Glasses Detection Image Classification

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INTRODUCTION

BACKSTORY

Glasses typically used for vision correction

Other types of glasses
Safety Glasses
Sunglasses
3D Glasses.

Data set

Glasses or No Glasses Dataset

- Kaggle.
- 4920 images.
  - 2769 Glasses
  - 2151 No glasses
  - 1024 X 1024

Tools

- Pandas
- Numpy
- Matplotlib
- Seaborn
- Sklearn
- Keras
- Tensorflow
- Visualkeras
- Pickle

02

PREPROCESSING

Preprocessing

Resize	img_to_array	Reshape
1024x1024 128x128	Using keras preprocessing	To be fitted into models

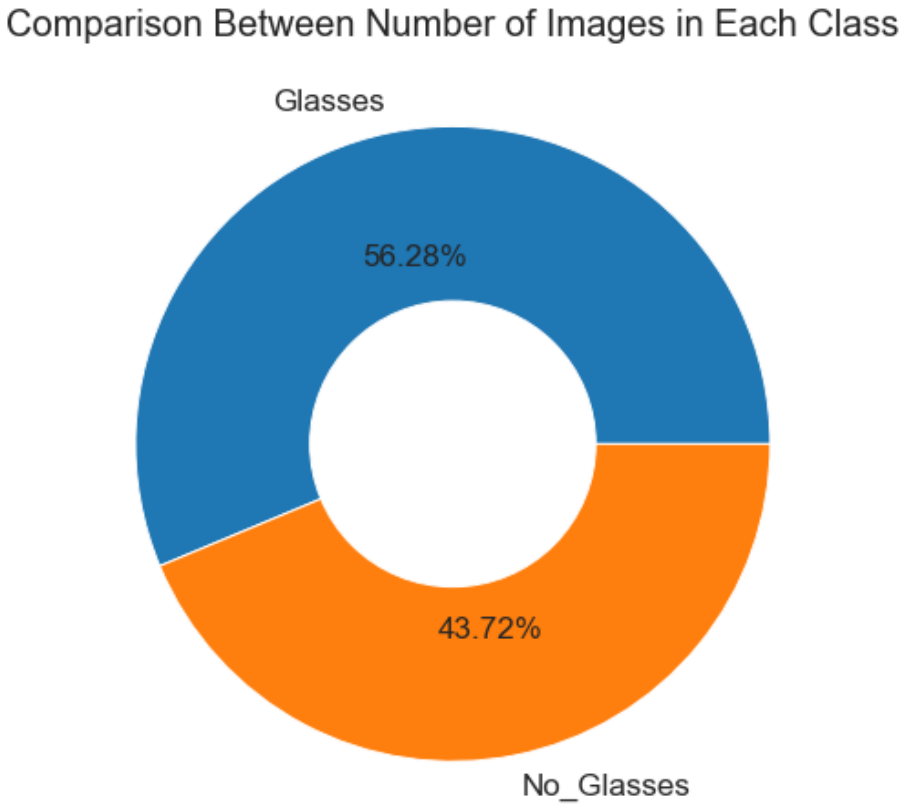
03

DATA ANALYSIS

Data Sample


no_glasses
no_glasses
no_glasses
no_glasses
no_glasses
no_glasses
no_glasses
no_glasses
no_glasses
glasses
glasses
glasses
glasses
glasses
glasses
glasses
glasses
glasses

Pie Chart for Image Classes



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AUGMENTATION

4920 → 9399 Images

2769 → 4770 Glasses

2151 → 4629 No glasses

Augmentation Sample

Classes Count Comparison

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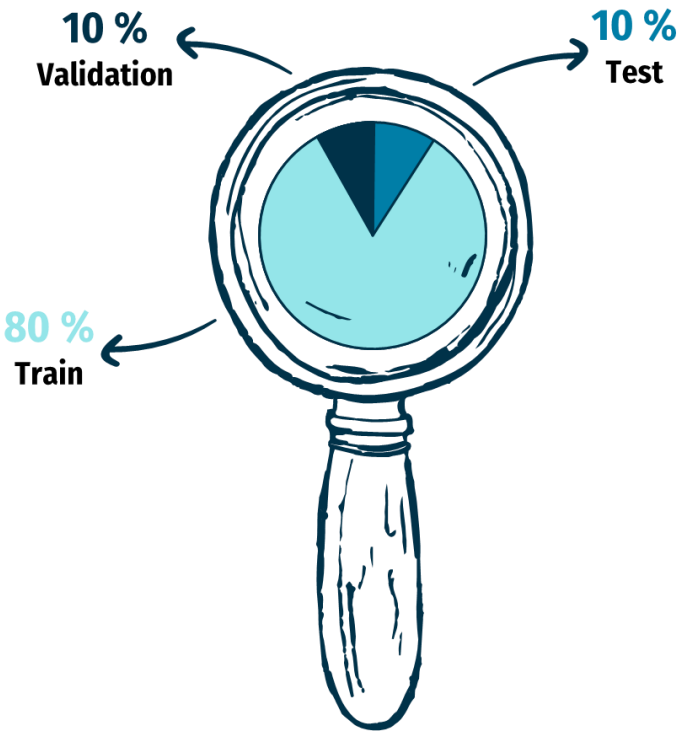
MODELS



Baseline
Logistic Regression

Before Augmentation

After Augmentation

Simple NN Model

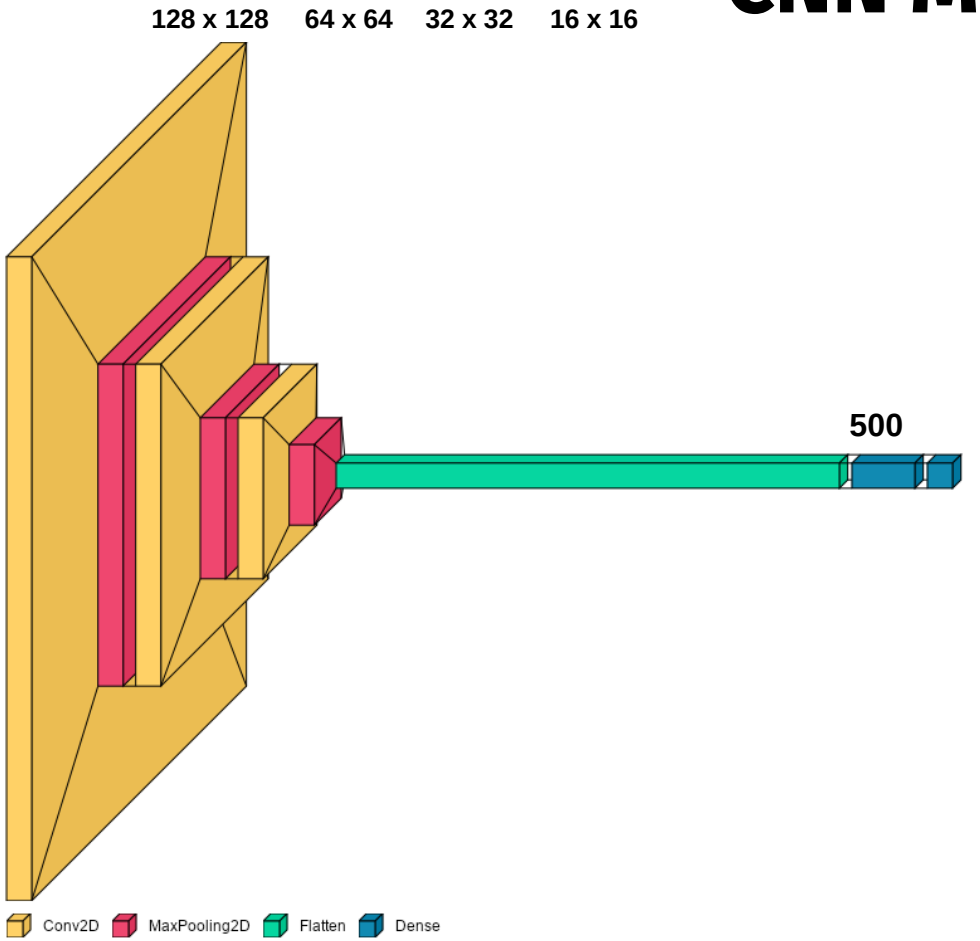
Training: 0.56021
Valuation: 0.54471

Training: 0.96189
Valuation: 0.9593

Training: 0.9222
Valuation: 0.9186

Training: 0.9214
Valuation: 0.9085

CNN Model

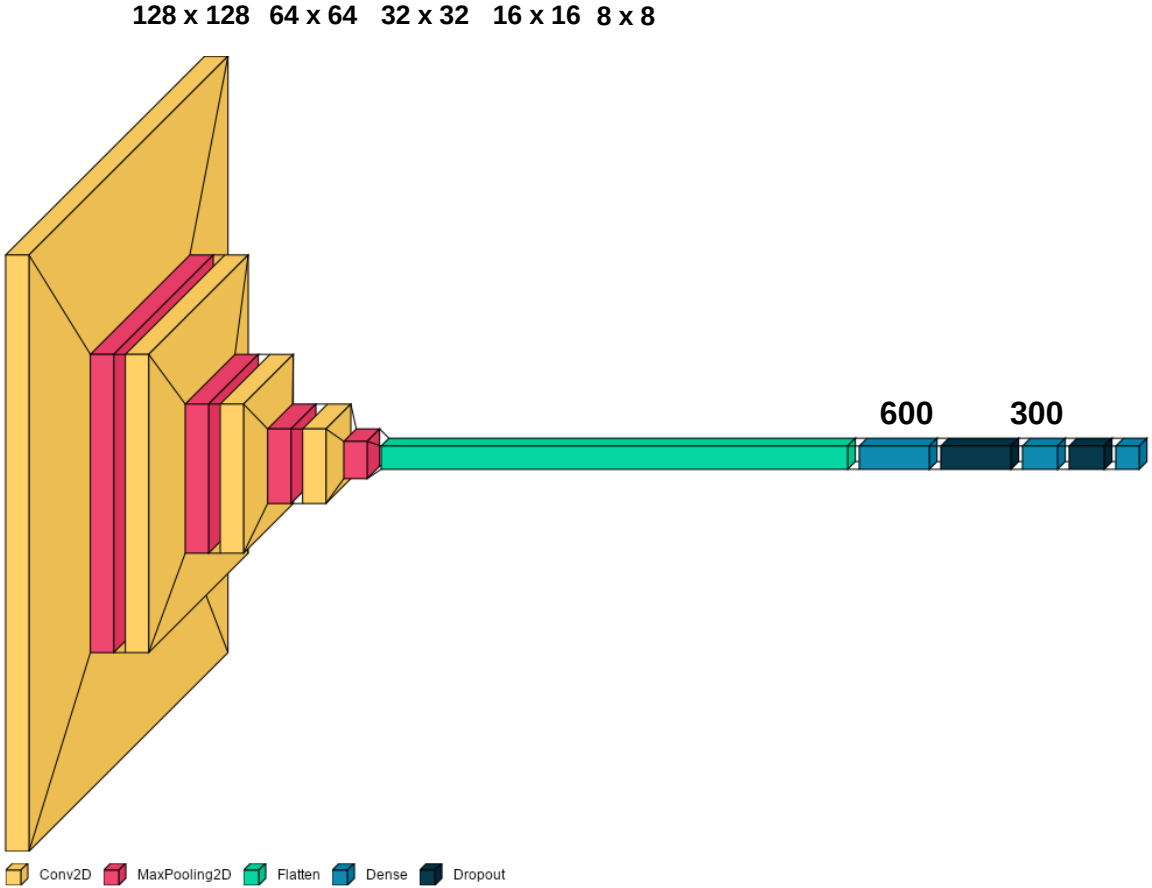


Training:	0.9966
Valuation:	0.9959

Transfer Learning

Model	Training	Validation
VGG16	0.9972	0.9756
Xception	0.8991	0.8638
ResNet50	0.9966	0.9756
MobileNet	0.9720	0.9247
DenseNet121	0.9435	0.9146
EfficientNetB1	0.9951	0.9817

Best Model



Training:	0.9917
Valuation:	0.9936

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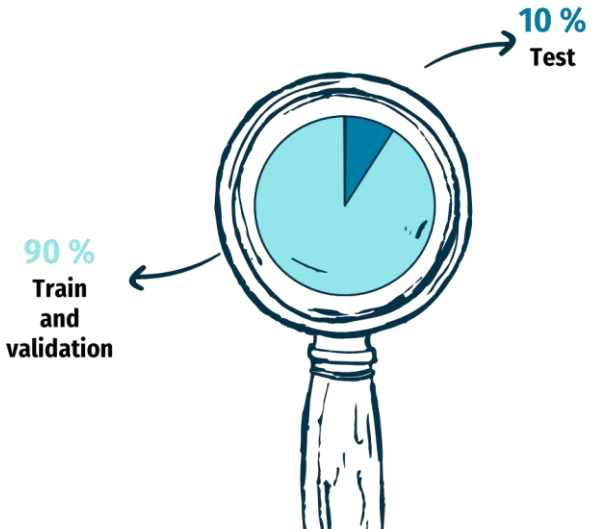
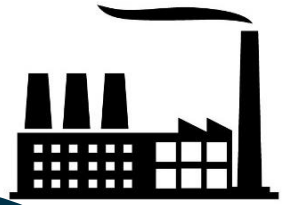
CONCLUSION

Training + Validation :
0.9985
Test:
0.9957





Future Work