WHAT POKEMON ARE YOU?

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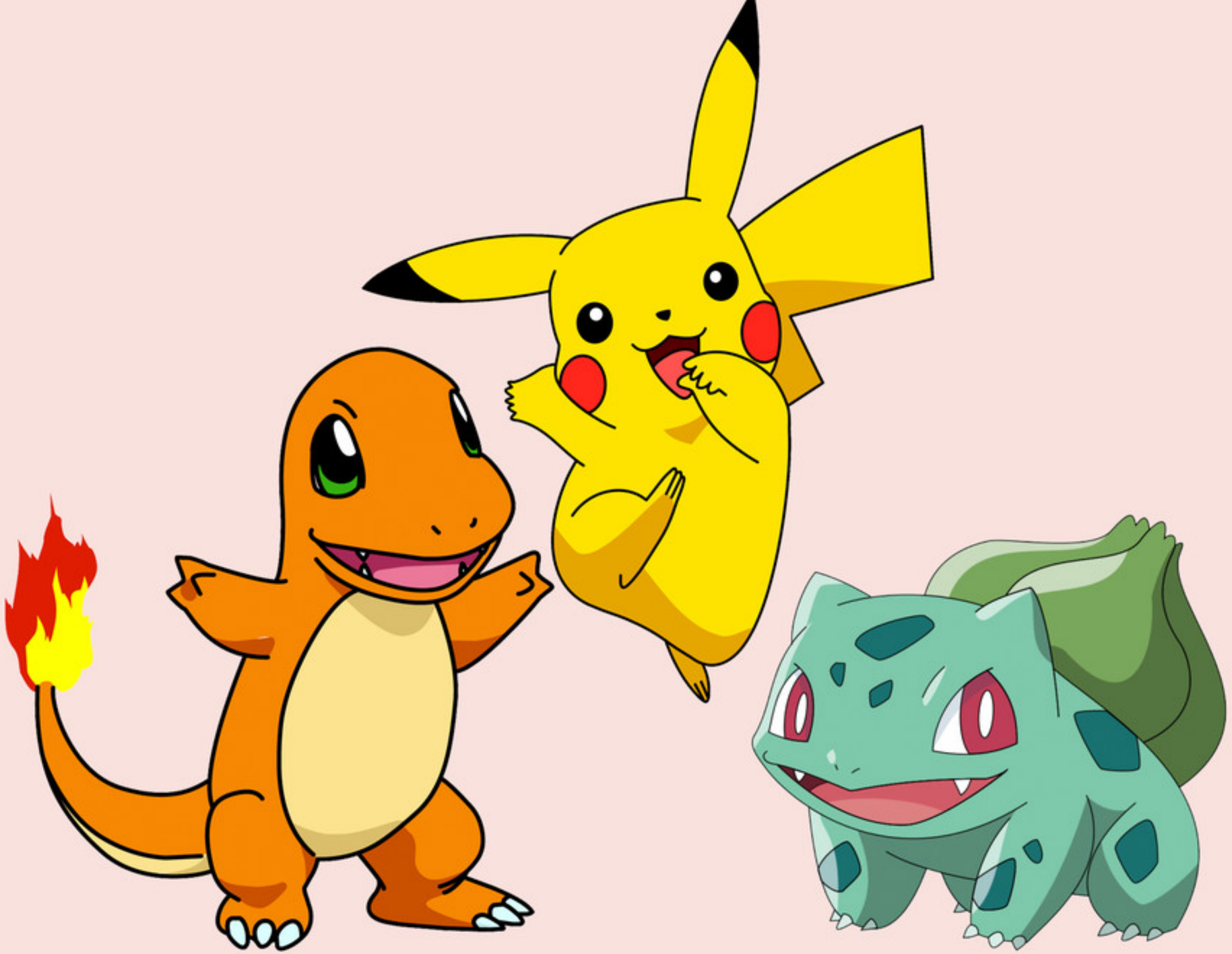
INTRODUCTION

Pokémon is an extremely popular franchise:

- books
- TV shows
- movies
- video games



METHODOLOGY

DATA

- Dataset from Kaggle, comprising of ~60 images for each Generation One Pokémon

- Selection of 57 unevolved forms, for a total of 4,371 images

METHODOLOGY

TOOLS

Python

Tensorflow

Google CoLab

METHODOLOGY

DESIGN

- Convolutional neural network
- Layers:

  convolution, normalization, pooling, and dropout

- Activation functions: ReLu and softmax
- No transfer learning utilized - too specialized
- Trained for 50 epochs

Layer (type)	Output Shape	Param #
conv2d_9 (Conv2D)	(None, 96, 96, 32)	896
batch_normalization_15 (BatchNormalization)	(None, 96, 96, 32)	128
max_pooling2d_9 (MaxPooling2D)	(None, 48, 48, 32)	0
dropout_15 (Dropout)	(None, 48, 48, 32)	0
conv2d_10 (Conv2D)	(None, 48, 48, 64)	18496
batch_normalization_16 (BatchNormalization)	(None, 48, 48, 64)	256
max_pooling2d_10 (MaxPooling2D)	(None, 24, 24, 64)	0
dropout_16 (Dropout)	(None, 24, 24, 64)	0
conv2d_11 (Conv2D)	(None, 24, 24, 128)	73856
batch_normalization_17 (BatchNormalization)	(None, 24, 24, 128)	512
max_pooling2d_11 (MaxPooling2D)	(None, 12, 12, 128)	0
dropout_17 (Dropout)	(None, 12, 12, 128)	0
flatten_3 (Flatten)	(None, 18432)	0
dense_9 (Dense)	(None, 512)	9437696
batch_normalization_18 (BatchNormalization)	(None, 512)	2048
dropout_18 (Dropout)	(None, 512)	0
dense_10 (Dense)	(None, 256)	131328
batch_normalization_19 (BatchNormalization)	(None, 256)	1024
dropout_19 (Dropout)	(None, 256)	0
dense_11 (Dense)	(None, 57)	14649

Total params: 9,680,889
Trainable params: 9,678,905
Non-trainable params: 1,984

RESULTS

Two models:

- trained for 20 epochs (validation accuracy of 0.5143)

- trained for 50 epochs (validation accuracy of 0.4960)

RESULTS

- Model 1: Lickitung

- Model 2: Lickitung

RESULTS

Model 1: Charmander

Model 2: Slowpoke

Model 1: Charmander

Model 2: Slowpoke

Model 1: Charmander

Model 2: Slowpoke

RESULTS

Abra

Model 1: Magikarp

Model 2: Slowpoke

Kadabra

Model 1: Charmander

Model 2: Slowpoke

Alakazam

Model 1: Charmander

Model 2: Voltorb

RESULTS

Model 1: Charmander

Model 2: Voltorb

Model 1: Charmander

Model 2: Charmander

Model 1: Charmander

Model 2: Slowpoke

CONCLUSION

- Increase in epochs does not necessarily increase accuracy

- Many Pokémon have features that are similarly shaped (tails, nose)

- Evolved forms may be similar, but can be hard to predict

FUTURE WORK

- Data augmentation to increase accuracy of predictions

- Incorporate training on evolved forms