to the use of modern neural network architectures and successful applications to various fields such as chemistry, physics, or special mathematical problems. In this talk we will look at how to model network topologies as graphs which can be processed using GNNs. After a brief overview of GNNs and their applications in computer networks, we will delve deep in an application to performance evaluation. We will look at how to model latencies in computer networks and how GNNs can predict latencies and assist the computation of latencies.