Title: Fruit Image Classification Using Convolutional Neural Networks (CNNs)

Objective:

Build an image classifier to recognize different types of fruits using the Fruit Image Dataset. You will implement a CNN model, experiment with various network architectures (e.g., number of layers, filters, activation functions), and evaluate the model's performance using accuracy and other relevant metrics.

Tasks:

1. Load and preprocess the Fruit Image Dataset (e.g., resizing, normalization, train-test split).

2. Design and implement a baseline CNN architecture using a deep learning framework (e.g., TensorFlow/Keras or PyTorch).

3. Train the model and evaluate its performance on the test set.

4. Modify the architecture (e.g., add/remove layers, change hyperparameters) and observe how it affects the model's accuracy.

5. Use metrics like accuracy, precision, recall, and confusion matrix to evaluate and compare results.

6. Summarize your findings and suggest improvements.

Deliverables:

- Code implementation of the CNN model(s)

- Plots showing training/validation accuracy and loss

- Evaluation metrics (accuracy, confusion matrix, etc.)

- A summary/report of experimentation and results