

Journal Report 6

10/7/19-10/13/19

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Period 2, White

Daily Log

Monday October 7

Searched for previous implementations of an adaptive GCN or topology adaptive GCN (TAGCN) on GitHub.

Cloned a TAGCN repo from GitHub and began reading through code to better understand how the TAGCN was implemented.

Tuesday October 8

Continued reading through TAGCN code, but encountered several errors when trying to run it in a Jupyter notebook.

Debugged issues with flags. The TAGCN code was trying to load in data in a confusing way, so I replaced it with loading in data using Spektral methods.

Thursday October 10

Finished going through TAGCN code and marking down parts that I didn't understand.

Reviewed TensorFlow documentation for the marked sections of the TAGCN code.

Began comparing TAGCN code with Spektral code to see where Spektral methods could be used in place of TensorFlow methods or other complicated parts of the TAGCN code.

Timeline

Date	Goal	Met
September 30	Complete GCN in graph batch mode for comparison with edge-conditioned GCN	Completed basic graph batch GCN, but did not finish coding accuracy graph for comparison with edge-conditioned GCN
October 7	Code accuracy graph (predictions v. true values) for graph batch GCN	No, due to difficulty understanding the batching
October 14	Research and begin implementing other kinds of GCNs (such as adaptive graph convolutional network presented by Li, et al. [2018])	Began implementing topology adaptive graph convolutional network (Du, et al. [2017]) by seeing how TAGCN code could work with Spektral methods
October 21	Finish implementing Du, et al.'s topology adaptive graph convolutional network; research other kinds of GCNs and begin implementing another kind, if there is enough time	
October 28	Determine which kind of GCN to use for final project	

Reflection

This week, my main goal was to implement another kind of GCN for comparison with the edge-conditioned GCN that I already have. With the previous GCNs that I implemented (the edge-conditioned GCN and graph batch GCN), I was able to find code that already worked with the QM9 database. Thus, I only had to edit it to fit my project's purposes. However, with the topology adaptive GCN (TAGCN) that I started implementing this week, I was only able to find example code to work with the Cora dataset, which is very different from the QM9 database. Furthermore, it was not linked with Spektral, which made it much more confusing from the previous implementations I had looked at.

Therefore, I spent a lot of time this week reading through the code for the TAGCN and reading through TensorFlow documentation so that I can begin to write code for the TAGCN next week. I will most likely need to start from scratch, drawing only on my example code for short portions of the code, since the QM9 database is structured so differently from the Cora dataset. However, I hope that I will be able to finish implementing the TAGCN by the end of the next week or into the following week at the latest. Hopefully, by the end of October, I will be able to compare the TAGCN (and possibly another type of GCN, if I finish with the TAGCN quickly enough) to the edge-conditioned GCN in order to decide which GCN to use in our final project.