

# Behavioral Identification With Computer Vision

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CSE 455

# Introduction

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- > **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

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- > **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



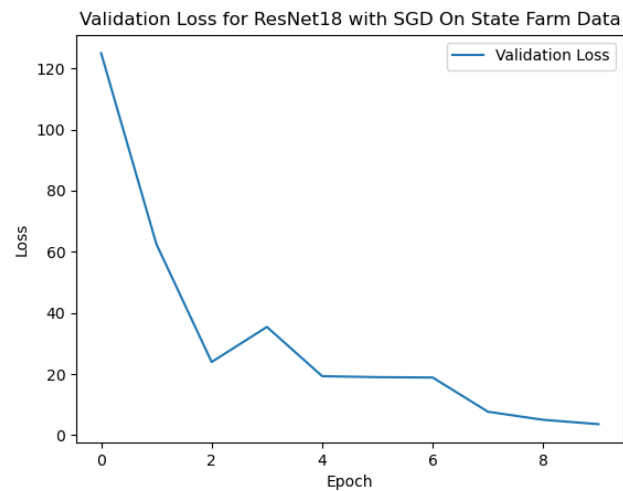
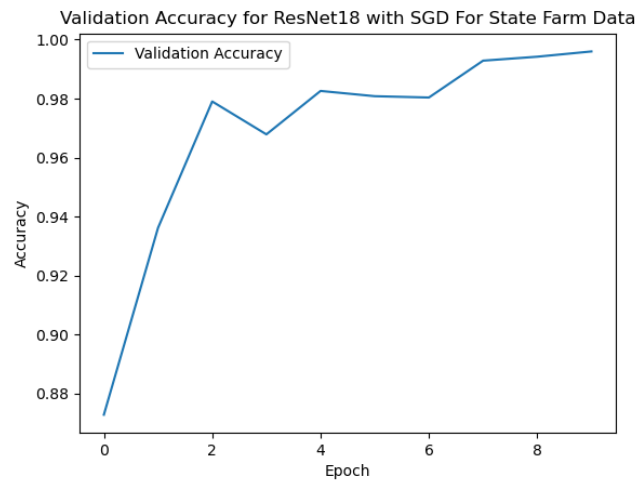
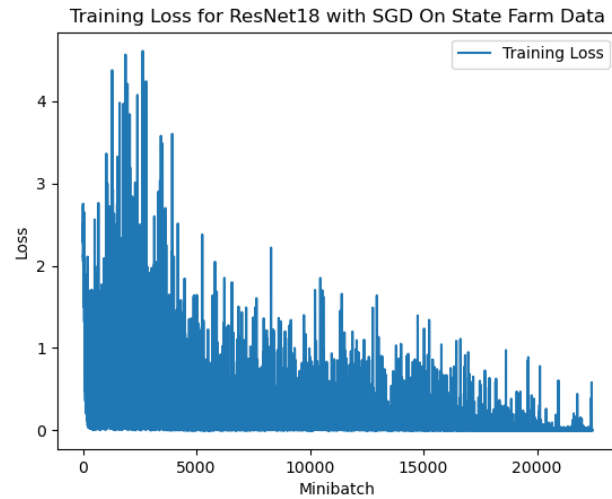
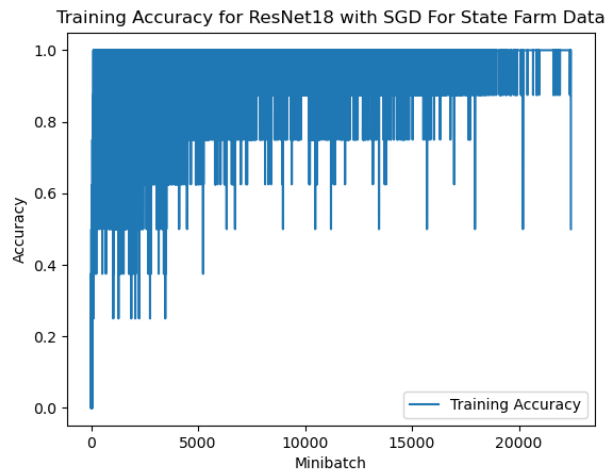
# Methodology

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



# Results



# Future Work

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- > **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!

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# Resources

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- > <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](https://colab.research.google.com/drive/1kHo8VT-onDxbtS3FM77VImG35h_K_Lav?usp=sharing)

