Independent Study Proposal

The **goal** for this project is to create a model that is able to visualize the potential spikes and dips of Russian Bot tweets over the ongoing Democratic primary season. To do this, I will be training a survey of models on tweet data from 2015-2017 of Russian Bot Data, and I will also train it on regular political tweets from the same time period. In addition, I will be training on the source of the tweets, meaning the actual profiles of the twitter accounts, to build a model that can see a more holistic image of what is happening. Once the model is trained, I will use a twitter scraping API (<https://github.com/taspinar/twitterscraper>) to scrape political tweets over the coming weeks and attempt to label them as fake or real.

The **data** for this project will come from various sources. The bulk of the Russian data will come from 538’s dataset of 3 million fake Russian tweets (<https://fivethirtyeight.com/features/why-were-sharing-3-million-russian-troll-tweets/>), and then an additional 200,000 tweets will come from NBC’s set of Russian bot tweets (<https://www.nbcnews.com/tech/social-media/now-available-more-200-000-deleted-russian-troll-tweets-n844731>). The data for these tweets contains accounts that have mostly been deleted, but we will be using archives to gather account information. Additionally, the NBC data comes with a CSV with user information that they gathered, with will be useful in building a model using the source information. As for the actual tweets, these are the fields given for NBC data: id, location, name, followers\_count, statuses\_count, time\_zone, verified, lang,screen\_name, description, created\_at, favourites\_count, friends\_count, listed\_count. The 538 data has similar fields, along with some data on the user account such as follower counts. So, one of the first tasks will be altering the datasets to be transformed in a way that they are similar enough to use in the same model.

Beyond the fake Russian tweets, we also need some real tweets to train the data on. I found (<https://tweetsets.library.gwu.edu/datasets>), which has hundreds of millions of tweets that can be used that are political from the same era as the fake Russian tweets. However, there are two issues with the data set. One, the tweets will need to be rehydrated. However, using the twitter API linked below, the rehydration process should not be very difficult (the README contains some information on how to do this in the dataset). According to the README, the API will limit my rehydrating rates, but after a day, a few million tweets should be rehydrated. Then, using the same twitter scraper, I can gather the tweet and user information the Russian bot datasets contain. The second problem is that I will be unsure if the tweets rehydrated will be from Russian bots or real people. The best solution I have is to rehydrate the tweets, see if they’re from deleted accounts, and if they are, assume they are from bots and throw them out, and ones from non-deleted accounts will be seen as real tweets.

Once I train the various survey of models (GRU, CNN, RNN, etc) and select the best performing ones, I will start testing it on tweets that are being scraped in real time to label them as bot or not. I shall have to make modifications to the twitter scraper used to gather the rehydrated tweets since I will be actively looking for live tweets, but I am hoping to use the documentation on the github to set it up without much difficulty.

More than likely, I will need access to GPUs to build my models. I can use AWS for that or a Hopkins cluster if I can get access. I will also need to deploy my twitter scraper to a server so that it can run at all times. Additionally, I would like to use Silvio’s project to build a model on user accounts. The project will be written in Python 3 and will make use of the sklearn and pytorch’s Machine Learning libraries to build the models.