FACIAL EMOTION CLASSIFICATION

presented by

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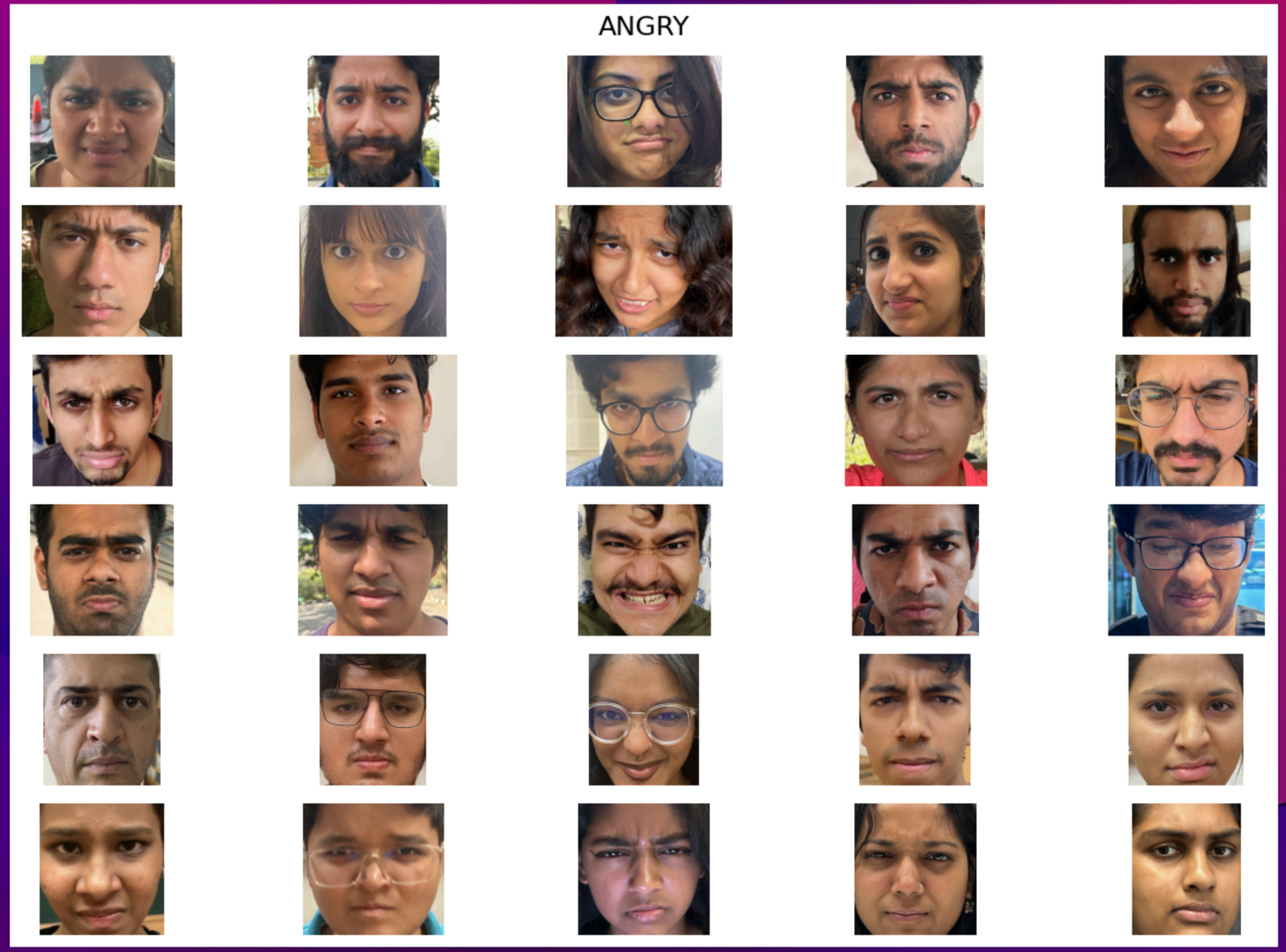
THE DATASET



MULTI-CLASSIFICATION: 5 CATEGORIES OF EMOTIONS

Happy,
Sad,
Neutral,
Angry,
Shocked

30 STUDENTS - 150 IMAGES

unedited,
colorized,
front-facing
close-ups

STORING + LOADING

Google Drive Directory,
Key-Value Dictionary,
Matplotlib for Verifying

FORMATTING + NORMALIZATION

RGBA -> RGB files
Store HEIC images to JPEGs
New Destination Folder

divide by 225,
adjust to [0,1] range for high-resolution images

AUGMENTATION

resizing 244 x 244
high exposure,
low brightness versions

dataset size increased to 300

GRAYSCALE + CANNY EDGE DETECTION

grayscale to canny edge detection comparisons
threshold adjusted from 100-200 to 50-150

MODEL COMPARISON

VGG16 (bad)

EPOCHS = 8, STEPS PER EPOCH = 5

TRAIN ACCURACY = 56%

TEST ACCURACY = 57%

ResNet (really bad)

EPOCHS = 6

TRAIN ACCURACY = 23.75%

TEST ACCURACY = 33%

GoogleNet (winner)

EPOCHS = 14

TRAIN ACCURACY = 82.08%

TEST ACCURACY = 68%

Our Model Attempt (suspicious winner)

EPOCHS = 10

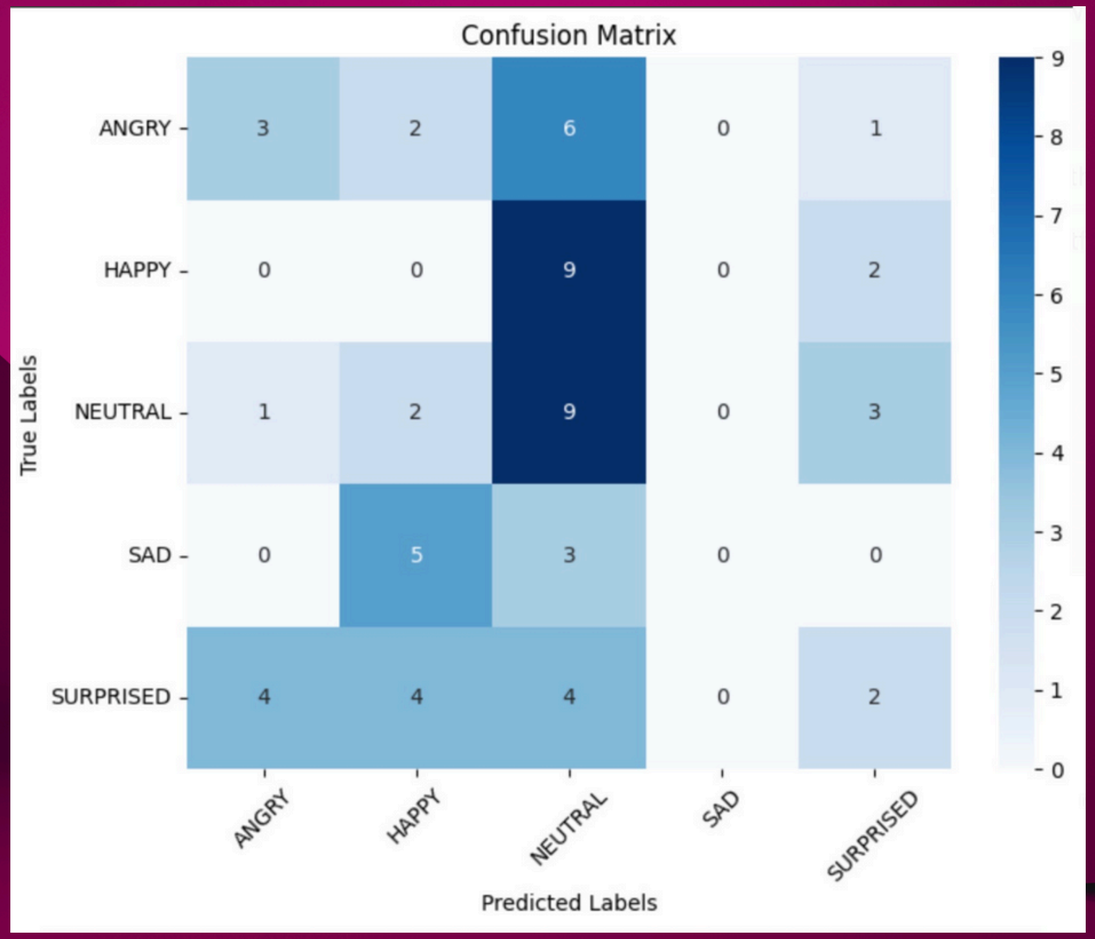
TRAIN ACCURACY = 87%

TEST ACCURACY = 80%

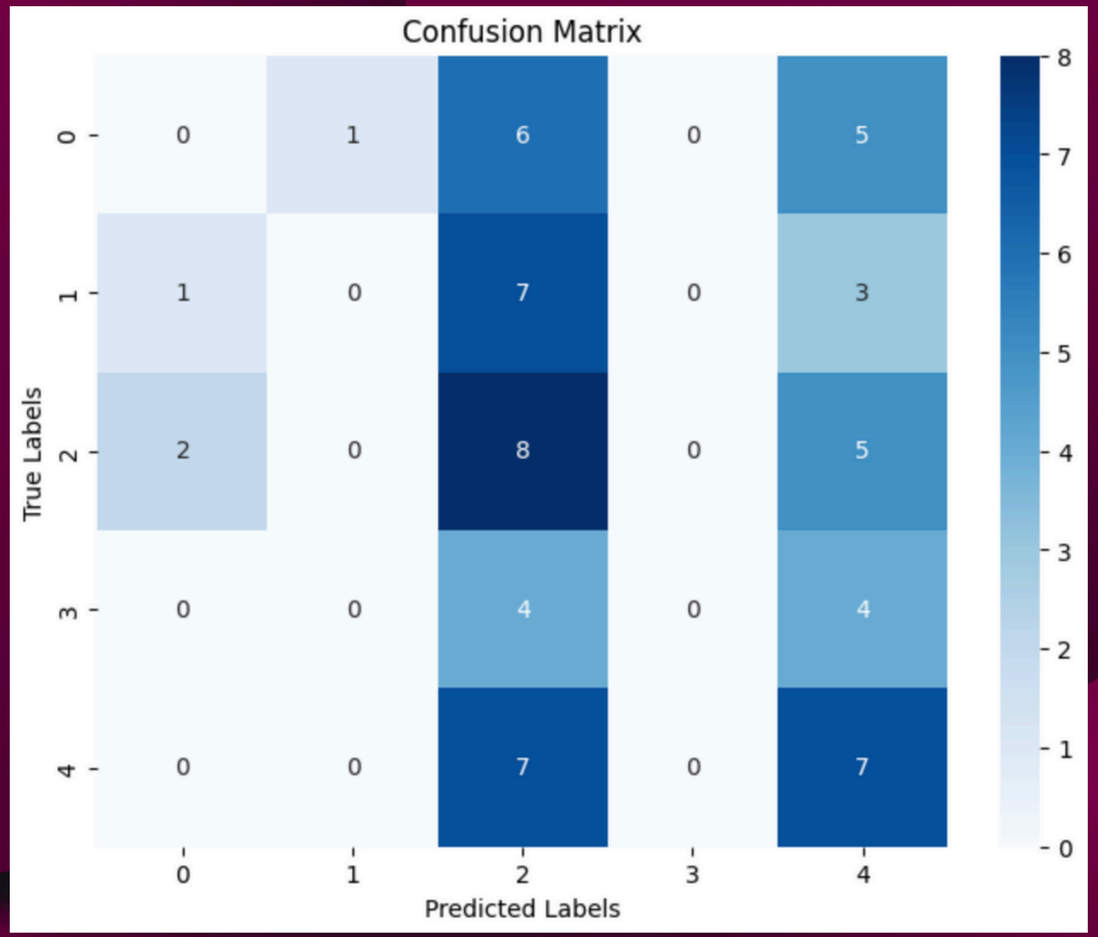
```python
# Define the model
model = Sequential()

# Add convolutional layers
model.add(Conv2D(32, (3, 3), activation='relu', input_shape=(224, 224, 3)))
model.add(MaxPooling2D((2, 2)))

model.add(Conv2D(64, (3, 3), activation='relu'))
model.add(MaxPooling2D((2, 2)))

model.add(Conv2D(128, (3, 3), activation='relu'))
model.add(MaxPooling2D((2, 2)))

model.add(Conv2D(256, (3, 3), activation='relu'))
model.add(MaxPooling2D((2, 2)))

# Flatten the output of the convolutional layers
model.add(Flatten())

# Add fully connected layers
model.add(Dense(128, activation='relu'))
model.add(Dense(64, activation='relu'))
model.add(Dense(5, activation='softmax'))  # Adjust the number of units for the output layer

# Compile the model
model.compile(optimizer='adam', loss='categorical_crossentropy', metrics=['accuracy'])
```

CONFUSION MATRICES

VGG16

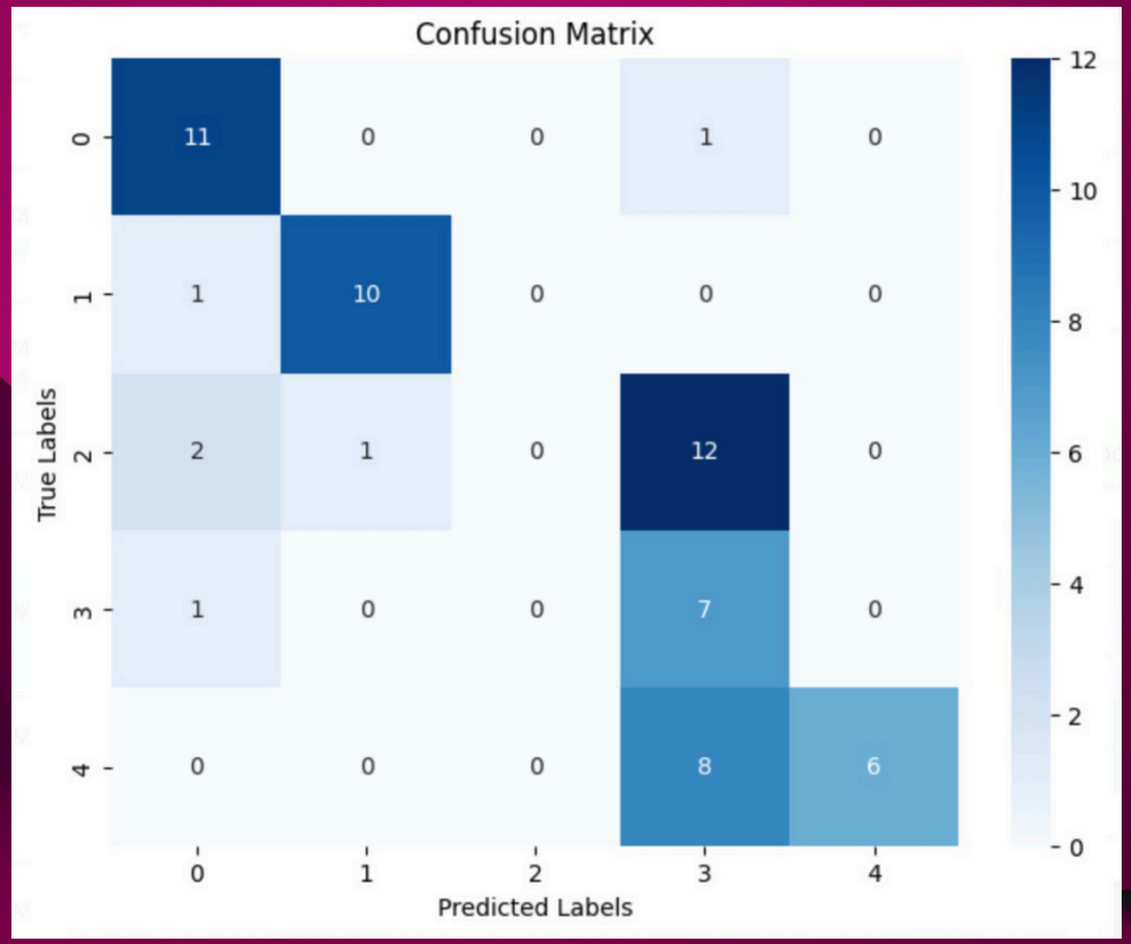


ResNet

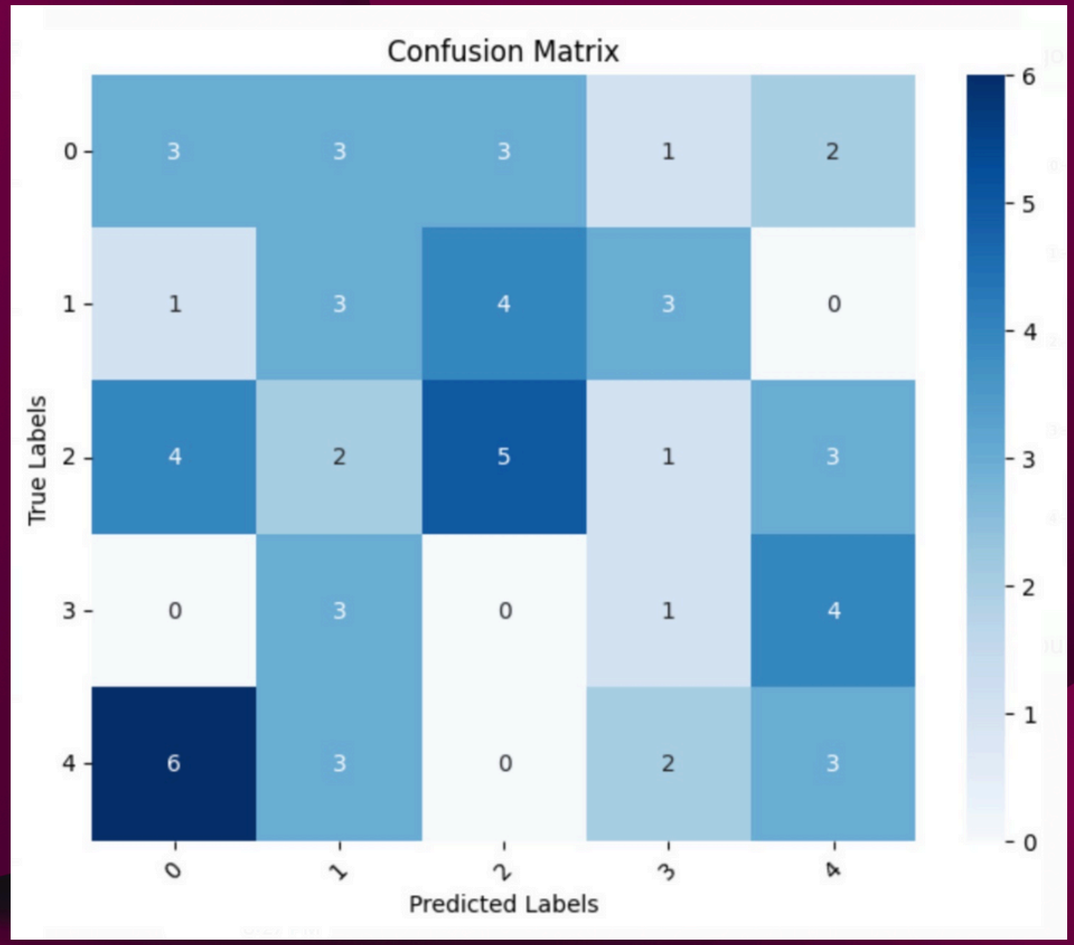


CONFUSION MATRICES

GoogleNet



Our Model



OUTCOMES, FINDINGS

- DATASET LIMITATIONS
- PRE-PROCESSING CHALLENGES
- EDGE-COMPLEXITY
- STANDARD MODEL OUTPERFORMS GOOGLENET