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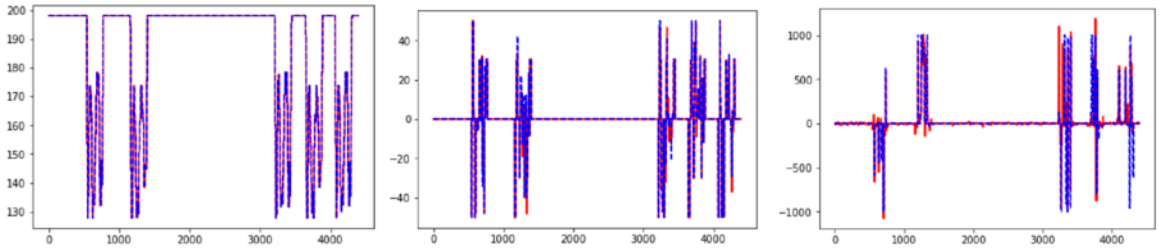
# Weekly Report

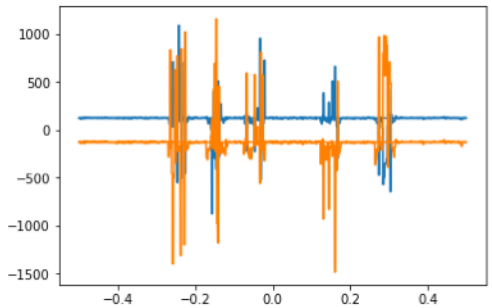
## What I did:

- Start Comparing different features in different axis.
    - Compared command position/velocity/acceleration with actual position/velocity/acceleration in X, Y, Z axis.
    - The results show that position and velocity are pretty consistent. However, the acceleration doesn't match well (can be seen for the figure on the right, which compare the acceleration in x-axis).



position velocity acceleration

- This pattern happens to Y, Z as well, indicates the position, velocity, and acceleration are some feature needs to be taken into consideration.
- I also looked into the plot for every single feature of spindle data. Spindle power is consistent all the time, this is due to the fact that the machine is not interact with any material. Therefore we cannot neglect the effect of power. This is the same to the power measured for Z axis. Since Power for Z axis can be intuitively an important factor to determine the machine is drilling or milling.
- I also perform Fast Fourier Transform on the data we get for X-axis. The imaginary part and read part shows different pattern. We could further investigate the frequency space feature to determine the optimal feature combination



## Goal for next week:

- Continue research on finding optimal feature
- Get some more data and label them as different tasks.