Graph Analysis

# Training & Validation Loss

The training and validation loss graphs show how the model's error decreases over each epoch. The sharp decline in training loss suggests that the model quickly learns to fit the training data. However, the validation loss plateau indicates that improvements in the model's performance on the training data do not translate to equivalent improvements on unseen data. This discrepancy can signal overfitting, where the model learns the training data too well, including its noise and outliers, which does not generalize well to new data.

# Prediction Accuracy

The prediction accuracy graph shows a scatter plot of the model's predicted reliability against the true reliability values. The cluster of points around the dashed line of perfect prediction indicates that the model has a good level of predictive accuracy. However, there are deviations, especially in higher reliability values, where the model tends to underestimate the reliability. This could suggest that the model may need further tuning to handle higher reliability ranges or that there are factors affecting high reliability that the model is not considering.

# Impact of N

The graph for the impact of 'N' on reliability shows a spread of predicted versus actual reliability which does not indicate a clear trend. This could imply that 'N' is not a strong predictor for reliability on its own, or that its relationship with reliability is non-linear and possibly influenced by other variables. A more complex model or feature engineering may be needed to capture the true impact of 'N' on reliability.

# Impact of V

The 'Impact of V' graph presents a vertical clustering of points at specific 'V' values, suggesting a categorical or discrete nature of 'V'. The overlaps of predicted and actual reliability values indicate that the model can capture the effect of 'V' on reliability to some extent. However, there is notable variance in the predictions at the extreme values of 'V', which may require additional investigation.

# Impact of f

In the 'Impact of f' graph, the distribution of points shows a random pattern, indicating a weak or complex relationship between 'f' and reliability. The model's predictions do not consistently align with the actual values across the range of 'f'. This suggests that 'f' may not be a significant predictor in the current model's form, or it interacts with reliability in a way that the model is currently not capturing.

# Impact of T

The 'Impact of T' graph depicts a horizontal banding pattern, with the predicted values generally matching the actual reliability across different values of 'T'. This indicates that while 'T' varies, its impact on reliability is not strongly captured by the model. If 'T' is an important factor in theory, the model may need to be reassessed to ensure it can leverage 'T' effectively for prediction.