

Skin Cancer Detection Using Deep Learning Models

What is Neoplasm & Our objective

Given a Neoplasm



The question arises whether it is possible to identify this from an image?

Methods

Dataset

13,900 images (244x244) of Neoplasms, labeled as benign or malignant

Logistic Regression

Flattened input layer

Single output node with sigmoid

Neural Network

Input layer

3 fully connected hidden layers
(64, 32, 32 units)

Output layer with sigmoid

Convolutional Neural Network

4 conv layers with 32 3x3 filters

2x2 max pooling after each layer

Flattened input to output layer

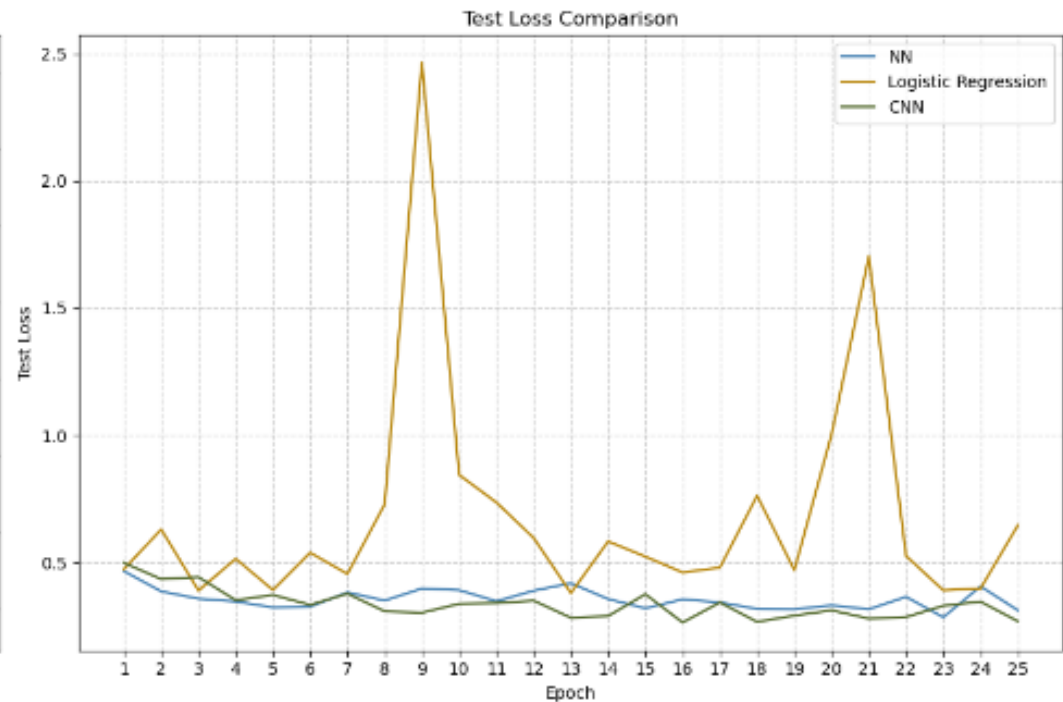
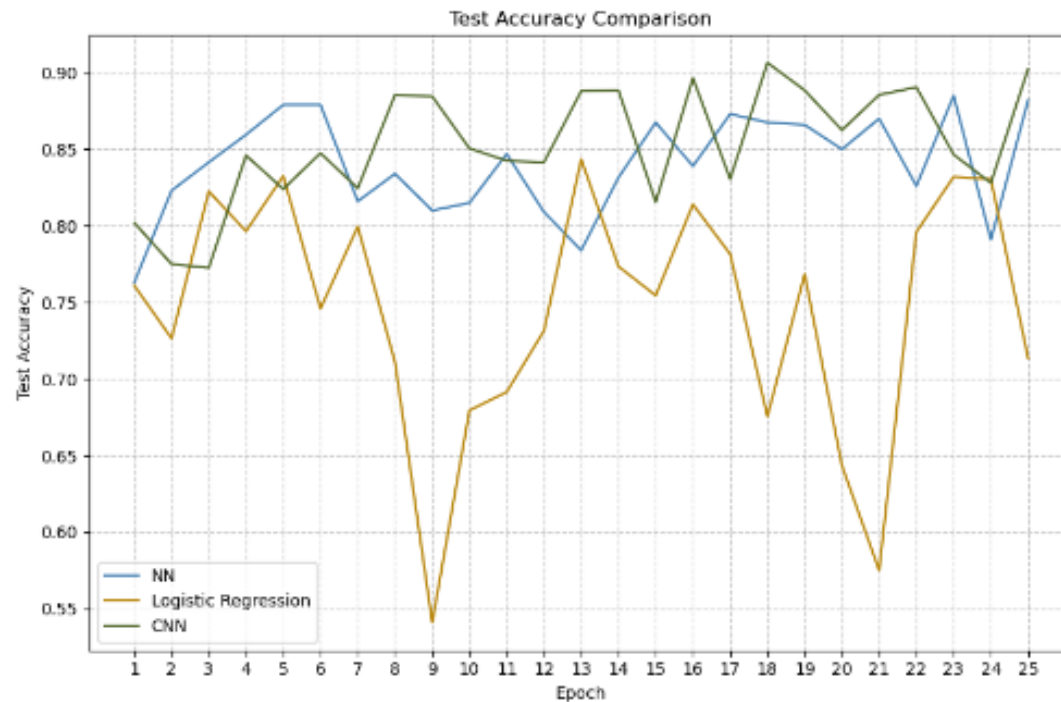
Sigmoid output

Training

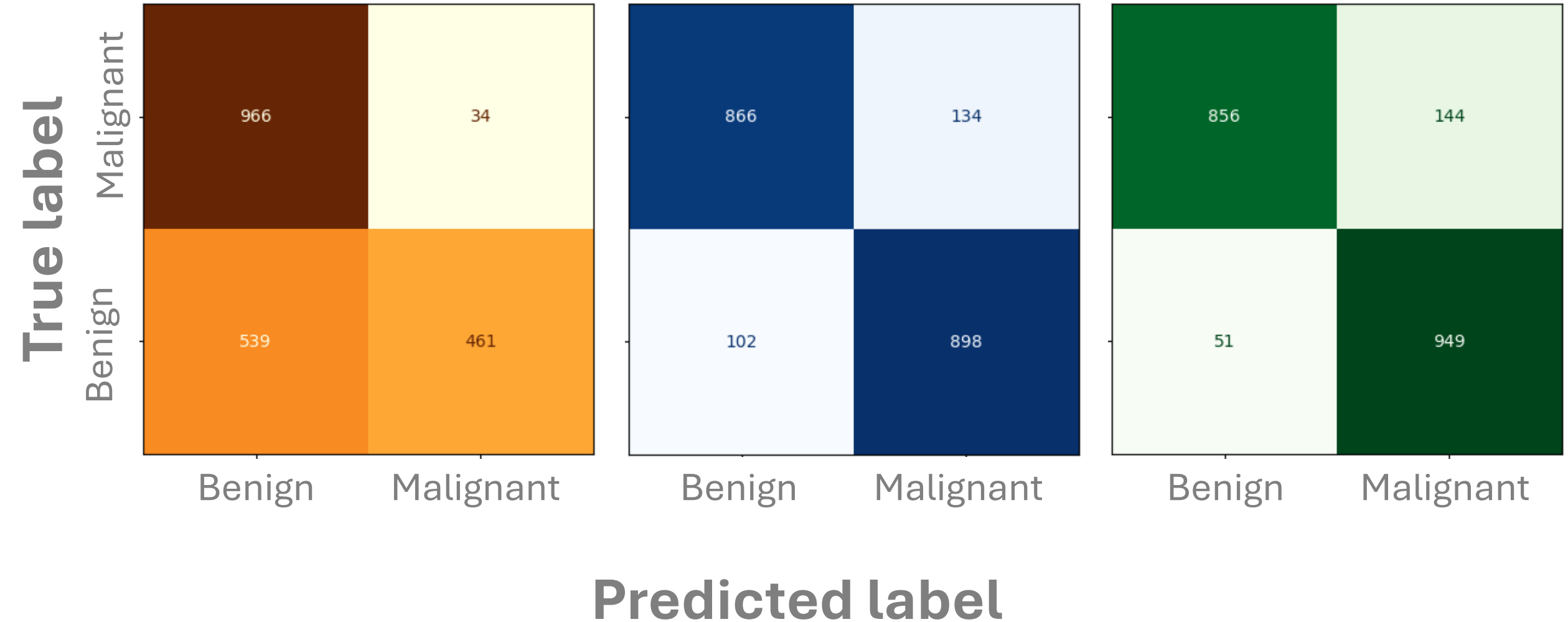
Adam | Log loss | 25 epochs | 128 size batch

Results

Model	Accuracy	Precision	Recall	Loss
Logistic Regression	71%	93%	46%	0.287
NN	88%	87%	89%	0.118
CNN	91%	87%	95%	0.097



Results – Confusion Matrixes



Prediction Examples

Prediction: Benign
True: Benign
0.07
✓



Prediction: Benign
True: Benign
0.03
✓



Prediction: Benign
True: Benign
0.13
✓



Prediction: Malignant
True: Benign
0.77
✗



Prediction: Benign
True: Benign
0.04
✓



Prediction: Benign
True: Benign
0.40
✓

