Week 14 Lab Report

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The objective of this lab was to build and train a Convolutional Neural Network (CNN) to classify images of hand gestures—rock, paper, and scissors—using the Rock-Paper-Scissors dataset. The model was implemented and trained in PyTorch.

Model Architecture

The CNN consists of three convolutional blocks: Conv2d(3→16), ReLU, MaxPool2d(2) Conv2d(16→32), ReLU, MaxPool2d(2) Conv2d(32→64), ReLU, MaxPool2d(2) The classifier includes: Flatten Linear(64×16×16 → 256) ReLU + Dropout(0.3) Linear(256 → 3)

Training and Performance

The model was trained using: Optimizer: Adam Loss Function: CrossEntropyLoss Learning Rate: 0.001 Epochs: 10 Final test accuracy was obtained after training.

Conclusion

The CNN performed effectively on the gesture classification task. Challenges included variance in lighting and gesture angles. Accuracy could be improved using data augmentation, batch normalization, or a deeper CNN architecture.