End-to-end learning of latent edge weights for Graph Convolutional Networks
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Abstract

We present Latent-Graph Convolutional Networks (L-GCN), an approach for machine learning on any kind of graph structure, including directed graphs, multi-graphs and knowledge graphs. Our approach extends Graph Convolutional Networks (Kipf and Welling, 2016) by allowing for end-to-end training and by supporting any kind of data available on the edges in the network, such as numerous transactions within a company network, different relations between entities in a knowledge graph or different flights between airports. The edge features are mapped to latent graphs which are in turn used in the GCN's localpooling operation. Taking this approach allows us to use the predictive power that is contained within the edges of the graph. We achieve competitive results on four graph datasets (CORA, RITA, AIFB and NELL).