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| Name: Isaiah King |
| Department: Computer Engineering |
| Program Enrolled (PhD/Master) and year in: PhD, 1st year |
| Advisor: Prof. Howie Huang |
| Research Area (A brief description of your research):  Graph-based learning techniques. Special interest in unsupervised graph learning methods and anomalous edge detection. |
| Project Description (Include a paragraph about your selected topic and what exactly you would like to solve using RL):  I would like to use RL classify graphs, as was done by [1]. In their work, they use undirected graphs, however, I would like to attempt this on directed, time-series information in the form of computer log files. The authors had moderate success classifying molecules using clustering on vectors generated through attention based graph traversal where the agent traversing the graph was informed by an RL algorithm. I believe this technique can be extended to other fields of graph learning. Particularly, in my research, I see many papers about generating graph labels through random walks; the authors of [1] build an agent that can extract better information in it’s graph traversals through RL. Further, this field has a dearth of research, as is evident by the scant section of [2] relating to RL in the field of graph learning. [3] has some information, but it is largely related to KB traversal, and agent training rather than graph learning problems generally. |
| Selected Papers:  1.) Graph Classification using Structural Attention. Lee, Rossi, & Kong, 2019  2.) Deep Learning on Graphs: A Survey. Zhang, Cui & Zhu, 2015 (Just section 6: Graph Reinforcement Learning)  3.) Graph-based skill acquisition for reinforcement learning. Mendonca, Matheus RF, & Ziviani, 2019 (Survey) |