

# Flower Classification: Analysis of Data Augmentation Strategies

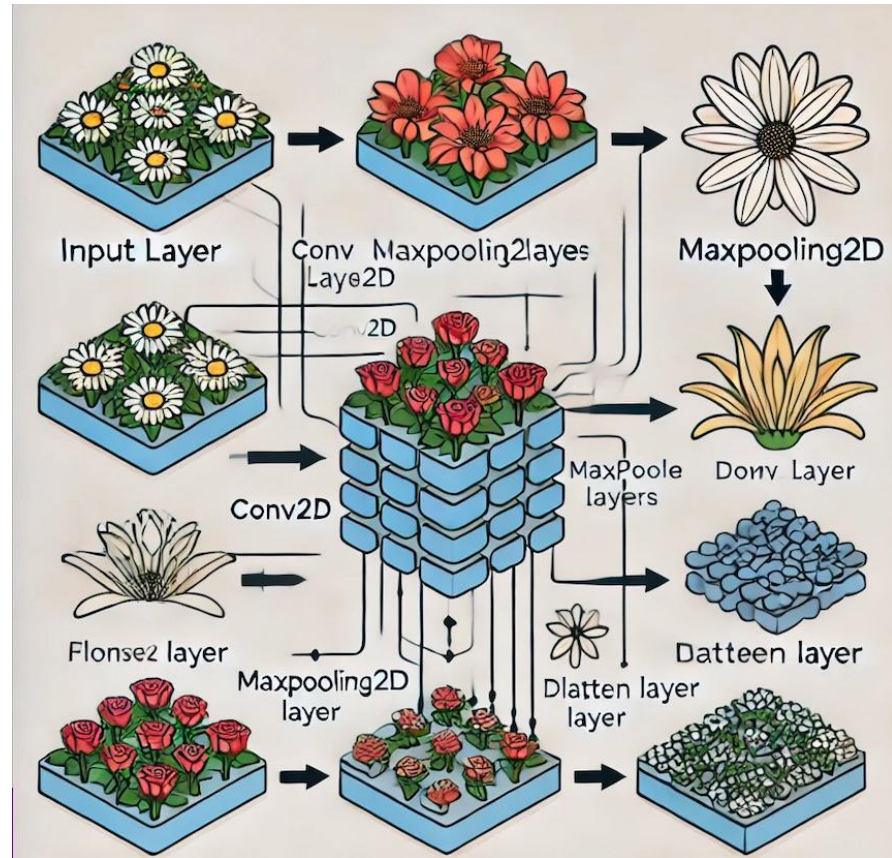
Diego Acevedo, Samantha Colbert-Neal, Pallav Kamojhala

AAI 501: Introduction to Artificial Intelligence

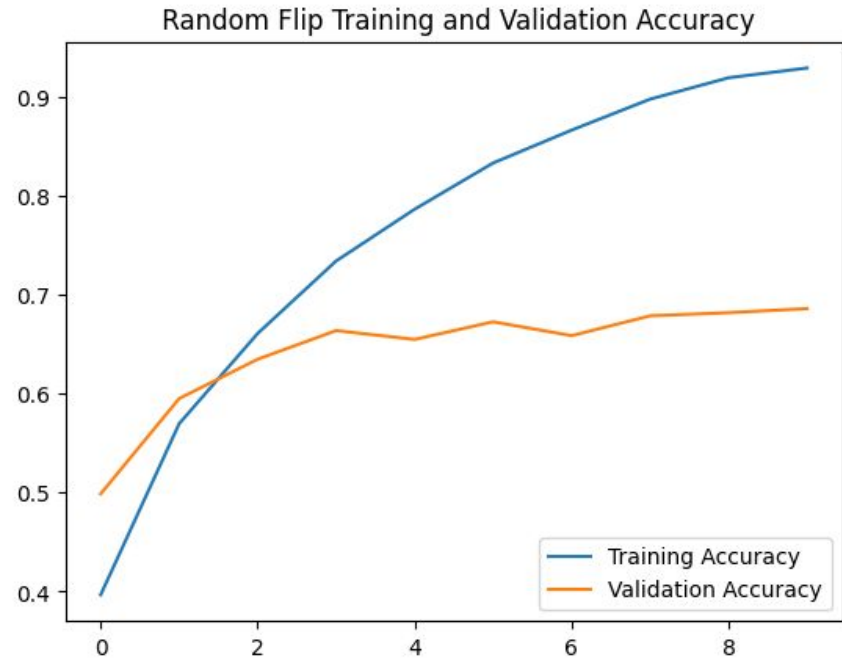


# Introduction

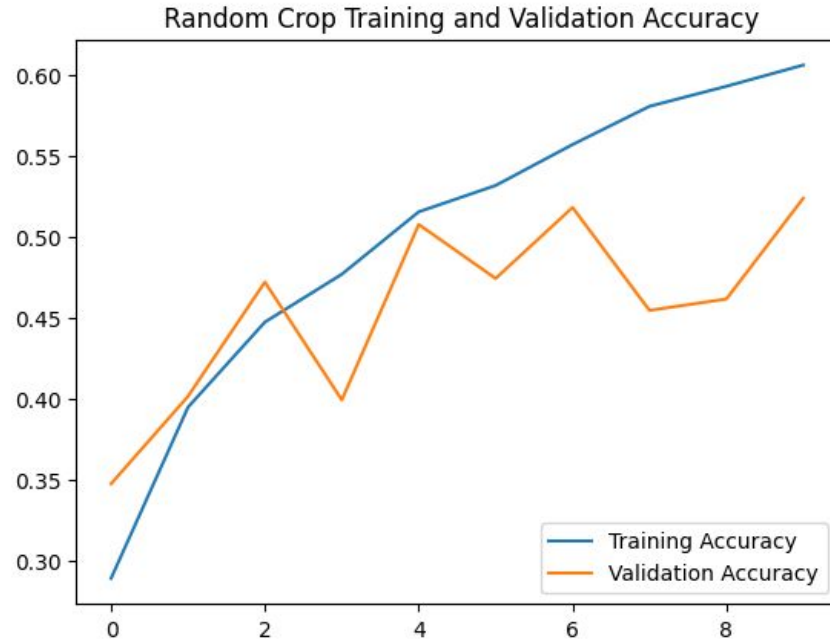
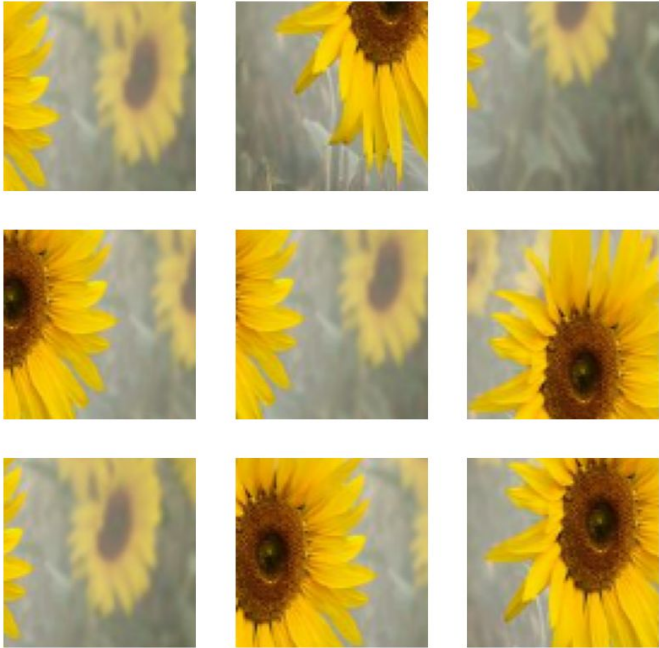
- **Project Overview:** Developing a model to classify 16 species of flowers utilizing data augmentation techniques.
- **Objective:** Improving our model performance through implementing augmentation techniques.
- **Dataset:** We selected a dataset from Kaggle consisting of 16 species of flowers.



# Random Flip

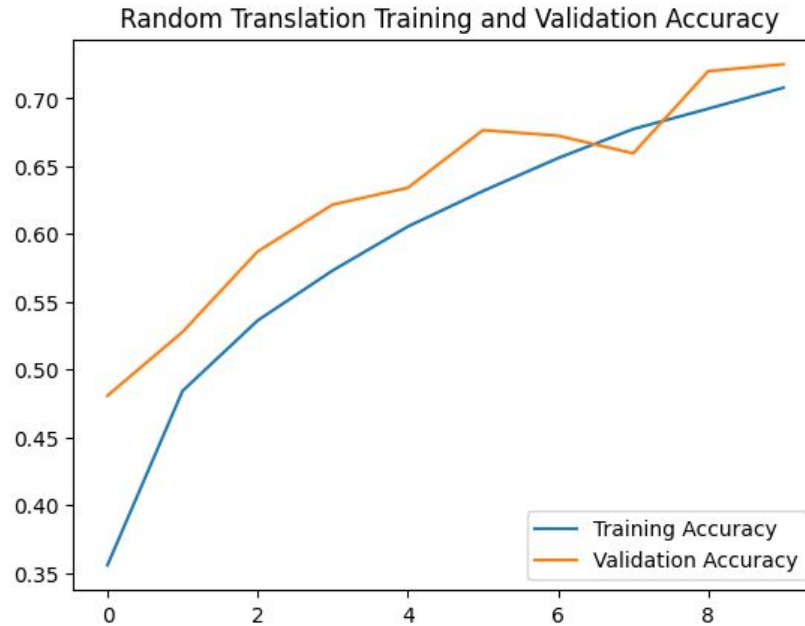
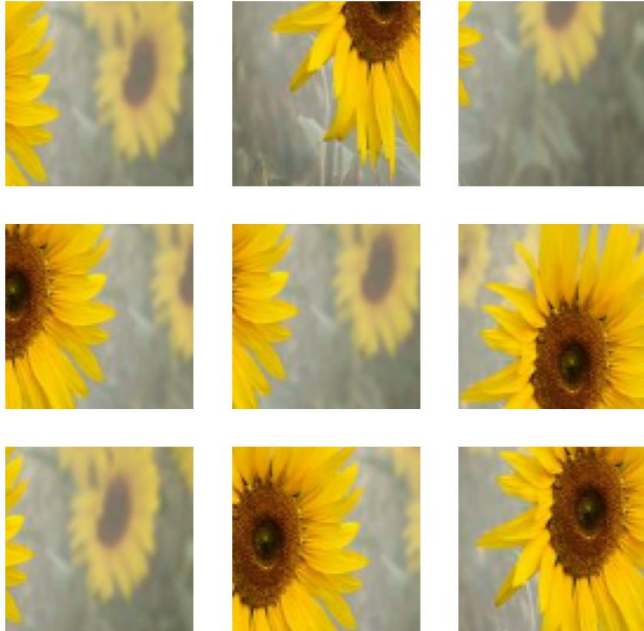


# Random Crop

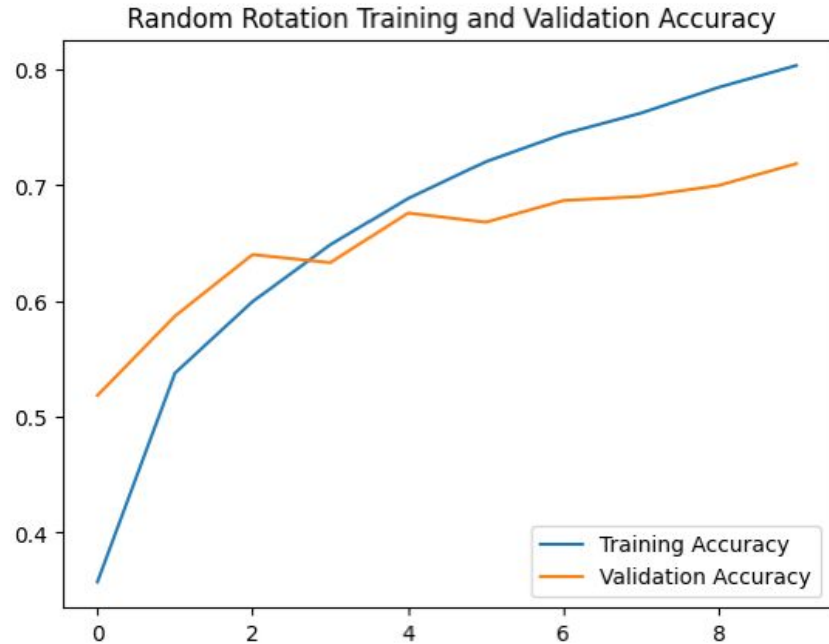




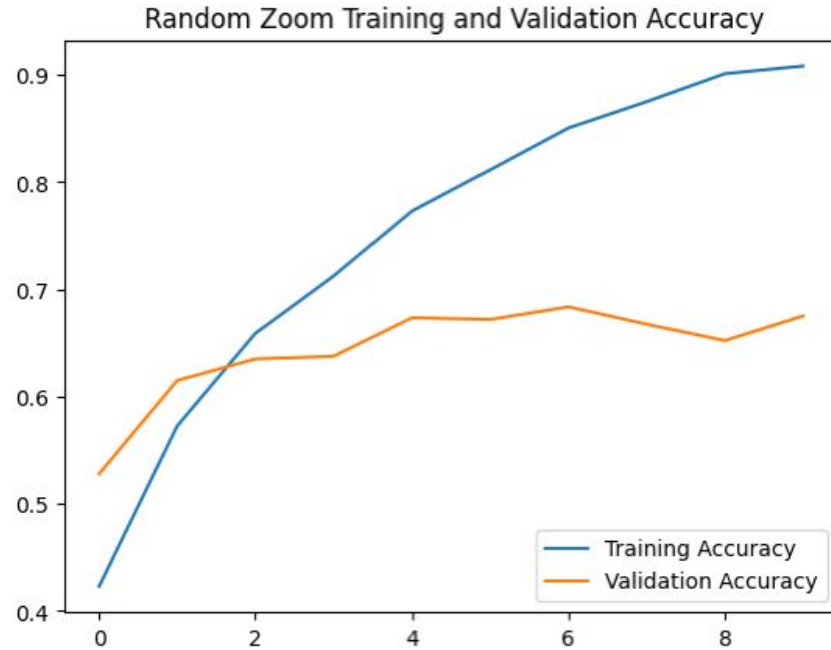
# Random Translation



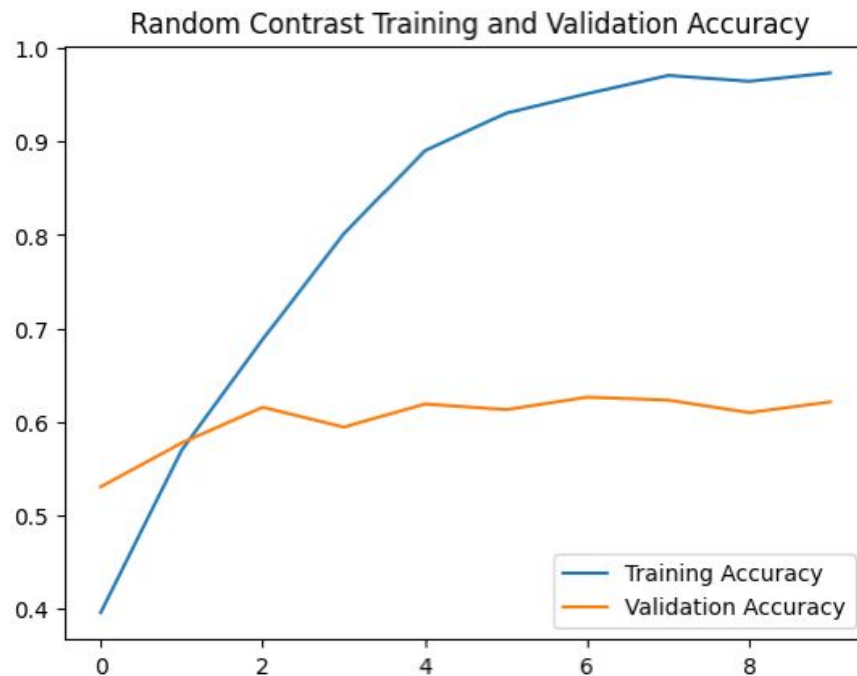
# Random Rotation



# Random Zoom

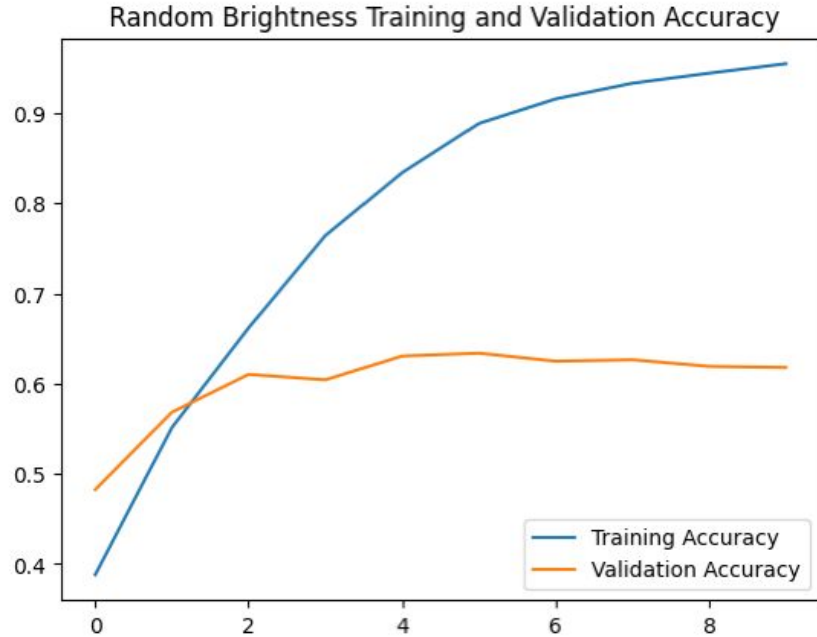
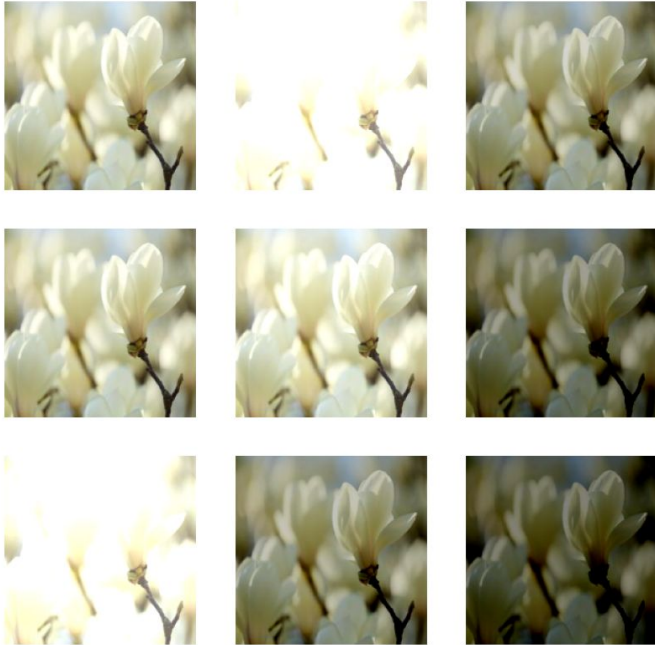


# Random Contrast

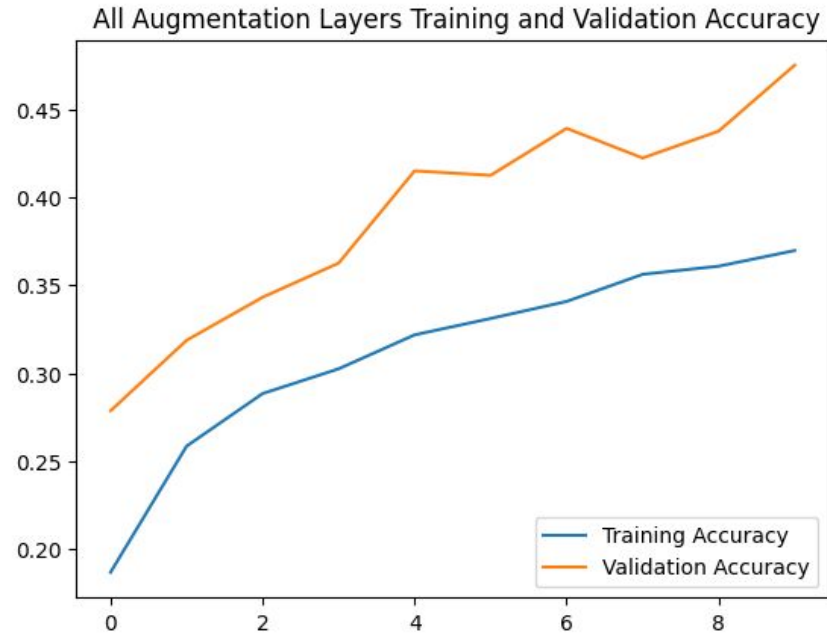
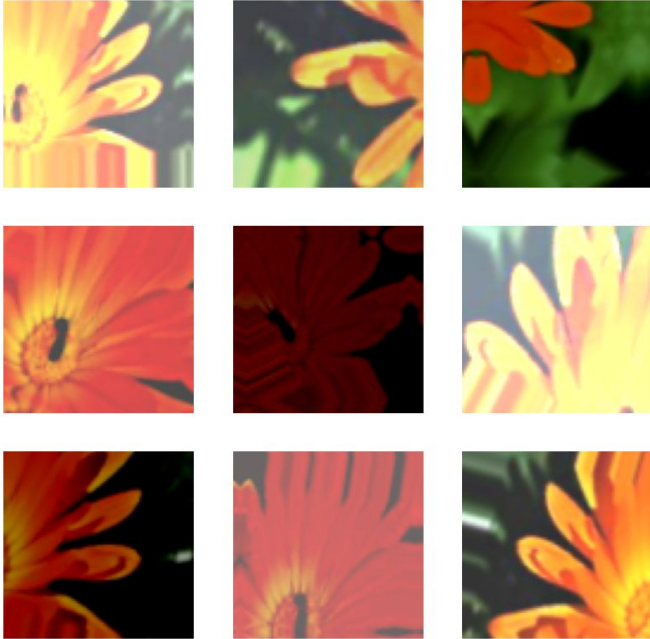




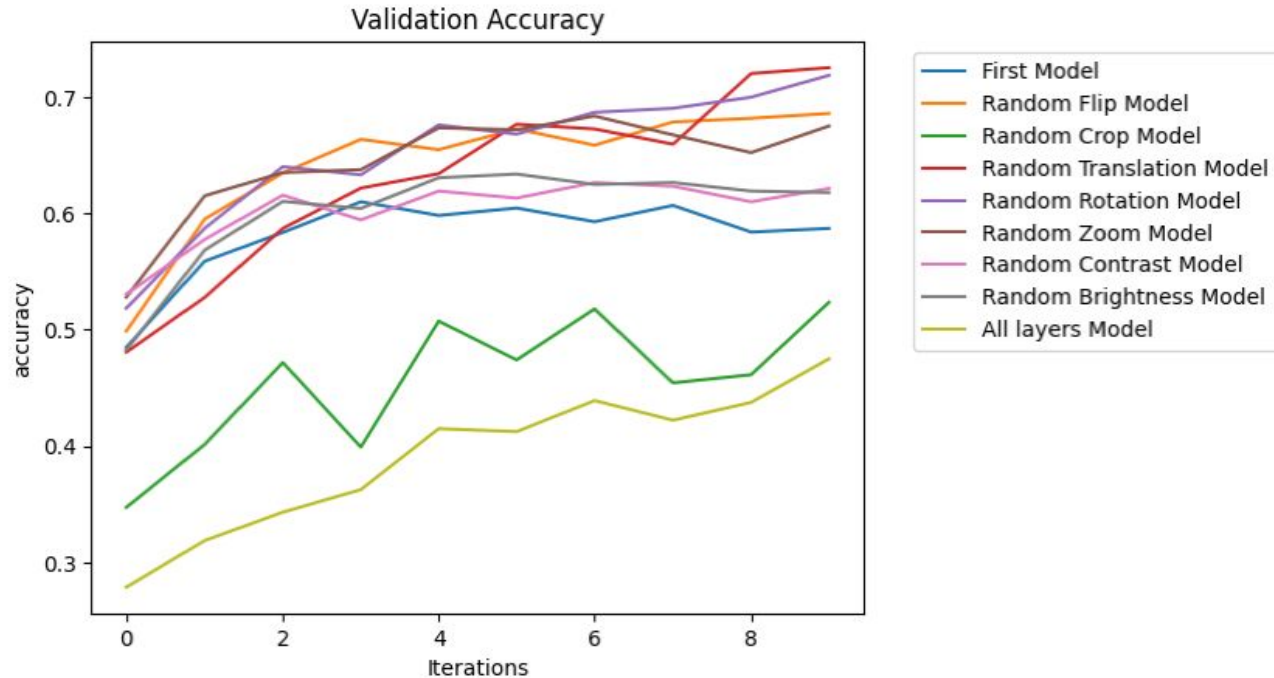
# Random Brightness



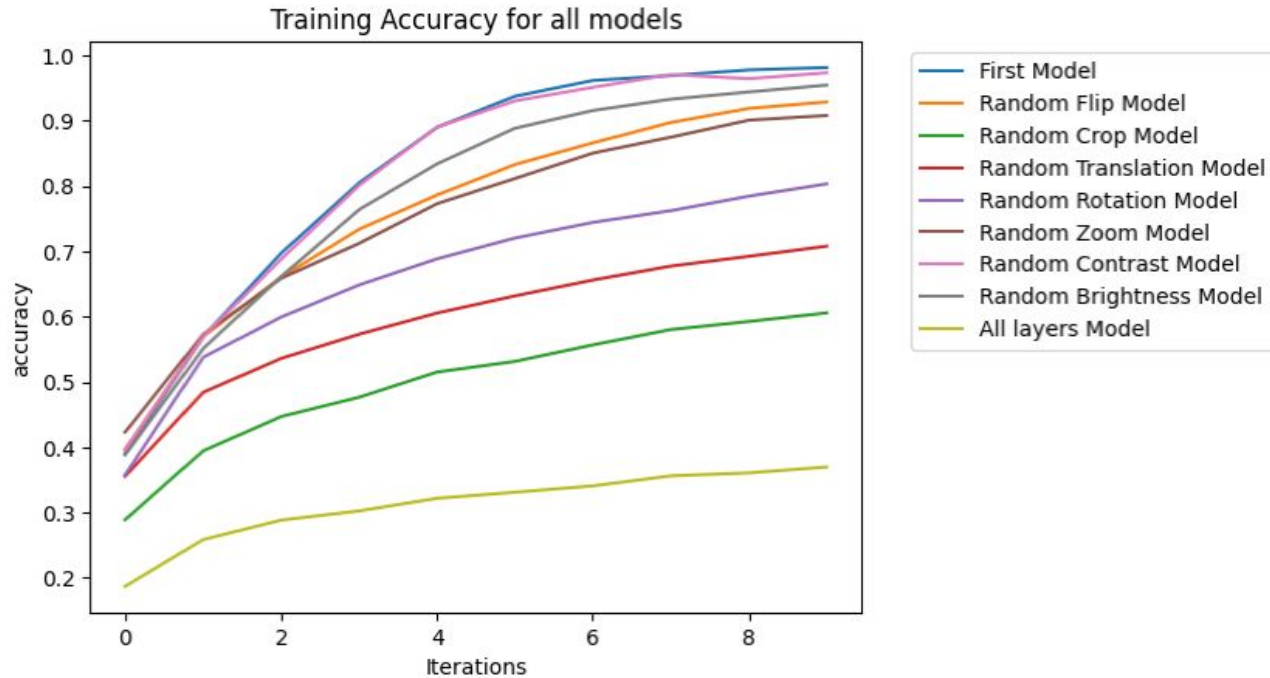
# All Data Augmentation Layers



# Validation Accuracy Across Models



# Training Accuracy Across Models





# Conclusion & Improvements

- **Key Findings:** Random Translation provided the highest accuracy of 72.5%. Combining all of the augmentations decreased the models performance.
- Our work emphasizes the importance of strategic data augmentation in improving CNN performance in real world applications.



# Contributions

- Project Proposal
  - Dataset Selection
- Code
  - Approach
  - Data Prep
  - Data Augmentation Models
- Technical Report
  - Introduction
  - Analysis / Interpretation
  - Conclusion
- PowerPoint Presentation
  - Slides + Voiceovers



We all decided to work on the project together rather than delegating tasks or portions of the assignment.

All team members contributed equally to the group work requirements.