

Comparison plot between the prediction and target data based on the the model trained with coefficient A and the residual error of C and the average applied force

Similarly to Supplementary 2. A series of graph below plot entire dataset of 108 cases, including 81 training cases ([Train](#)) and 27 validation cases ([Test](#)) using the model with learning rate of 0.025 and 0.99 exponential decay. However, the output was used in this case is the residual error between C and the average applied force instead of C as in previous model (model used in supplementary 2). The x-axis is represents the axial position of the roller, and the y-axis represents the distributed force f_x . For easier observation, all prediction equations (Prediction) and target equations (Target) are plot on the same axial range from -1000 to 1000. As the results shown in Figure 13, the prediction and target data of C are consistent. Therefore, most of cases were plotted below shown a very small discrepancy of vertical translation prove that this model improved the vertical translation error of force distribution curve prediction.























