Journal Report 7
10/14/19-10/27/19
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## Daily Log

### Tuesday October 15

Finished comparing TAGCN code with Spektral code to find places where TAGCN TensorFlow code could be replaced with Spektral methods.

### Thursday October 17

Debugged errors with loading in data using Spektral method, since some later parts of the TAGCN code were incompatible with the way Spektral read in data.

Began replacing sections of TAGCN code with Spektral code and debugging issues arising from the replacements.

### Monday October 21

Continued replacing sections of TAGCN code with Spektral code and debugging issues arising from the replacements.

### Tuesday October 22

Finished replacing sections of TAGCN code with Spektral code and debugging issues arising from the replacements.

Reviewed TAGCN paper by Du, et al., going through Spektral-compatible TAGCN code line-by-line to get a better understanding of TAGCNs.

### Thursday October 24

Began writing Spektral-compatible TAGCN for usage with QM9 dataset rather than Cora.

## Timeline

| Date | Goal | Met |
|---|---|---|
| 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 | Began modifying TAGCN code, but underestimated how much time it would take to make TAGCN code work with Spektral and with QM9 dataset |
| October 28 | Finish modifying TAGCN code to be compatible with Spektral for Cora dataset | Finished modifying Cora TAGCN code for Spektral compatibility and began modifying it to work with QM9 dataset |
| November 4 | Finish implementing Du, et al.'s topology adaptive graph convolutional network with Spektral and QM9 dataset | |
| November 11 | Determine which kind of GCN to use for final project after comparing TAGCN with previously-implemented edge-conditioned GCN | |

## Reflection

The past two weeks have mostly been spent on making the TAGCN code compatible with Spektral. In my last journal, I mentioned that the Cora dataset, which the TAGCN code was written for, and the QM9 dataset, which our project uses, are structured very differently. Originally, I had planned to just look at the TAGCN code as an example and begin writing my own TAGCN to be compatible with QM9. However, I felt like I did not understand TAGCNs well enough, so I decided to make the Cora TAGCN compatible with Spektral before starting on my own TAGCN for QM9.

Unfortunately, I also vastly underestimated how long this would take. There were a lot of bugs when I tried to replace sections of the TAGCN code with Spektral methods, and I spent most of this week trying to resolve those issues. Once I got the TAGCN code for the Cora dataset to work with Spektral methods, I began working on writing a TAGCN from scratch to work for the QM9 dataset. Hopefully, I will finish this by the end of this week (or a little bit into next week) so that I can determine which GCN to use for the final project by the end of next week.