



lululemon  **athletica**

MACHINE LEARNING
MULTI-IMAGE CLASSIFICATION



EDWARD JUAREZ
Founder
Chief Data Scientist

ABOUT ME:

FOUNDER: ALPHA-WEAVE ANALYTICS

HEADQUARTER: NEW YORK, NEW YORK

BACKGROUND: 2 DECADES AS AN INVESTMENT BANKER ON WALL ST.

THINGS I LOVE TO DO: MEDITATE, YOGA, COMPETE, EXERCISE AND INVEST

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MISSION



Nikki Neuberger - Chief Brand Officer at
LULULEMON

- Expand consumer reach,
- Improve new customers online shopping experience.
- Improve customer engagement

BUSINESS OBJECTIVE



Our goal is to create a multi-image classification model that can identify 5 different yoga poses

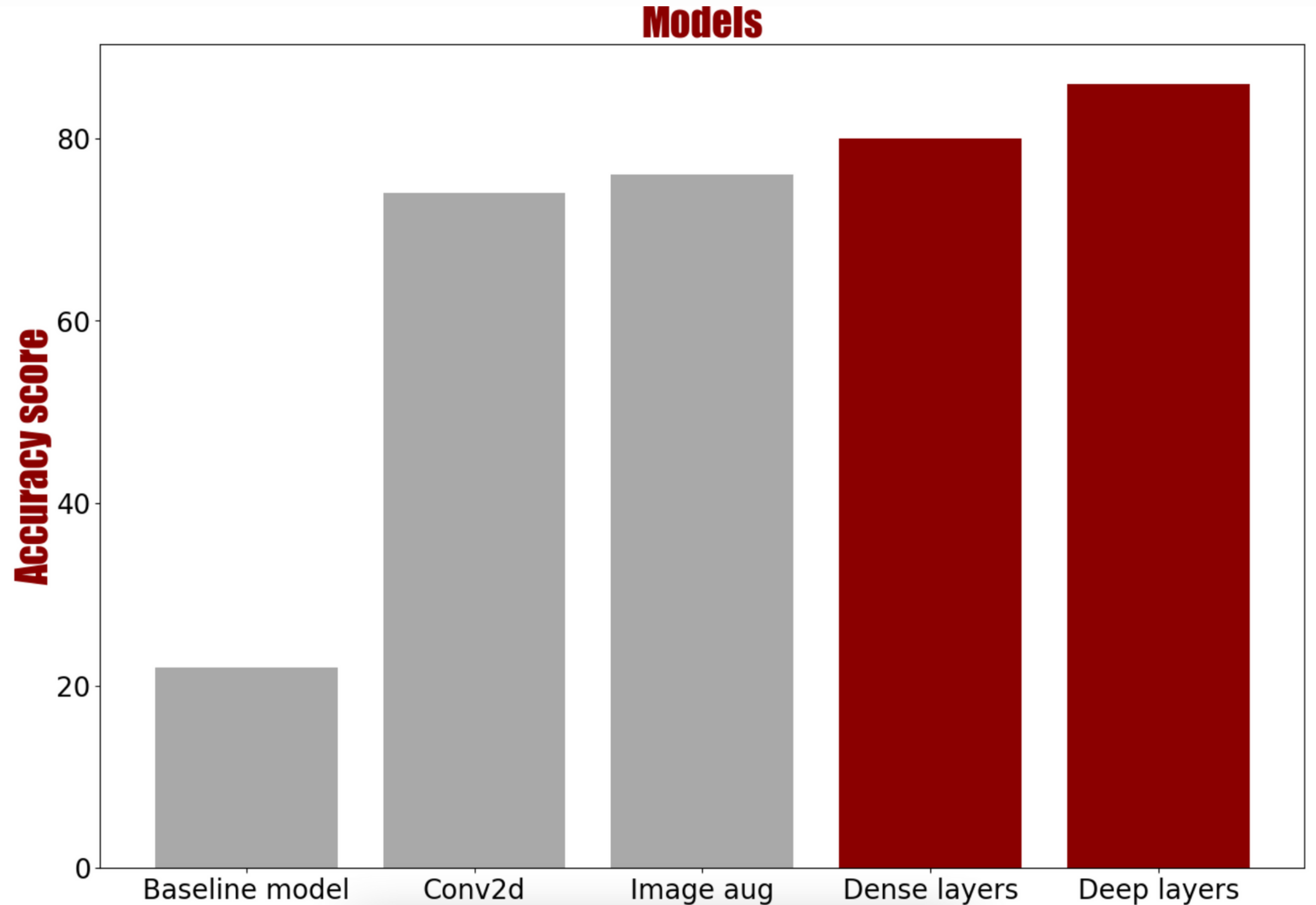
DATA OVERVIEW



Data	—————→	Kaggle
Content	—————→	5 Yoga Poses
Data size	—————→	1551 images
Challenges	—————→	Different poses

Model Metric: **Accuracy**

- Convolutional Layers
- Hyperparameters
- Image Augmentation
- Dense layers
- Dropout layers



Final Model Architecture

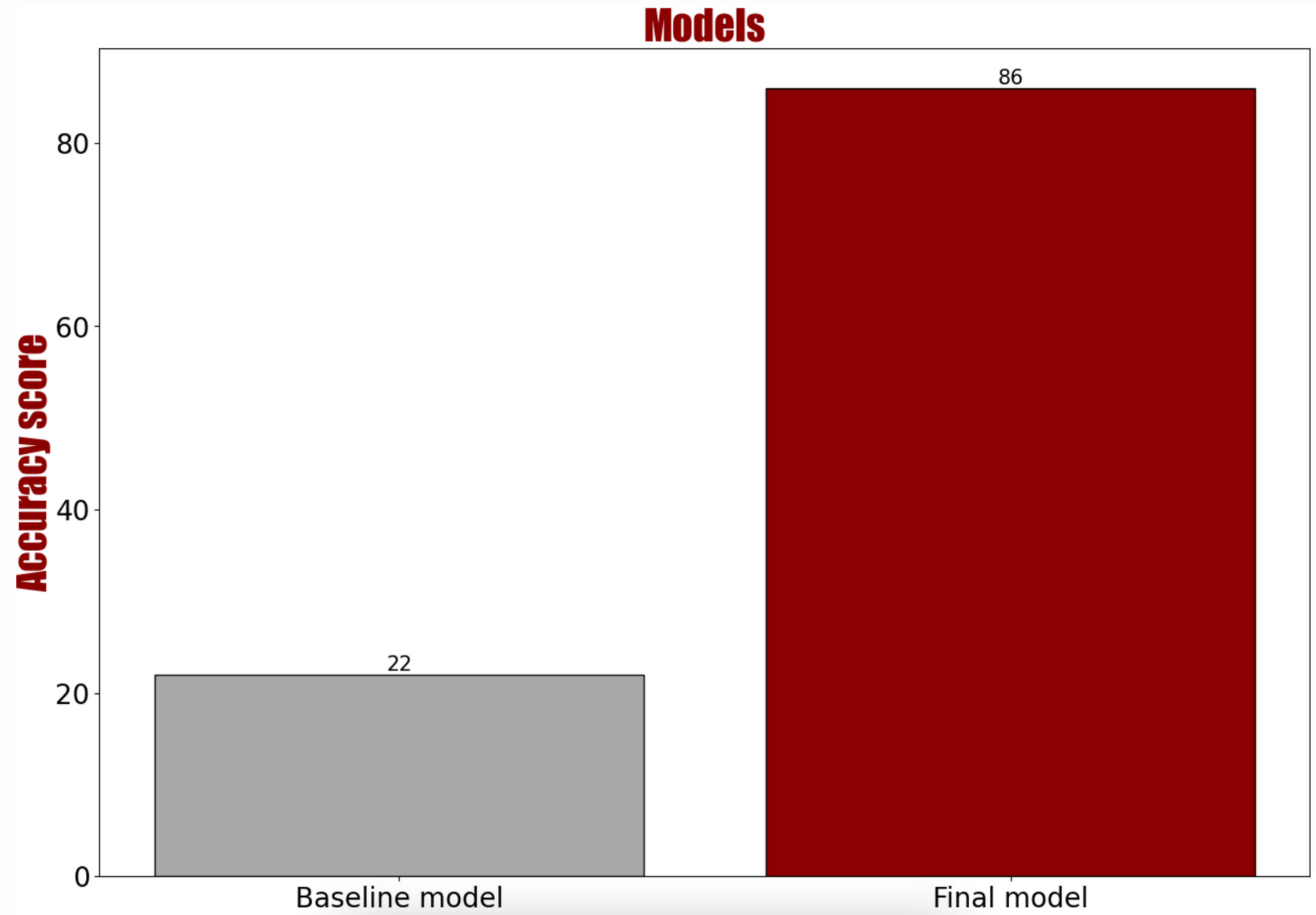


Model: "sequential"

Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 150, 150, 64)	2368
max_pooling2d (MaxPooling2D)	(None, 75, 75, 64)	0
dropout (Dropout)	(None, 75, 75, 64)	0
conv2d_1 (Conv2D)	(None, 75, 75, 128)	73856
max_pooling2d_1 (MaxPooling2D)	(None, 37, 37, 128)	0
dropout_1 (Dropout)	(None, 37, 37, 128)	0
conv2d_2 (Conv2D)	(None, 37, 37, 128)	147584
max_pooling2d_2 (MaxPooling2D)	(None, 18, 18, 128)	0
dropout_2 (Dropout)	(None, 18, 18, 128)	0
conv2d_3 (Conv2D)	(None, 18, 18, 256)	295168
max_pooling2d_3 (MaxPooling2D)	(None, 9, 9, 256)	0
dropout_3 (Dropout)	(None, 9, 9, 256)	0
flatten (Flatten)	(None, 20736)	0
dense (Dense)	(None, 1024)	21234688
dropout_4 (Dropout)	(None, 1024)	0
dense_1 (Dense)	(None, 5)	5125

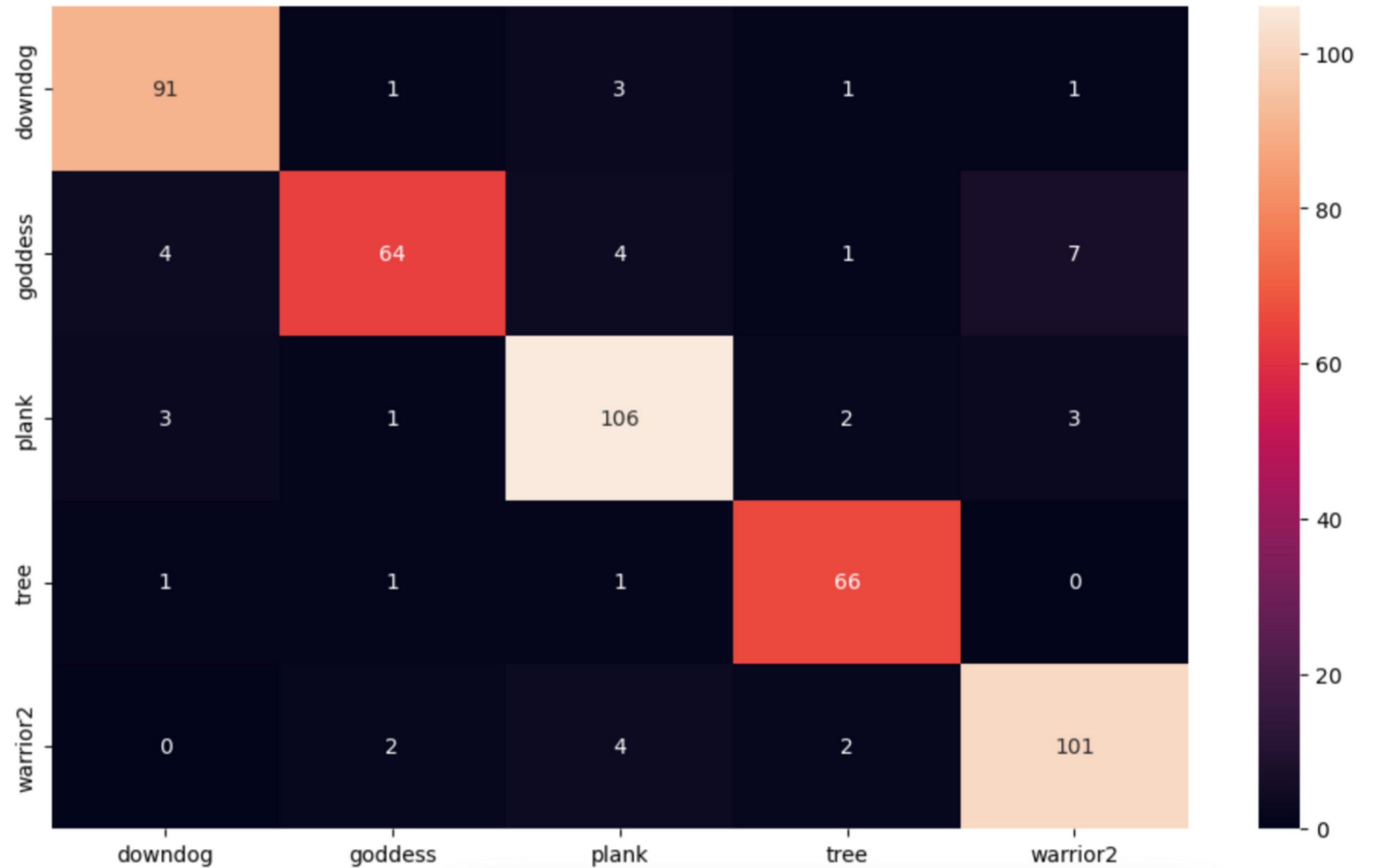
=====
Total params: 21,758,789
Trainable params: 21,758,789
Non-trainable params: 0

**Multi-image
classification
Score on
Validation
Data**








Test Data Results

Accuracy
score =
.91



CONCLUSION



-  **They can identify yoga pose**
-  **Predict Proba out**
-  **Gain reliable data**
-  **Improve customer relationship**
-  **Improve online user experience**



Contact information



<https://github.com/DSEDDIE>



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