**Breast Cancer Classification Models**

This repository contains implementations of three different machine learning models for breast cancer classification: Support Vector Machine (SVM), Logistic Regression, and Neural Network. The dataset used for training and testing is the Breast Cancer Wisconsin (Diagnostic) dataset.

**Dataset**

The dataset used is the Breast Cancer Wisconsin (Diagnostic) dataset, which includes various features computed from a digitized image of a fine needle aspirate (FNA) of a breast mass. The goal is to predict whether a tumor is malignant (M) or benign (B).

**Models**

**Support Vector Machine (SVM)**

The SVM model is implemented using the scikit-learn library. It uses a linear kernel for classification and achieves accuracy on the test set.

**Logistic Regression**

The Logistic Regression model is implemented from scratch using NumPy. It utilizes gradient descent for optimization and demonstrates accuracy on the test set.

**Neural Network**

The Neural Network is implemented using TensorFlow/Keras. It consists of an input layer, two hidden layers with ReLU activation, and an output layer with a sigmoid activation function. The model is trained using the Adam optimizer and binary cross-entropy loss.

**Usage**

1. Clone the repository: **git clone https://github.com/your\_username/breast-cancer-classification.git**
2. Install the required libraries: **pip install -r requirements.txt**
3. Run the main script: **python main.py**

**Requirements**

* Python 3.x
* pandas
* numpy
* scikit-learn
* TensorFlow