Neural network comparison:
Numpy v/s Pytorch

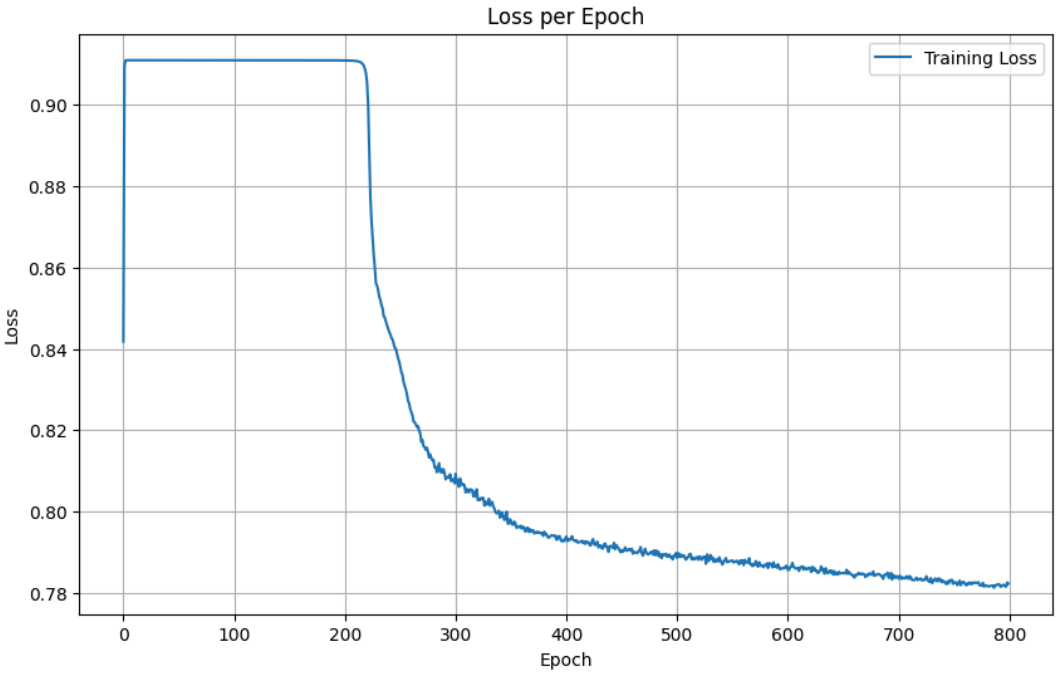
1. Introduction

In this report, I have compared the performance of a deep neural network made using only NumPy and Python fundamentals, and the other made with the help of built-in methods of the PyTorch framework.

We will compare various aspects, including the time taken for implementation, accuracy, precision, recall, and F1-score.

2. Numpy version

a. Device: CPU
b. Training Time: 362 s
c. Accuracy: 65.82%
d. Precision: 32.47%
e. Recall: 65.93%
f. F1-score: 0.4351



3. Pytorch version

a. Device: GPU (Tesla T4)
b. Training Time: 367s
c. Accuracy: 64.32%
d. Precision: 32.48%
e. Recall: 69.21%
f. F1-score: 44.21%

4. Comparison

Although the Pytorch model takes slightly more time than the numpy variant, it yields a slightly better F1-score. The Modelshiness is on the absence of huge lines of code and GPU integration that allows parallel computations on its tensors, making it a better choice for deeper neural networks.