**Journal Report 5**

**9/22/23**

I was able to discuss the two goals I had for my project with Dr. Gabor. The two goals are to preprocess raw data received from Mr. Kienzle and format it into a CSV dataset. My goal is to extract a two-signal dataset that consists of temperature controller and set-point by October 6. My second goal is to find a time series dataset and create a synthetic time series dataset with GAN for learning purposes by October 13. After getting my goals approved, I researched further into GAN. I used this resource: <https://towardsdatascience.com/synthetic-time-series-data-a-gan-approach-869a984f2239>. This allowed me to get foundational knowledge on synthetic time series and how to apply it. I learned that the TimeGan model that the article utilizes is less sensitive to hyperparameter changes and different from other GAN architectures for sequential data since it can generate its training to handle a mixed-data setting. I didn’t think about the problem of generating static and sequential simultaneously and so this was eye-opening. Next class, I hope to code this and follow along to ensure that I know the general idea of what’s going on.

**9/27/23**

I received my NIST computer last weekend. I was able to login and use my YubiKey to login to the NIST network. After setting up my computer and accessing the server via Jupyter Notebook, I looked at my previous code from the summer. I reorganized my data folders, which took up the better half of the class. Afterwards, I looked at the article from before (mentioned in the entry above). I followed along, but ran into errors with the library itself. I created a new Conda environment and downloaded only the required library: !pip install ydata-synthetic. It seemed to work, but I got a failure for importing this part of the library: from ydata\_synthetic.synthesizers.timeseries import TimeGAN. I am still trying to troubleshoot this problem and it did not work by the end of class. I am leaning towards finding another guide in regards to coding a synthetic time series with a GAN approach. I hope to find an example by Friday and analyze it again by sometime next week.