1. Objective:
   1. System dynamic is important.
   2. System dynamic is hard for non linear systems. Accurate system dynamics is impossible to obtain.
   3. Using neural network method to approximate the system dynamics. It can be easy and fast.
   4. Similar work is performed by [1] and [2].
   5. I would like to reproduce their work on the system we have and evaluate the performance compared to model free and currently used mathematical model.
2. Method.
   1. The dynamics of physical system is given by differential equation.
   2. Using neural network to approximate the righthand side of the differential equation.
   3. Using current state and control input as the input to the neural network and predict next state information.
   4. For the first part of the project, plan to get data from simulator. Probably car model
   5. Second part of the project, plan to get data from real physical system. Cyphyhouse F1 Tenth, drone.
   6. Compare performance of neural network model with existing mathematical model or model free