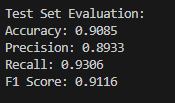
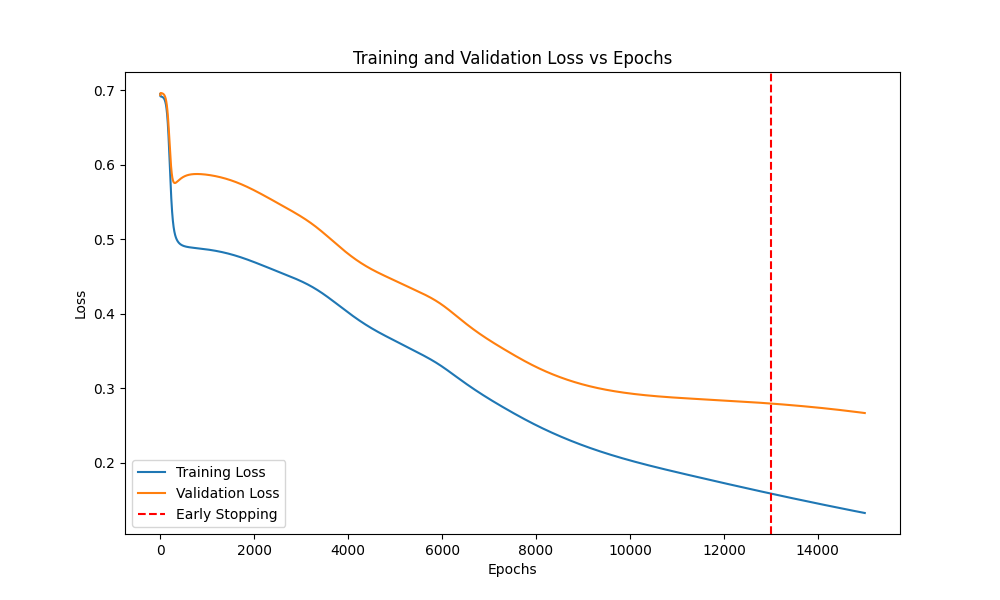
**M Ibrahim,04072213025**

**Heart Disease Classification Model**

The Dataset has around 2k records, with 13 features and one output.

* **Data Preparation:**
* The data was prepared by dividing into 3 sets, training, validation and testing.
* It was standardized for better results.
* **Model Arch:**
* The model was constructed in the way that there were 38 neurons in the hidden layer , 13 features in the input layer and one neuron in the output layer.
* **Training Process:**
* Logistic loss was used as the objective function.
* The model was optimized using gradient descent with a learning rate of 0.16 for 15,000 epochs (iterations).
* Early stopping was implemented, monitoring validation loss to prevent overfitting. The best weights were saved and restored upon stopping. The patience was set to a higher value to obtain higher accuracy, for example the accuracy of 90 percent is achieved if the patience is set to 2k iterations, but if the patience is below 1k, only accuracy of 70 percent can be achieved, the model learns slow after a certain value.
* **Evaluation Metrics**:
* The model was evaluated using Accuracy, Precision, Recall, and F1 Score. These metrics provide insights into the model's classification performance on unseen data
* **Results:**
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