A Study of Graph Convolution Networks

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Abstract

- The idea of this project is to create a graph visualization method using Graph Convolutional Networks (GCN) that is more efficient and is better at representing data
- We are integrating BatchLayout model in GCN to design a force-directed loss function

Introduction

- BatchLayout: This is a recent tool for graph visualization that generate good quality layout within a very short time while consuming less memory
- GCN: This is a semi-supervised graph embedding tool for node classification
- GCN performs well for node classification compared to other state-of-the-art methods

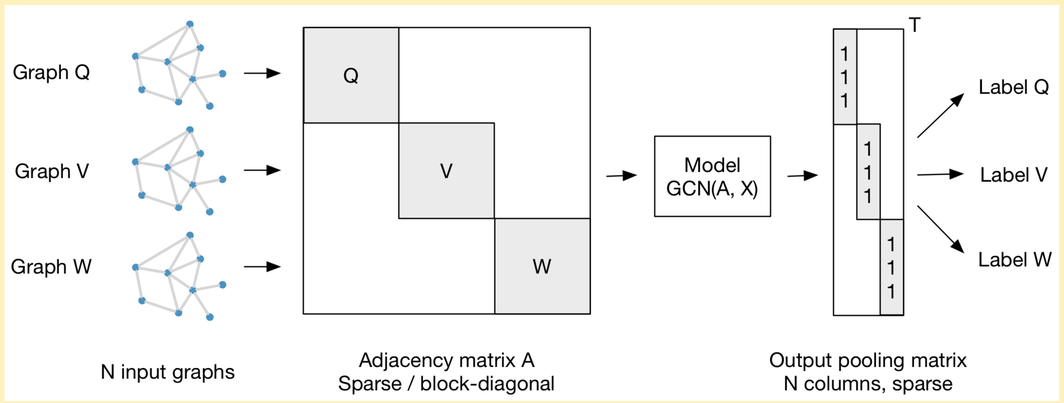
Methodology

- Using a set of data, these network pair nodes based on qualities
- Combining the different sets of pairs gets you an adjacency network that can be visualized

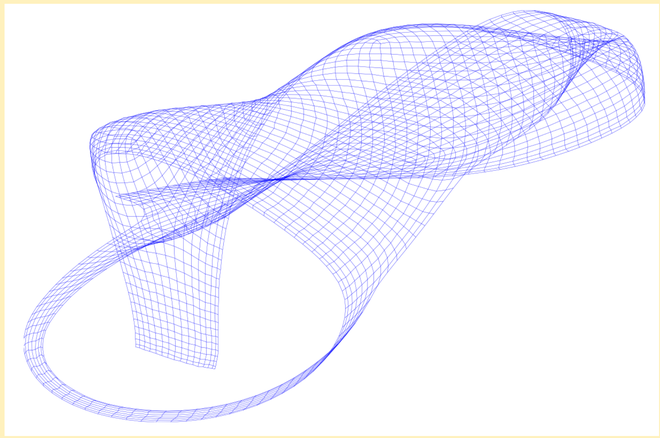
Results

- The results are that when you run either test, you get back embeddings, 2D for BatchLayout and 64D for GCN
- Data gets analyzed which then influences how we tune the networks
- Our work is still ongoing

GCN data preprocessing for training



BatchLayout visualization of a graph



Acknowledgements

- Github links
  - https://github.com/khaled-rahman/BatchLayout/tree/master/BatchLayoutCode
  - https://github.com/tkipf/gcn
- Paper
  - https://arxiv.org/pdf/1609.02907.pdf.