This directory consists of three files.

**1) von\_mises\_sine\_strain\_increased\_amplitude\_dataset\_preparation.ipynb**

* This Jupyter Notebook is focused on **generating a dataset for sine applied strain behavior with increasing amplitude** using the Von Mises yield criterion.
* Applied strain values, change in plastic strain values, total plastic strain values & hysterisis curves resulting from the von mises yield crieteria are plotted for visual assesment.

**2) von\_Mises\_Neural\_Network\_Implementation\_cyclic\_strain\_increased\_amplitude.ipynb**

* **This Jupyter Notebook is focused on training a neural network to predict the change in plastic strain values under cyclic loading with increasing amplitude.**
* **The trained neural network along with the min\_max\_scaler are stored after training.**

**3) von\_mises\_hysterisis\_loops\_cyclic\_applied\_strain\_increased\_amplitude.ipynb**

* This Jupyter Notebook is focused on **modeling hysteresis loops for cyclic applied strain with increasing amplitude** using the **Von Mises yield criterion and Neural Networks**.
* The min\_max\_scalers and trained neural network resulting from the file 2 is called here to predict the change in plastic strain values.
* Hysterisis loops resulting from von mises yield criterion and neural network prediction are plotted against each other for accuracy assesment.