GROUP 2

PROJECT CNN

Presented by Ankita and Bruno

OUR TEAM

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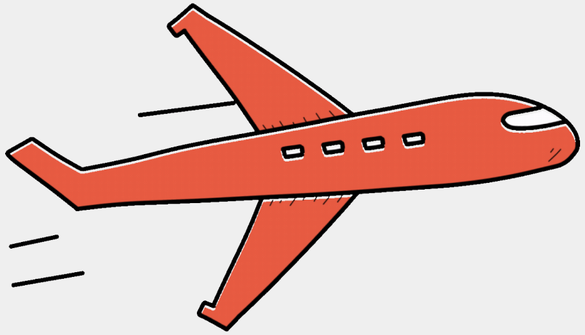
- Bruno Augusto

INTRODUCTION

IS IT A BIRD?

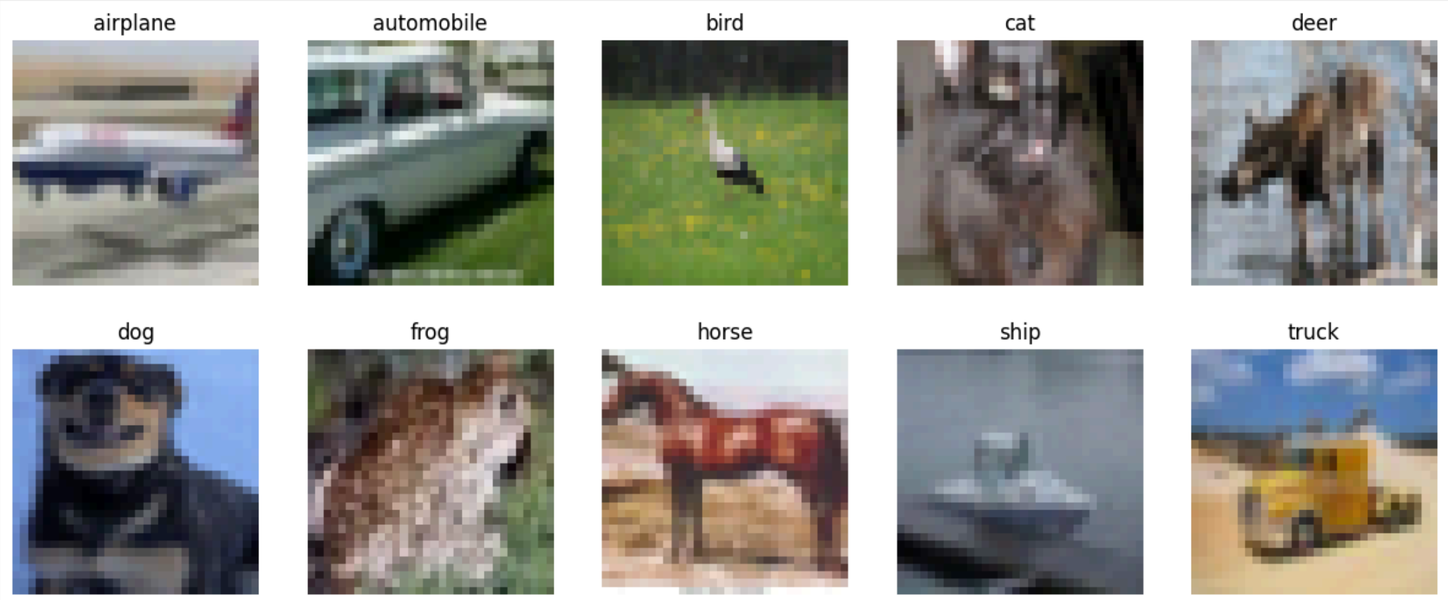


IS IT A PLANE?

NO! IT'S SUPER CNN

DATA SET CIFAR 10

It consists of 60,000 small 32x32 color images, divided into 10 different classes: airplanes, cars, birds, cats, deer, dogs, frogs, horses, ships, and trucks.

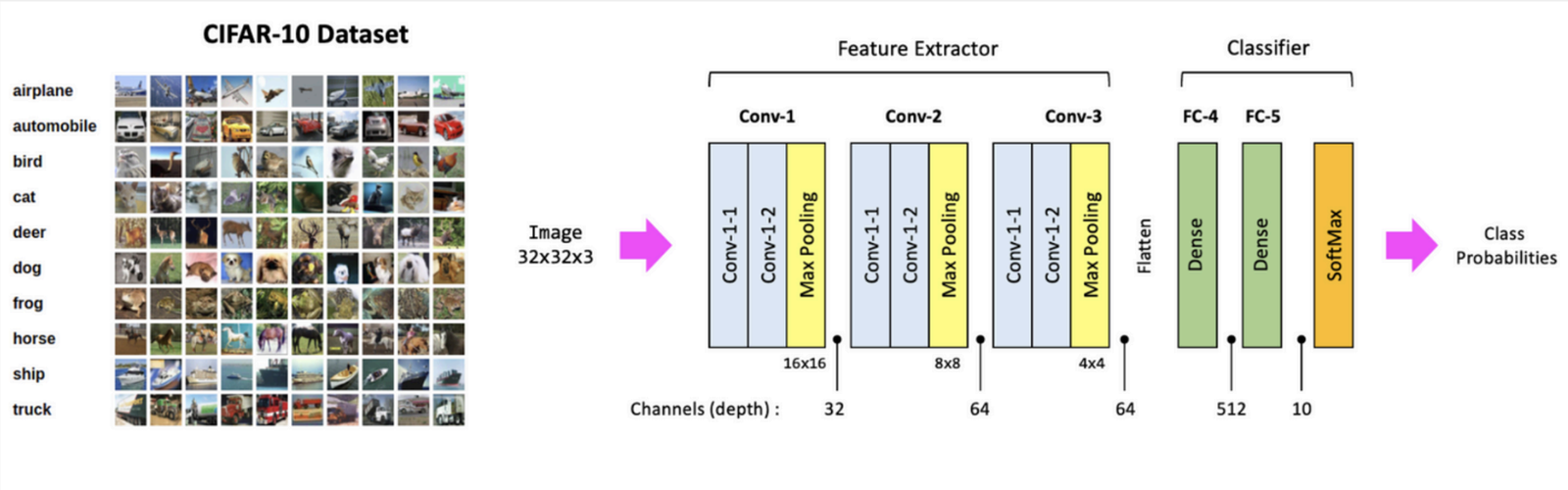


DATA PREPROCESSING

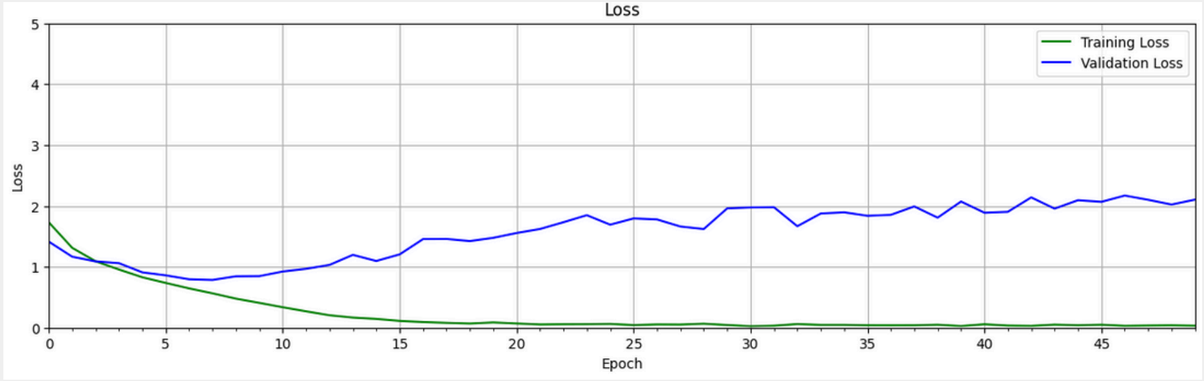
- **Normalization:** Scaled pixel values to [0, 1] for faster model convergence.
- **No Resizing:** Images already at required size (32x32).
- **Data Augmentation:** Applied techniques like flipping and rotation to increase dataset variety and prevent overfitting.
  - Random rotation by 15 degrees
  - Random shift images horizontally by 10%
  - Random shift images vertically by 10%
  - Random flip images horizontally
    Random zoom by 10%

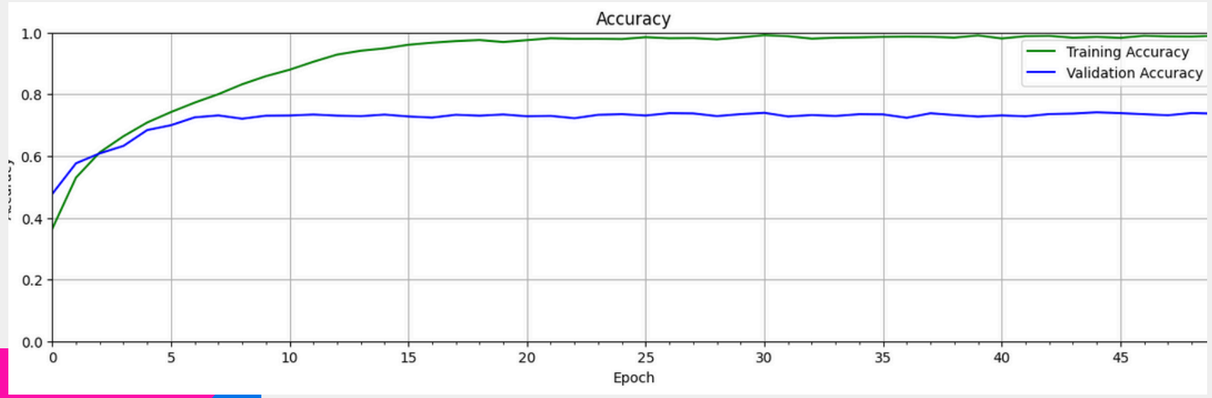
DESIGN CNN

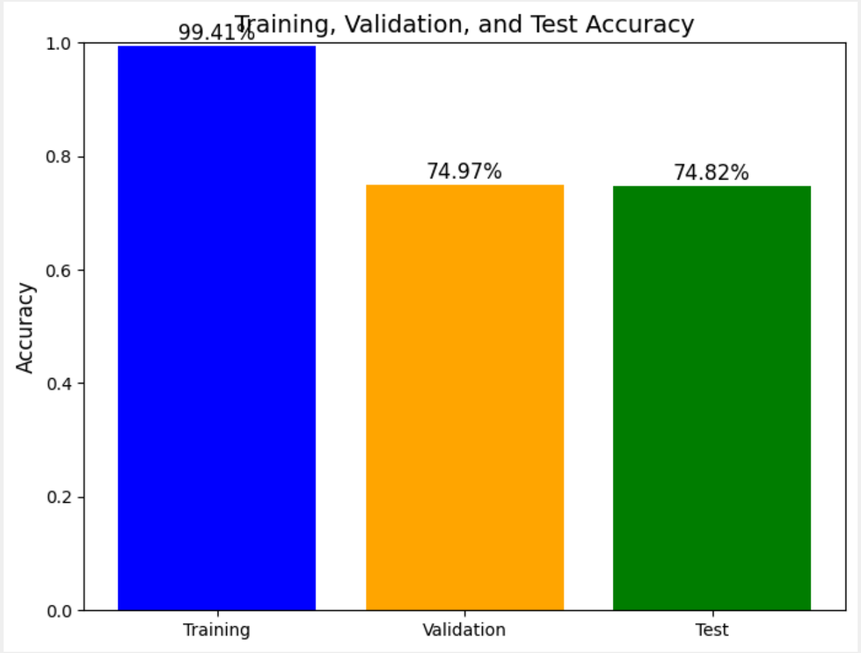
- *Design CNN suitable for image classification. Include convolutional layers, pooling layers, and fully connected layers.*



COMPILE AND TRAIN



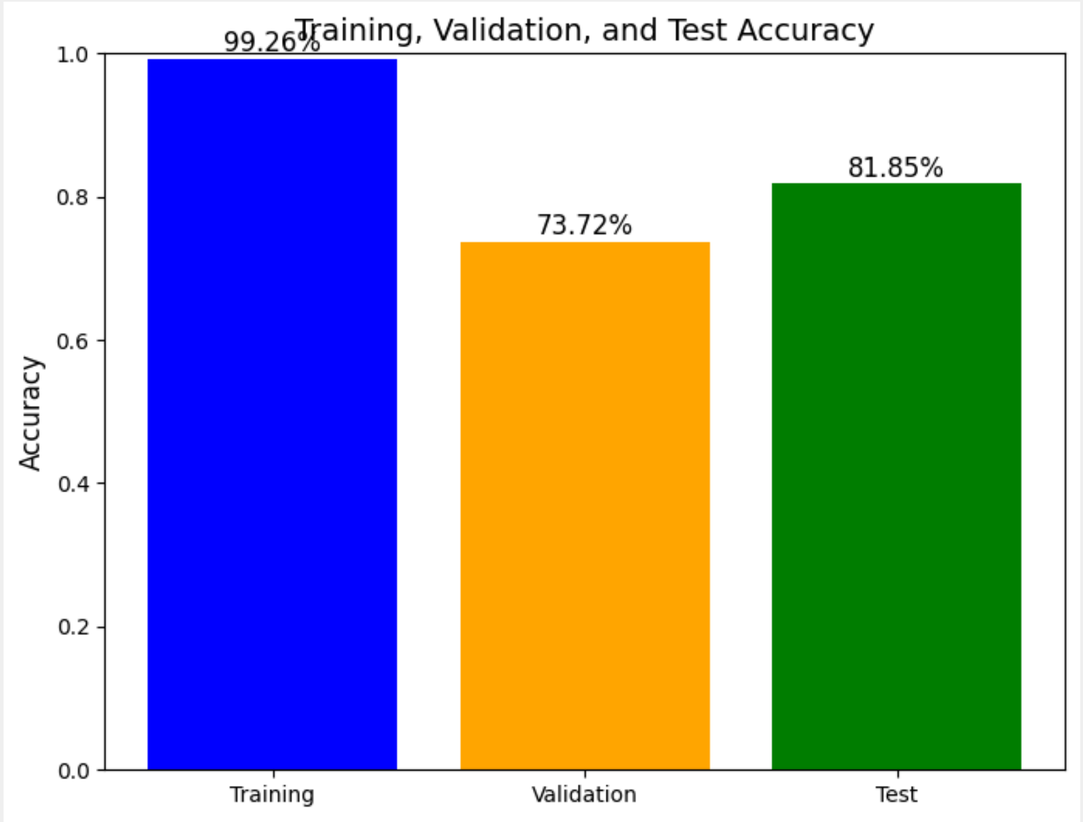




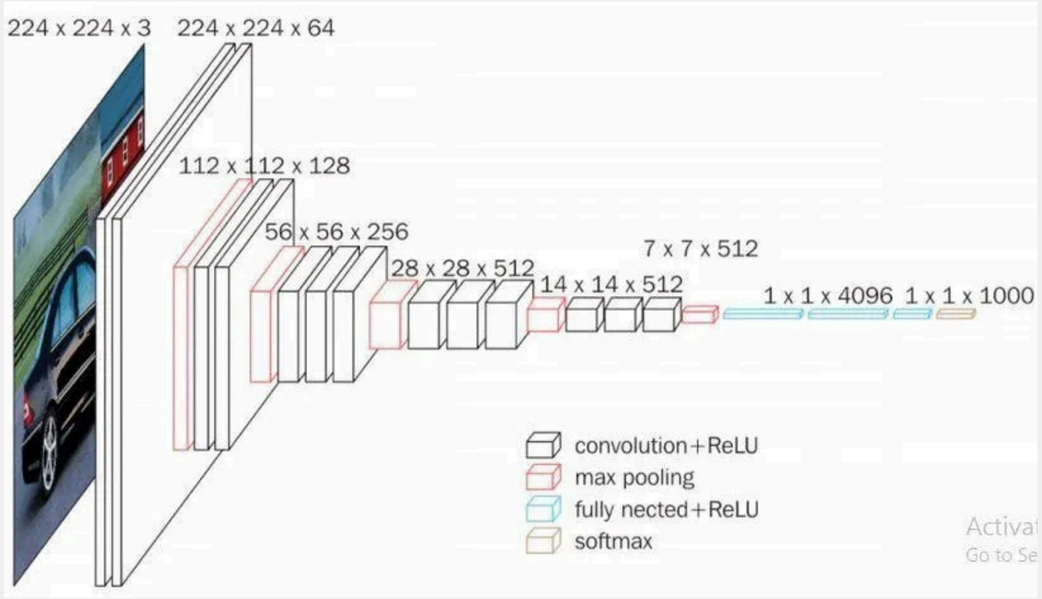
OPTIMIZATION TECHNIQUES

- **Dropout:**

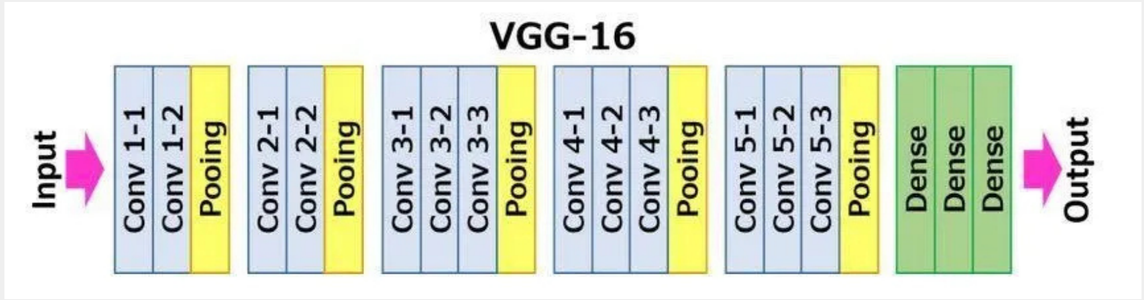
To Prevent Overfitting Dropout was applied to all layers



TRANSFER LEARNING

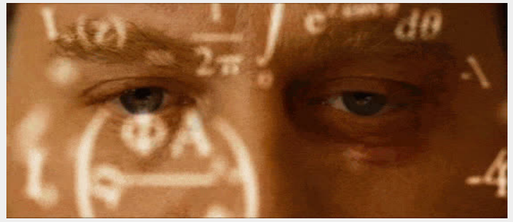


- VGG16 Pre Trained Model



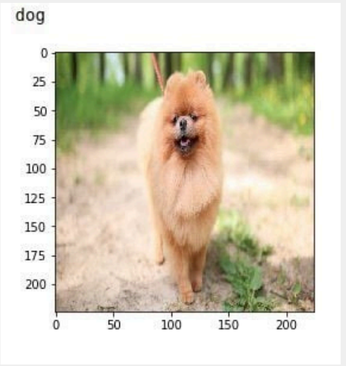
TRANSFER LEARNING

- **VGG16 Pre Trained Model**

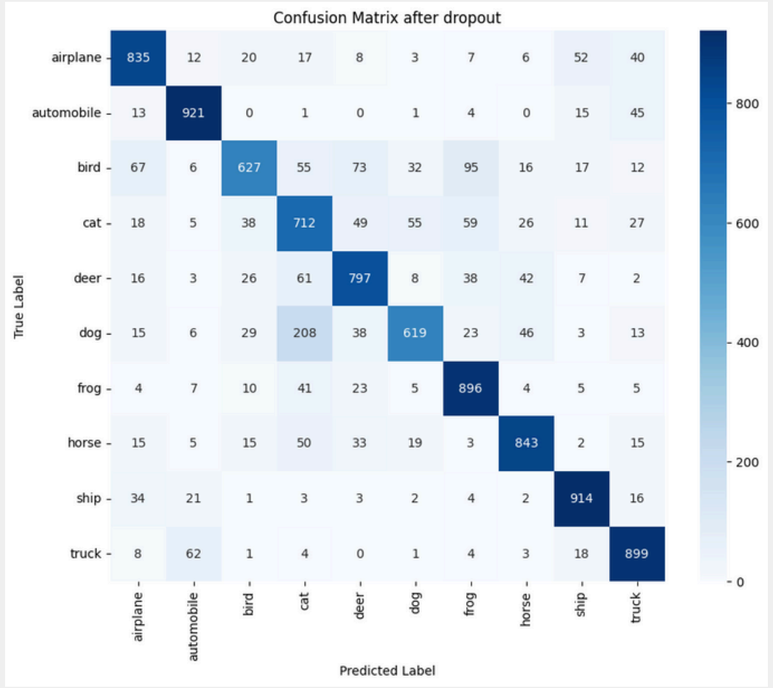


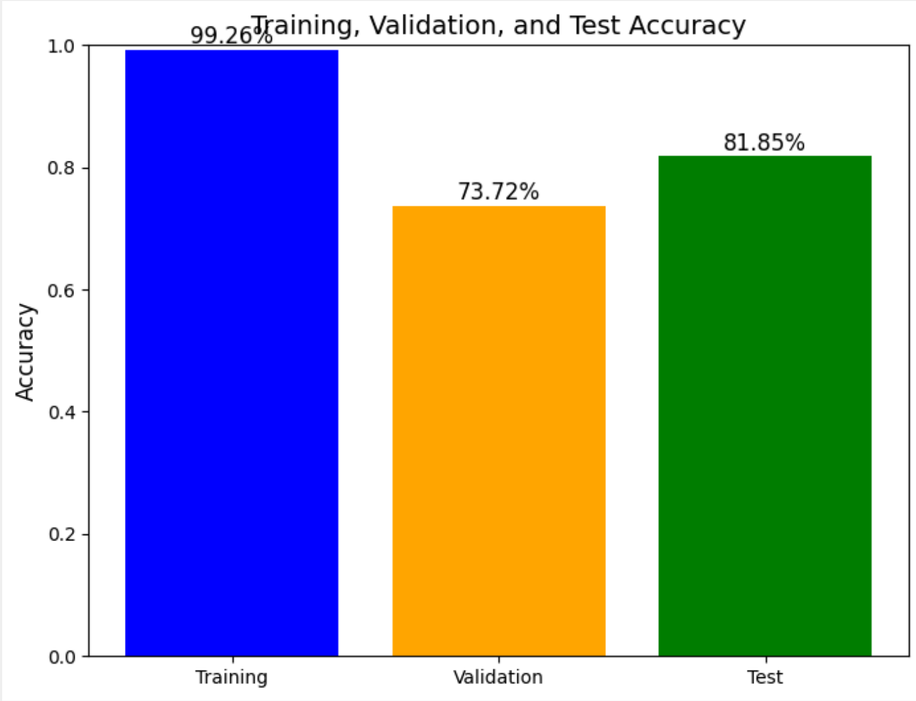
- CIFAR 10

- VGG16

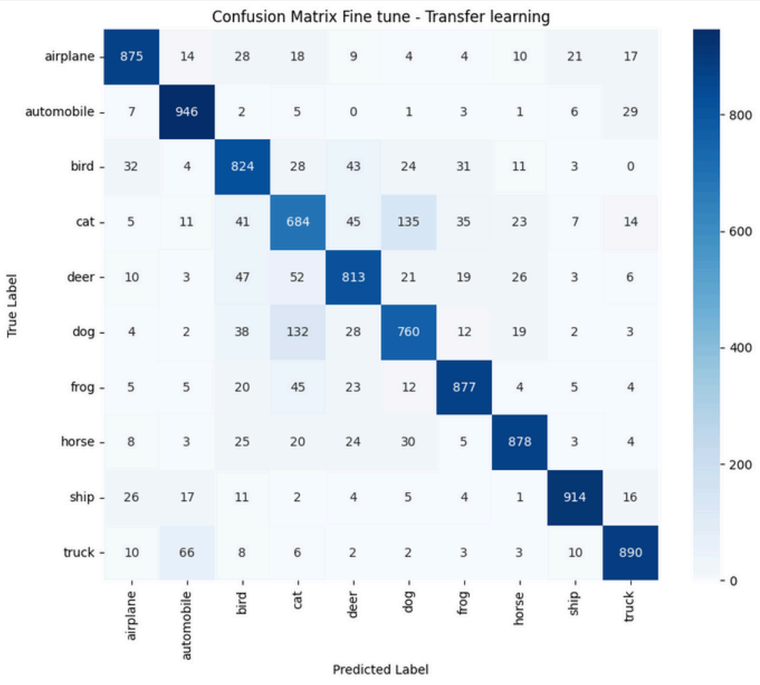


EVALUATION - CNN

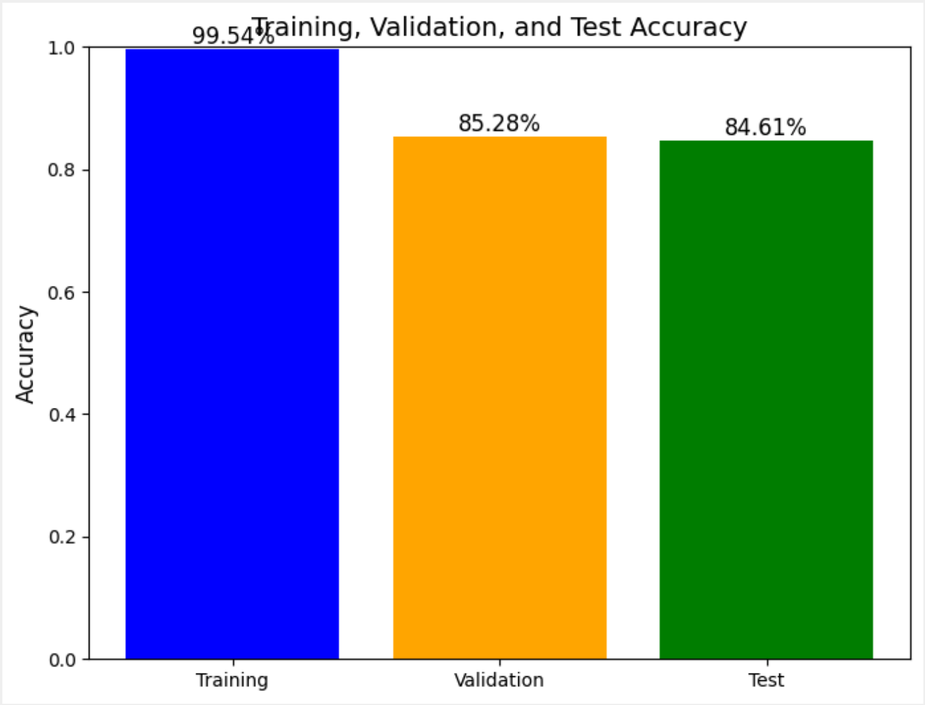




EVALUATION - TRANSFER LEARNING

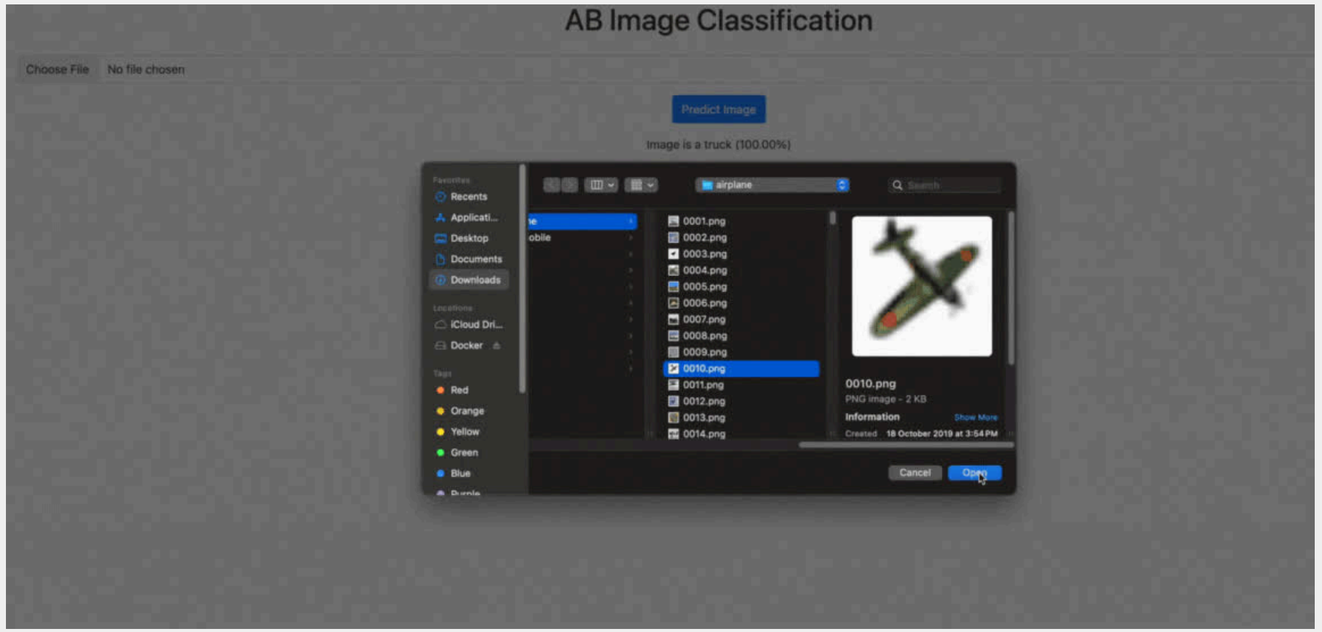


Used a pre-trained model VGG16 to leverage learned features, followed by fine-tuning to adapt the model to the CIFAR-10 dataset.



MODEL DEPLOYMENT

The best model was deployed locally by building an app using Flask.



RECAP

WHO BUILD THIS MODEL?

We did - That is a great motivation

QUESTIONS

THANK YOU