Using device: CUDA

Task execution time: 56.16 seconds

Completed Tasks:

Task 1.1: Load CIFAR-10 Dataset ✓

Task 1.2: Visualize CIFAR-10 Samples ✓

Task 1.3: Convert to Grayscale ✓

Task 2.1: Extract SIFT Features ✓

Task 2.2: Visualize SIFT Keypoints ✓

Task 3.1: Generate Codebook ✓

Task 3.2: Create BoVW Histograms ✓

Task 4.1: Train SVM Classifier ✓

Task 4.2: Train CNN Classifier ✓

Task 5.1: Compare SVM and CNN ✓

Task 6.1: Apply Data Augmentation ✓

Task 6.2: Train SVM with Augmented Data ✓

Reset (Clear Task)

CIFAR-10 Image Classification with BoVW and CNN

This application implements image classification on the CIFAR-10 dataset using:

- Bag of Visual Words (BoVW) model with SVM classifier
- Deep Learning approach with ResNet-18 CNN
- Data augmentation techniques

Follow the tasks step by step using the dropdown menu.

Select a task to run:

Task 6.2: Train SVM with Augmented Data

Run Task

Task 6.2: Train SVM with Augmented Data

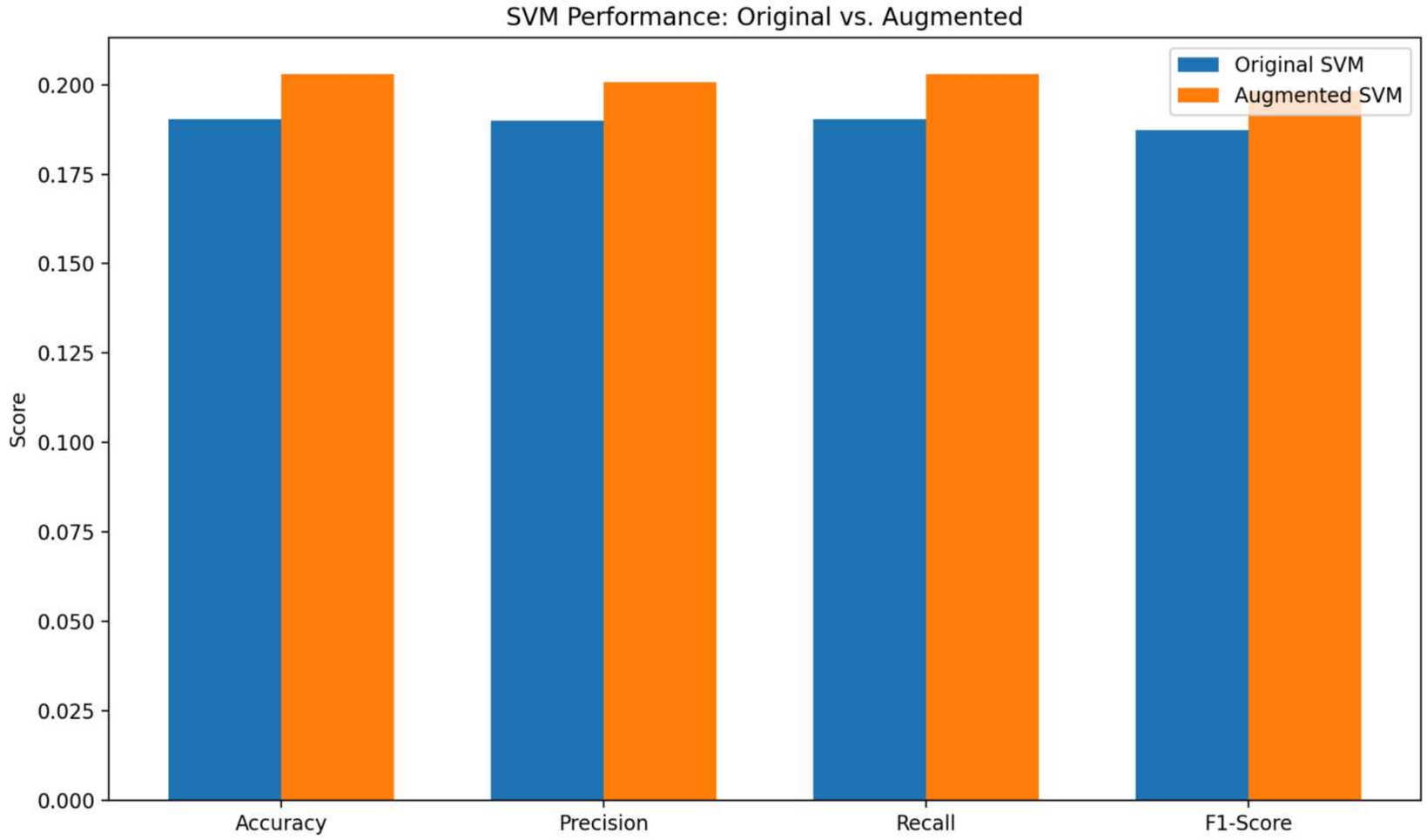
SVM Classification Results with Augmented Data

Accuracy: 0.2031

Precision: 0.2008

Recall: 0.2031

F1-Score: 0.1983



Improvement with Data Augmentation

Accuracy: 6.73%

Precision: 5.67%

Recall: 6.73%

F1_score: 5.88%

SVM classifier with augmented data trained successfully!