

Behavioral Identification With Computer Vision

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CSE 455

Introduction

- > **Computer Vision is a powerful tool to reduce manpower issues**
- > **Can be used to identify human behavior and actions**
- > **Useful for identify minor infractions such as littering or distracted driving**



Dataset

- > **Two different dataset retrieved from Kaggle**
- > **Face Mask Detection**
 - 8982 images
 - 3 classes
- > **State Farm Distracted Driver Detection**
 - Used a subset of this dataset (every image in the training folder)
 - 22424 images
 - 10 classes

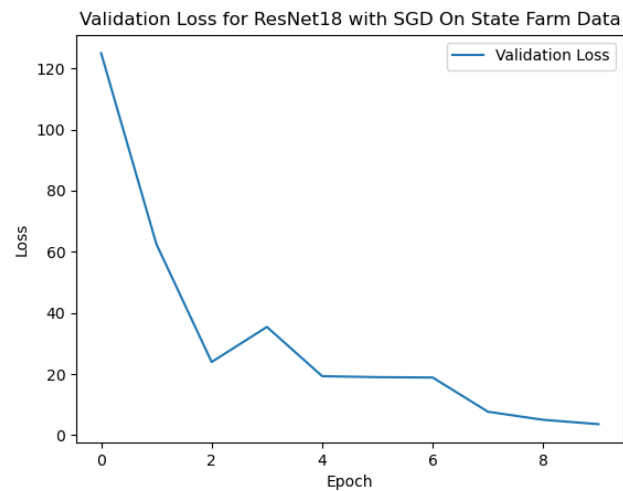
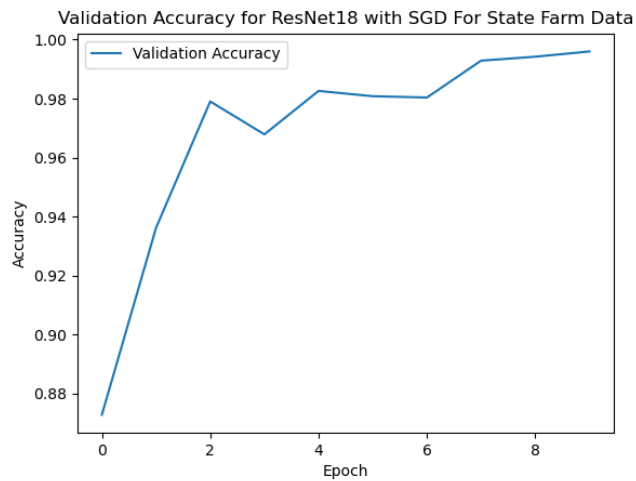
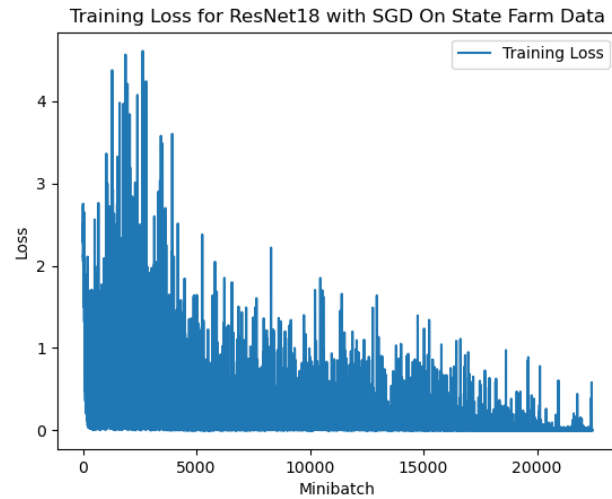
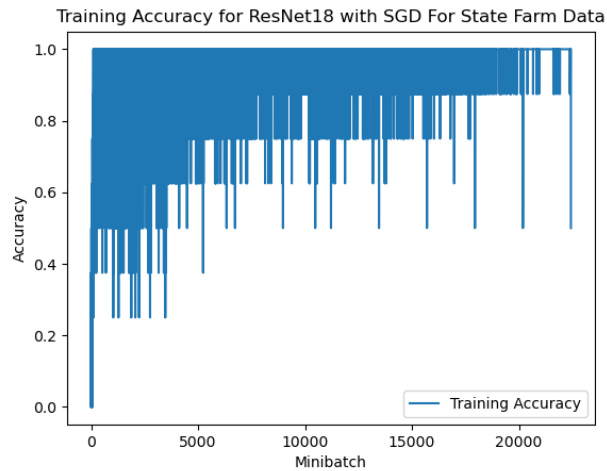


Methodology

- > **Pre-trained Model:**
 - ResNet18
- > **Optimizer:**
 - SGD: mini-batch stochastic gradient descent
- > **Cross-Validation:**
 - 80-10-10 train-validation-test holdout method
- > **Parameters:**
 - 0.05 Learning Rate
 - 10 Epochs
 - 0.9 Momentum Weight



Results



Future Work

- > **Racial Biases?**
 - No analysis on the data's diversity
- > **Noisy Images?**
 - Trained only on clean dataset
- > **Ethical Issues?**
 - Authoritarian governments
 - Corporations
 - Morality



Thanks For Listening!

Resources

- > <https://arxiv.org/abs/1512.03385>
- > <https://blogs.microsoft.com/ai/microsoft-researchers-win-imagenet-computer-vision-challenge/>
- > <https://www.kaggle.com/datasets/vijaykumar1799/face-mask-detection>
- > <https://www.kaggle.com/c/state-farm-distracted-driver-detection>
- > <https://www.theverge.com/2019/4/25/18516004/amazon-warehouse-fulfillment-centers-productivity-firing-terminations>
- > <https://sitn.hms.harvard.edu/flash/2020/racial-discrimination-in-face-recognition-technology/>
- > https://colab.research.google.com/drive/1kHo8VT-onDxbtS3FM77VImG35h_K_Lav?usp=sharing

