

## Deep Learning on graph: A study on convolutional neural network over large-scale labeled graphs



Exploiting graph-structured data has many real applications in domains including natural language semantics, programming language processing, and malware analysis. A variety of methods has been developed to deal with such data. However, learning graphs of large-scale, varying shapes and sizes is a big challenge for any method. In this talk, we will present a multi-view multi-layer convolutional neural network on labeled directed graphs (DGCNN), in which convolutional filters are designed flexibly to adapt to dynamic structures of local regions inside graphs. The advantages of our model are that we do not need to align vertices between graph and can process large-scale dynamic graphs with hundred thousands of nodes. Experimental results on malware analysing and software defect prediction show that DGCNN outperforms the baselines, including several deep neural networks.

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