To Do:

* **Presentation:**
  + **Motivation**
  + **Data Collection/Simulation**
  + **Architecture**
    - **Different architecture (show prev models etc.)**
  + **Results**
    - **Simulation**
    - **Experimental results (if this works)**
  + **Future Works**
* **Coding:**
  + **~~-1 to 1 scaling~~**
  + **~~Initialize weight w/ DMD~~**
  + **Exploit initial champ NN structure**
    - **HP Param (Sriram)**
      * **Epoch (Max 10,000 – Good)**
      * **Loss Weights**
      * **Layer**
        + **Exploding & Contracting (Define # of layers)**
      * **Learning Rate (1e-4)**
  + **~~Augment data and on NN structure (Dakota)~~**
  + **Prediction on experimental data (Sriram)** 
    - **~~Test Stand~~**
    - **~~Mulch~~**
    - **Pebbles**
  + **Champ (Andrew)**
    - **More trajectory in one batch**
    - **~~Split in train and validation and test~~**
    - **Run w/ more layers**
    - **Run on more dataset**
    - **If poor results w/ varying speed (but not explicitly stated in states), write code to parse speed and append to df**
    - **Run** 
      * **Look into 3 states 🡪 6 states**
      * **Grab 1 single data for 1 ground parameter for 1 gait motion**
  + **Graphs**
    - **Save variables into csv**
      * **~~Epoch History Loss w/ min max range (of each batch)~~**
        + **~~Return these variables~~**
      * **~~Avg Trajectory Error Loss with min and max~~**
        + **~~Error vs. Traj #~~**
      * **~~Plot average value of trajectory w/ min max using data from all batches (Sriram)~~**
        + **Overlay with ground truth**
      * **Graph test data**
    - **Collected Data**
      * **Update readSimData**
      * **Difference in ground parameters** 
        + **Kp**
        + **Kd**
      * **Speed**
        + **Phase portrait**