Artificial Intelligence

accenture

Capstone Project

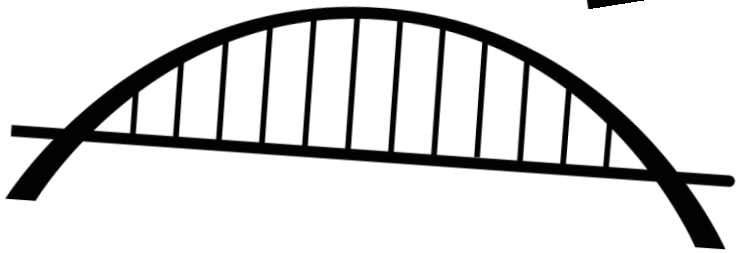
Landmark Identification

CONTENTS

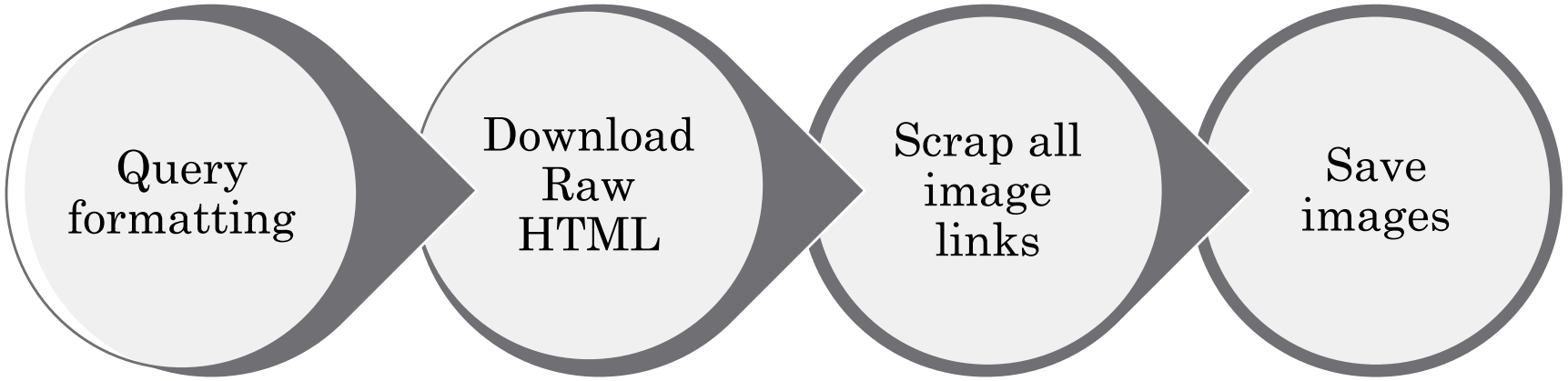
- Collection of data
- Pre-processing of data
- Difference between Inception_V3 and MobileNet
- Modelling of Inception_V3
- References

Data collection

- A large collection of images is required to train our Deep Neural Network Model to identify the said classes.
- The required labeled dataset could not be found in any online repository.
- To do so, we have to download the images from internet and label the data according to the classes.
- We have used a command line python program to find keywords/key-phrases on Google images and optionally download the images to our computer.



Algorithmic structure to download images



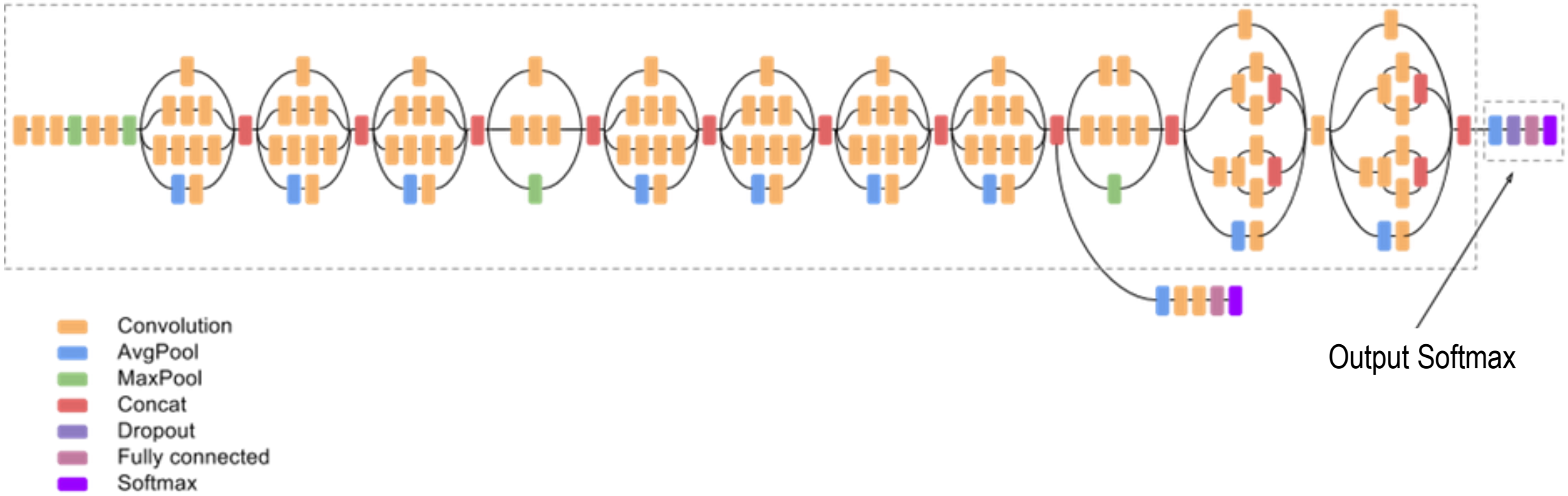
Data pre-processing

- After our Dataset is ready and stored in the machine, we have imported it to the Collaboratory Environment.
- Using OpenCV the images were resized to (300,300,3).
- Data was split into training data and test data
- One hot encoding of the target.

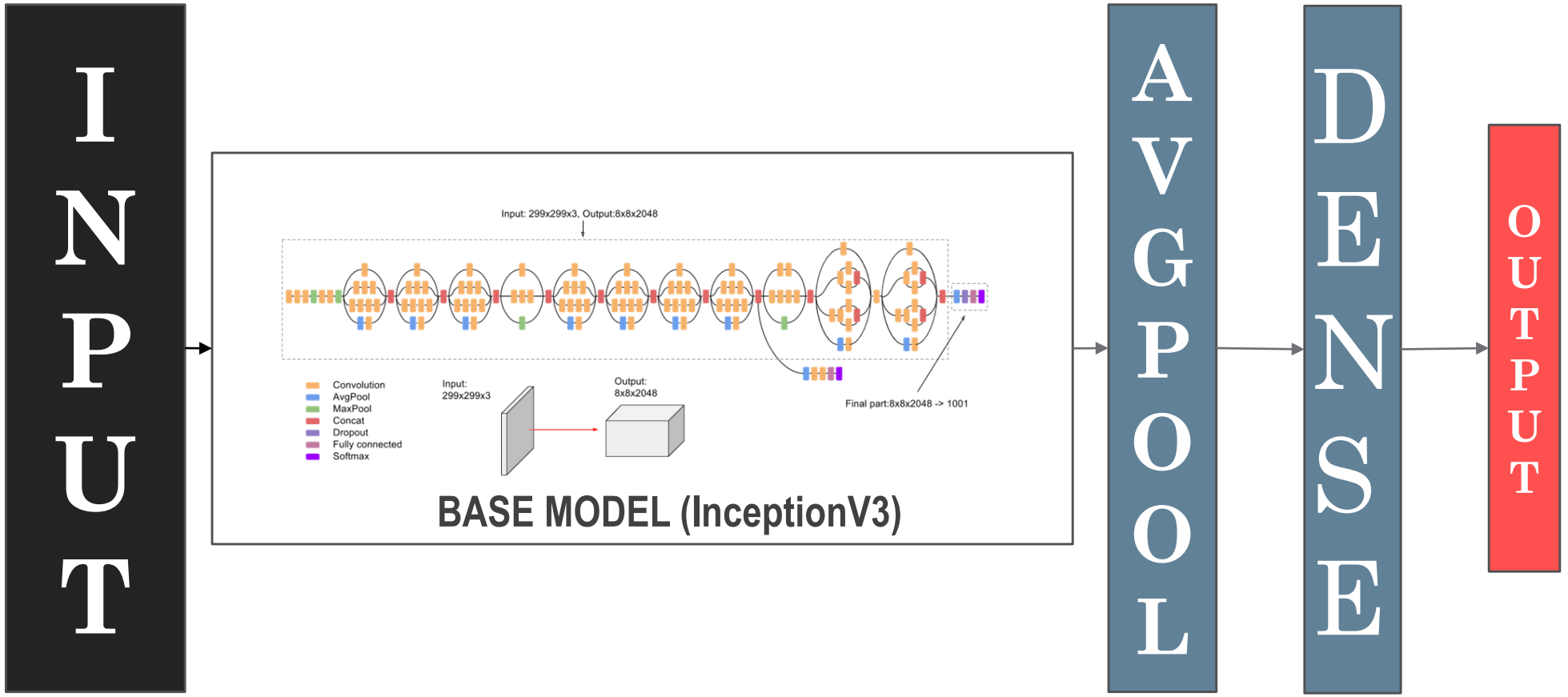
Inception_V3 MobileNet

Inception_V3	MobileNet
It uses standard convolution technique.	It uses Depth wise separable convolution technique.
Higher number of parameter. Basically, it's a heavy weight Deep Neural Network.	Lesser number of parameter. It is a light weight Deep Neural Network.
Accuracy is high.	Accuracy is comparatively low.
Conducive for high power computational devices like computer.(185 MB Sav file)	Conducive for low power computational devices like mobile and embedded based vision applications.(32 MB Sav file)

Inception_v3 Model



Building model using Keras



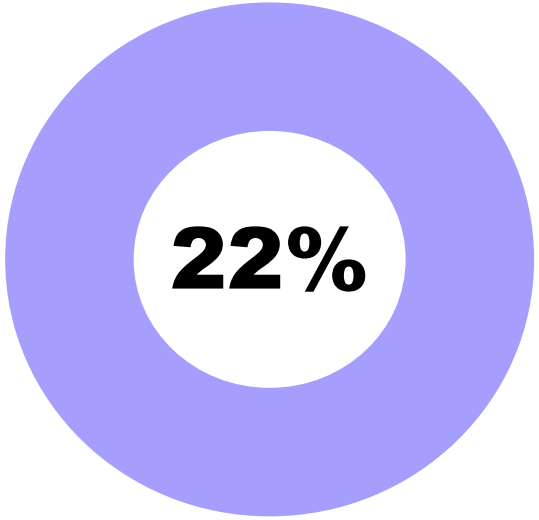
Model Parameters

INCLUDE TOP	FALSE
MOMENTUM	0.9
LEARNING RATE	0.001
OPTIMIZER	SGD Nesterov
LOSS	Categorical_cross_entropy
INPUT TENSOR	299,299,3
OUTPUT-SOFTMAX	5 Classes
ADDED DENSE	1024

Training Results

Try 1

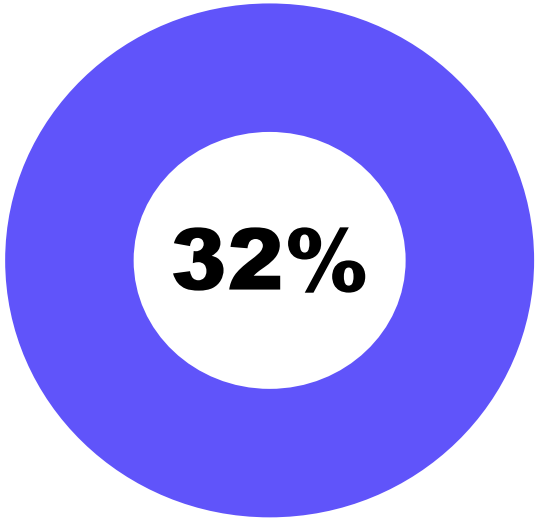
DATA AUGMENTATION	: NONE
FREEZE LAYER	: ALL
EPOCHS	: 30
LEARNING RATE	: 0.001
OPTIMIZER	: SGD
NESTEROV	: TRUE



Training Results

Try 2

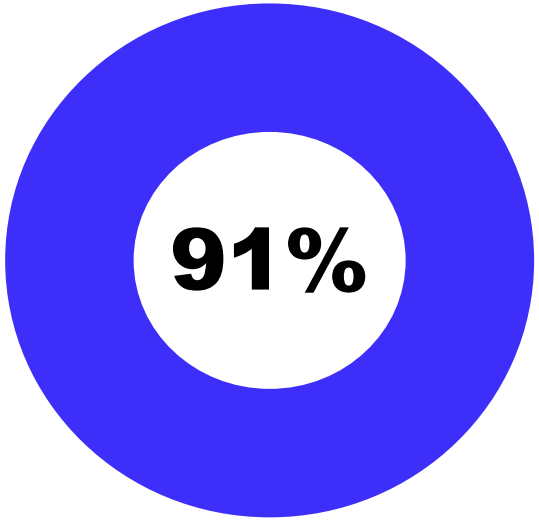
DATA AUGMENTATION	: NONE
FREEZE TILL LAYER	: 249
EPOCHS	: 200
LEARNING RATE	: 0.001
OPTIMIZER	: SGD
NESTEROV	: TRUE



Training Results

Try 3

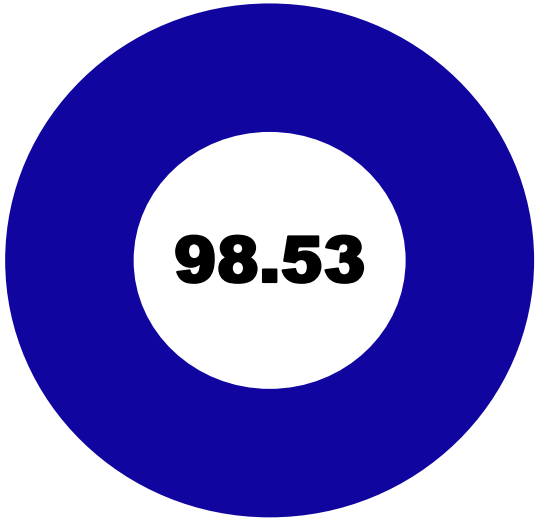
DATA AUGMENTATION	: FALSE
FREEZE TILL LAYER	: NONE
EPOCHS	: 30
LEARNING RATE	: 0.001
OPTIMIZER	: SGD
NESTEROV	: TRUE



Training Results

Try 4-Final Model

DATA AUGMENTATION	: TRUE
FREEZE TILL LAYER	: NONE
EPOCHS	: 30
LEARNING RATE	: 0.001
OPTIMIZER	: SGD
NESTEROV	: TRUE



Class-Wise Accuracy

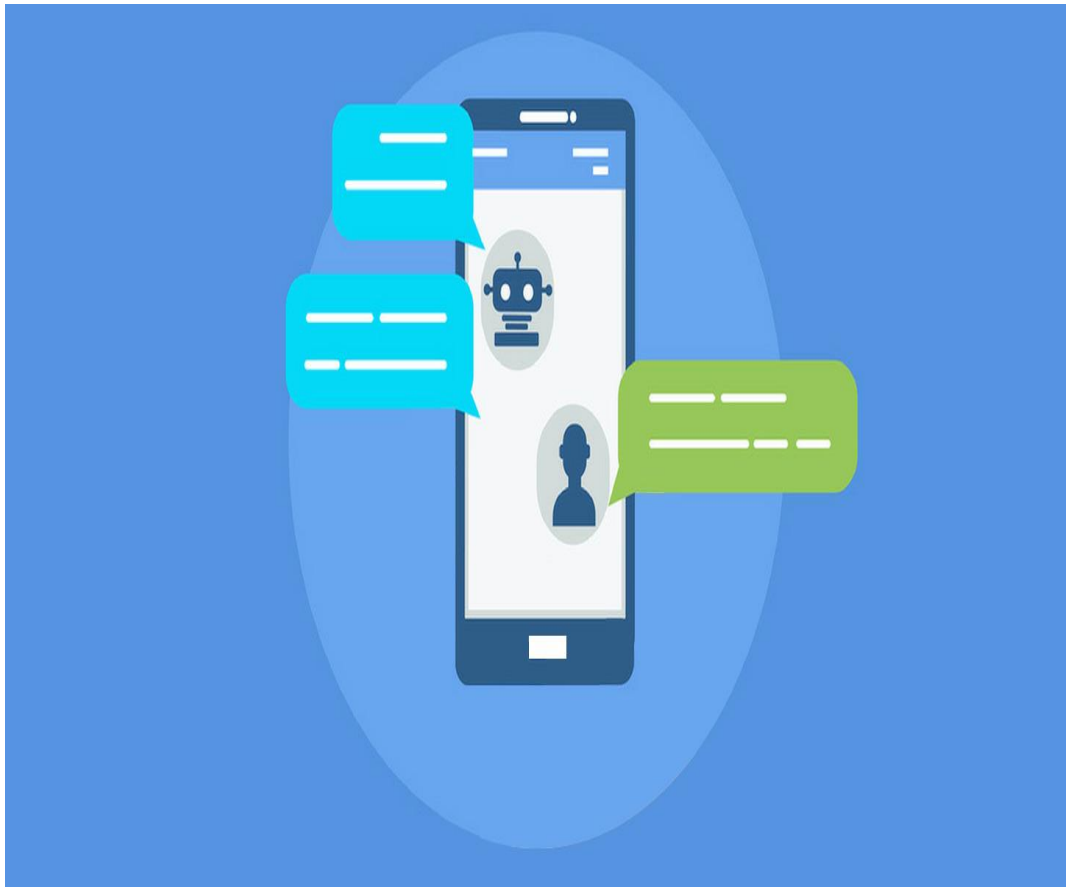
- Atm : 100.00%
- Bridge : 95.24%
- Petrol : 97.44%
- Temple : 100.00%
- Other : 100.00%
- MCA : 98.536%
- OA : 98.53

Model Summary

- Total params : 23,906,085
- Trainable params : 23,871,653
- Non-trainable params : 34,432

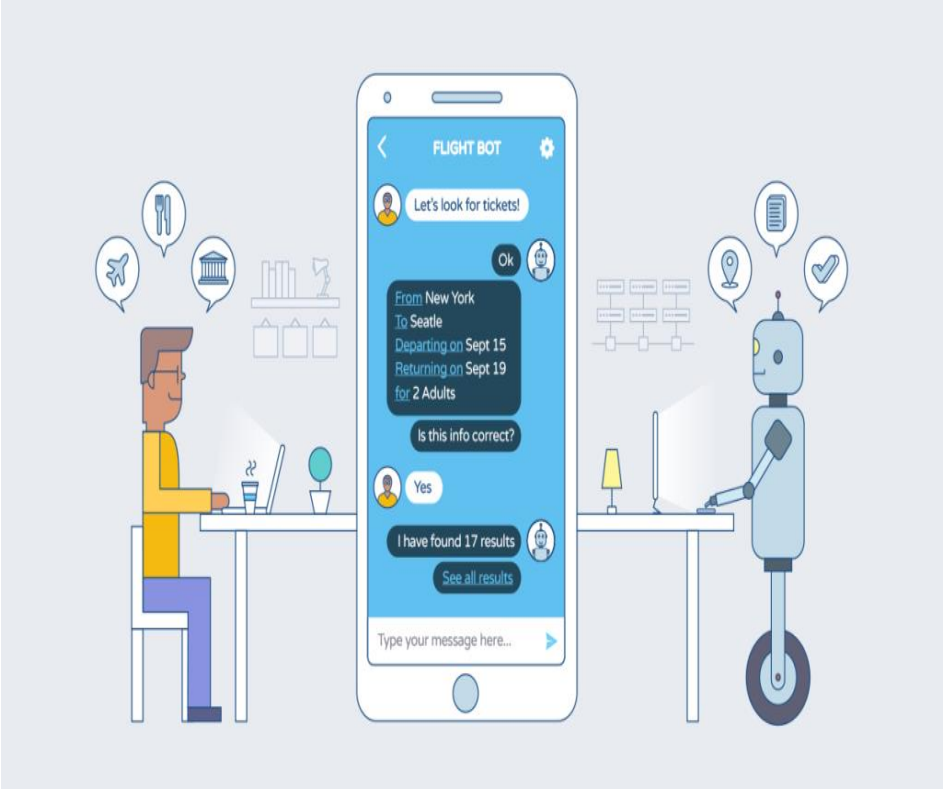
Chatbot

- A **chatbot** (sometimes referred to as a chatterbot) is a computer program that attempts to simulate the conversation or "chatter" of a human being via text or voice interactions.



Integration

- Integration of Chatbot with InceptionV3 model is done using Flask and Json.
- HTML,CSS, Javascript and Jquery used for website development for Chatbot.



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THANK YOU..!!