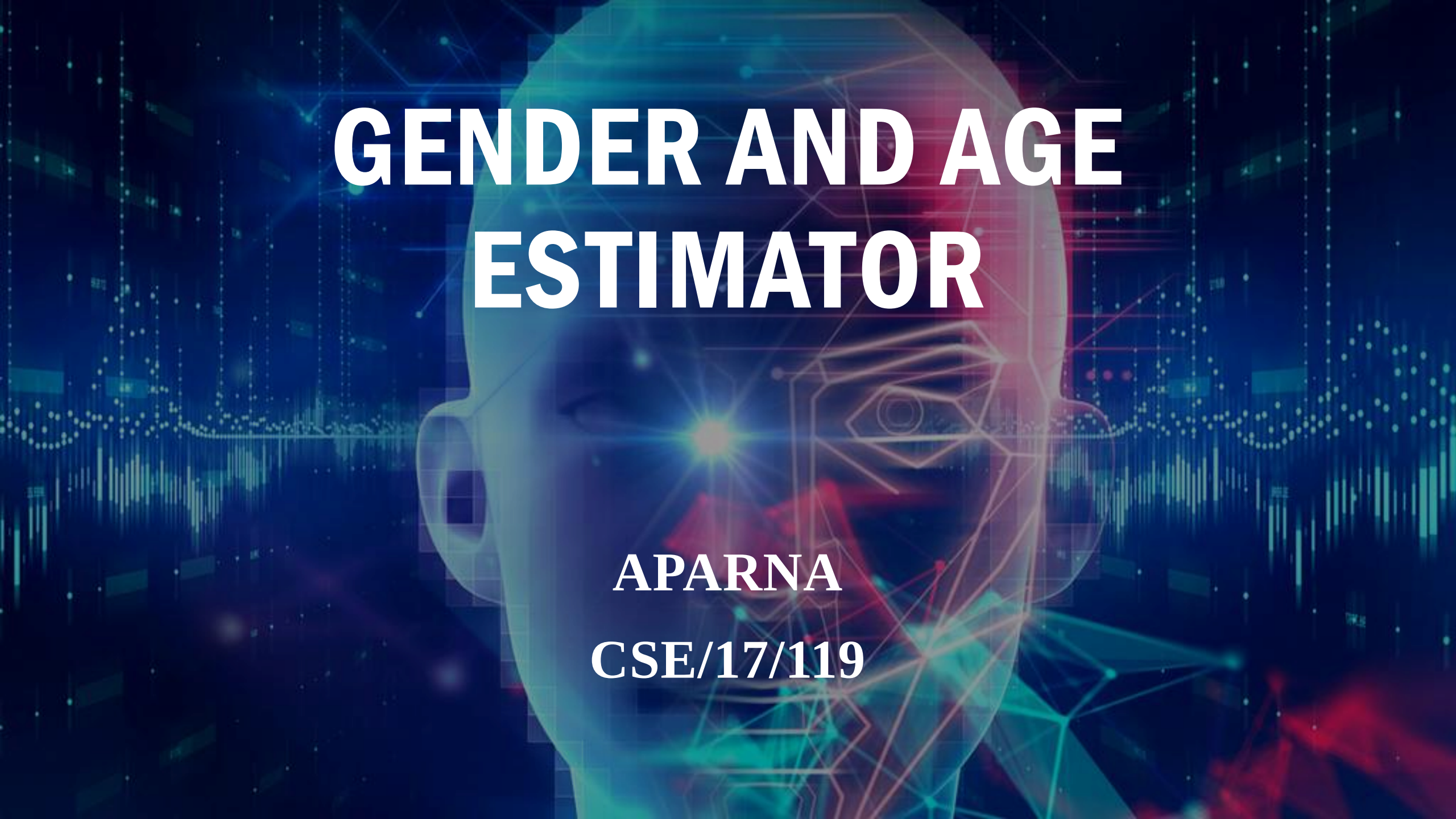


GENDER AND AGE ESTIMATOR

APARNA

CSE/17/119

PROBLEM STATEMENT

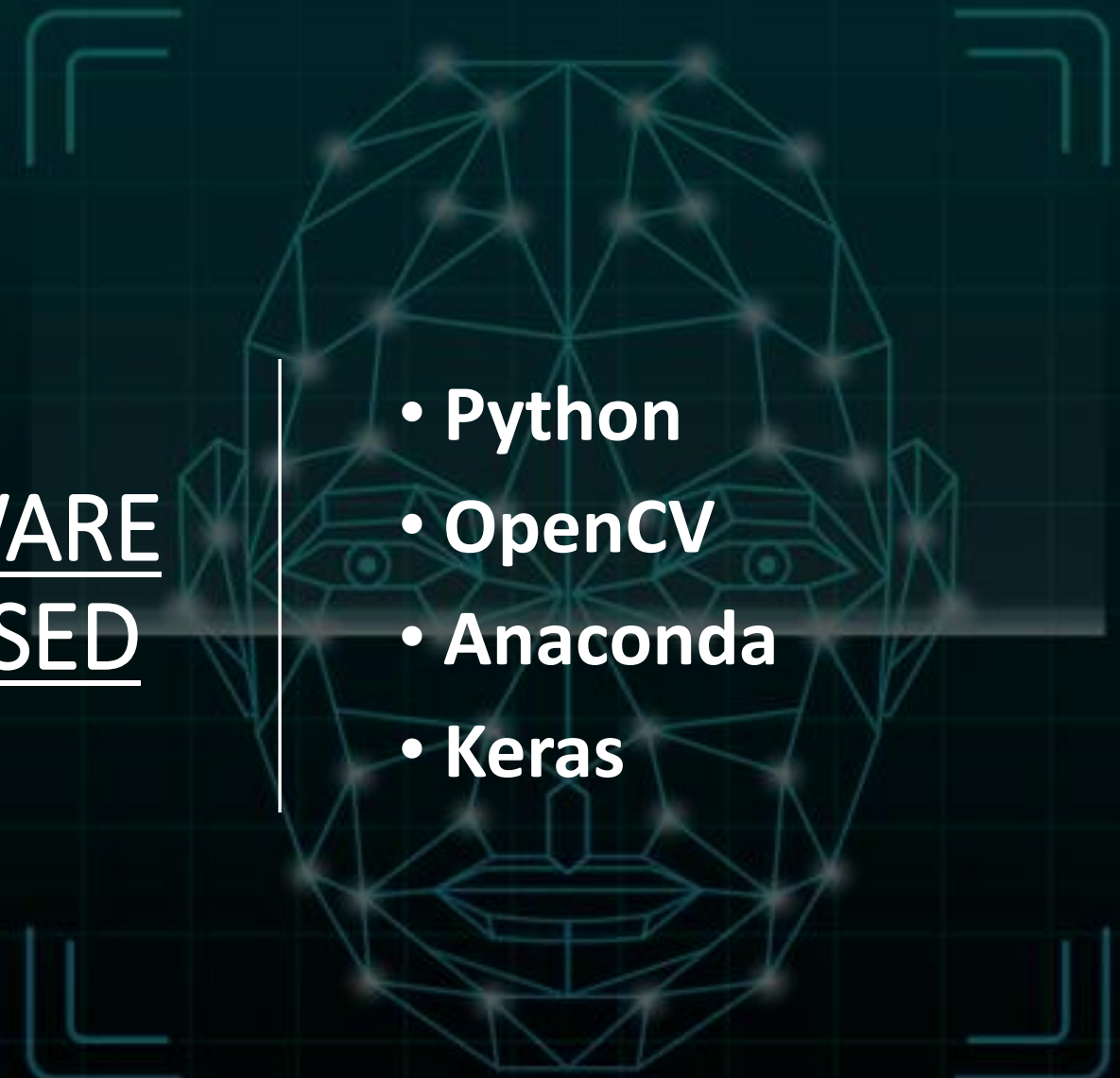
- To ensure the security and privacy of applications in mobile phones, we designed a Machine Learning Algorithm which will only unlock the application when it will detect your face and ensure you as the authorized user.

- To extend the face recognition system, an age predictor and gender classifier is to be added.

OBJECTIVE-

- To develop an algorithm which precisely can predict age and classify gender of the user using only the frontal face of the person

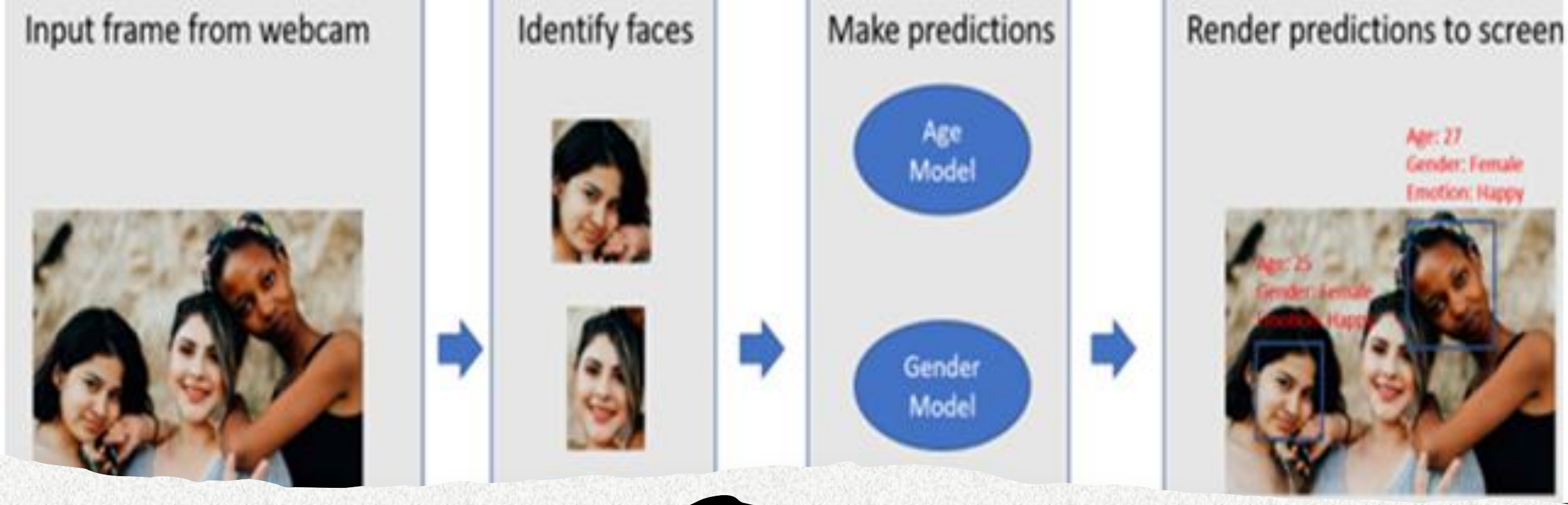
SOFTWARE USED



- Python
- OpenCV
- Anaconda
- Keras

HARDWARE USED

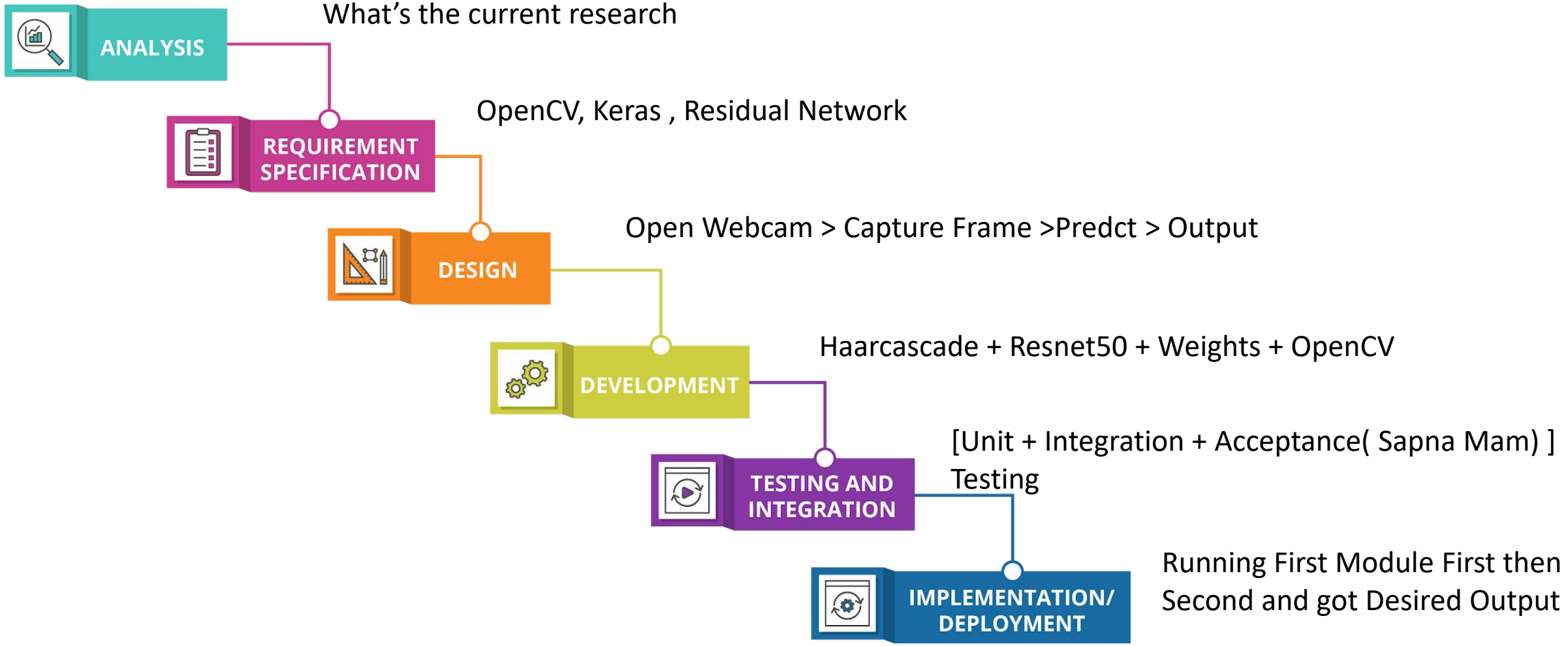
A WINDOWS SYSTEM WITH WEBCAM IN IT.

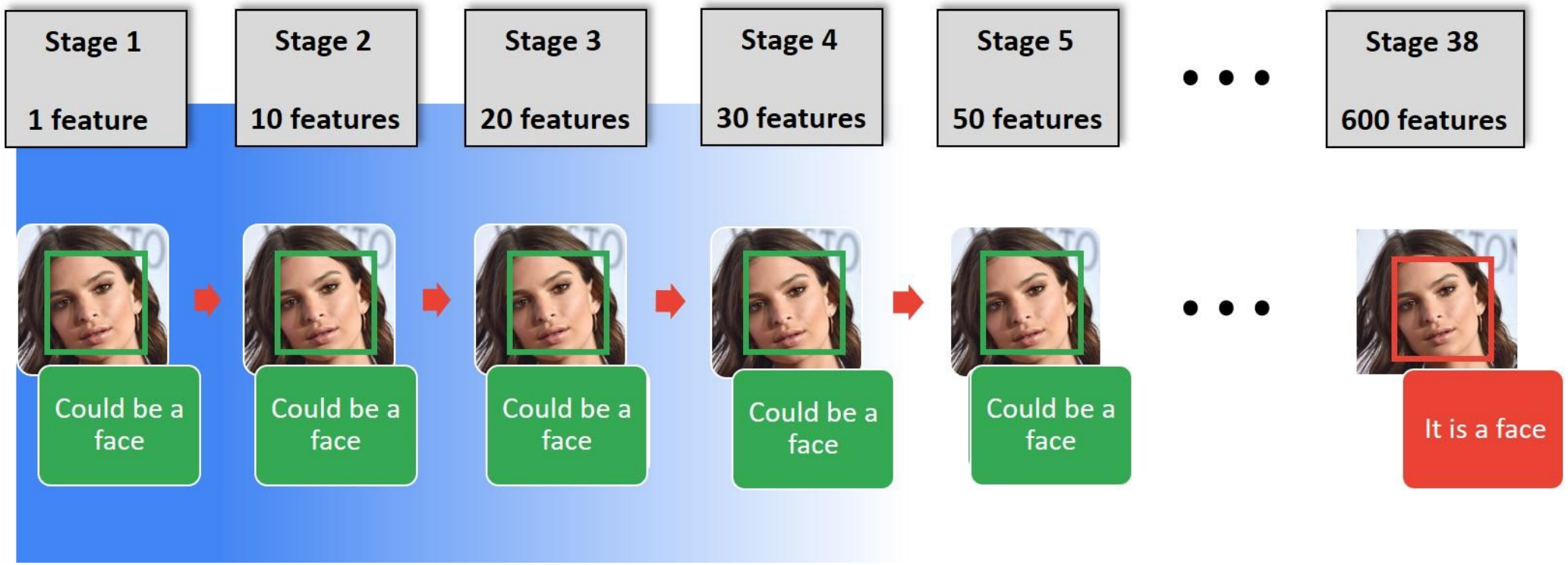


METHODOLOGY

FOR GENDER AND AGE ESTIMATOR

SDLC- Waterfall

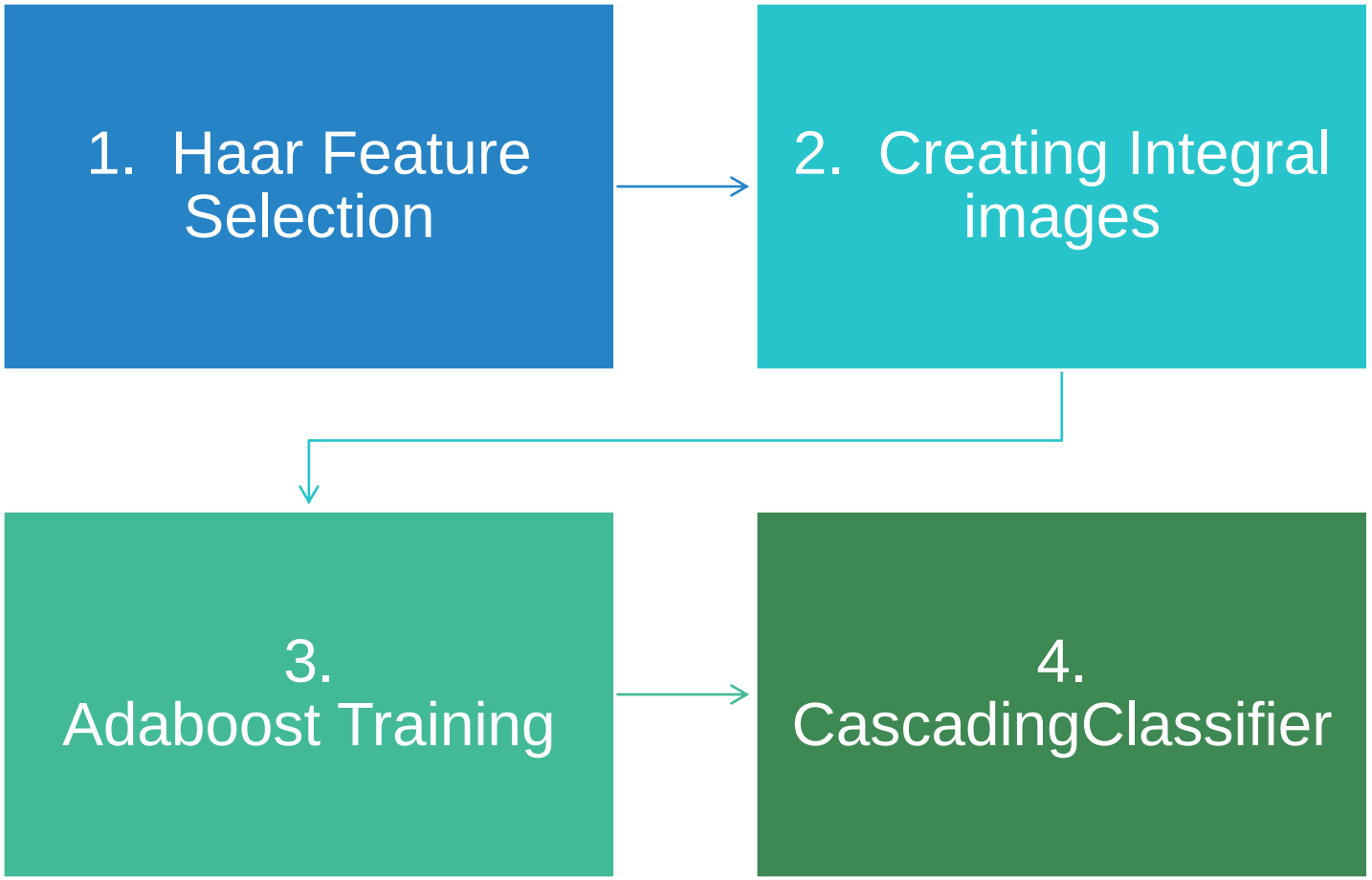




ABOUT HARCASCADE CLASSIFIER

This is basically a machine learning based approach where a cascade function is trained from a lot of images both positive and negative. Based on the training it is then used to detect the objects in the other images.

Stages in Haar Cascade Algorithm:



Concept of Integral Images

1	5
2	4

Input Image

0	0	0
0	1	6
0	3	12

Integral Image for the above input image

Residual Networks

* Problem of Deep Neural Networks: Vanishing gradient

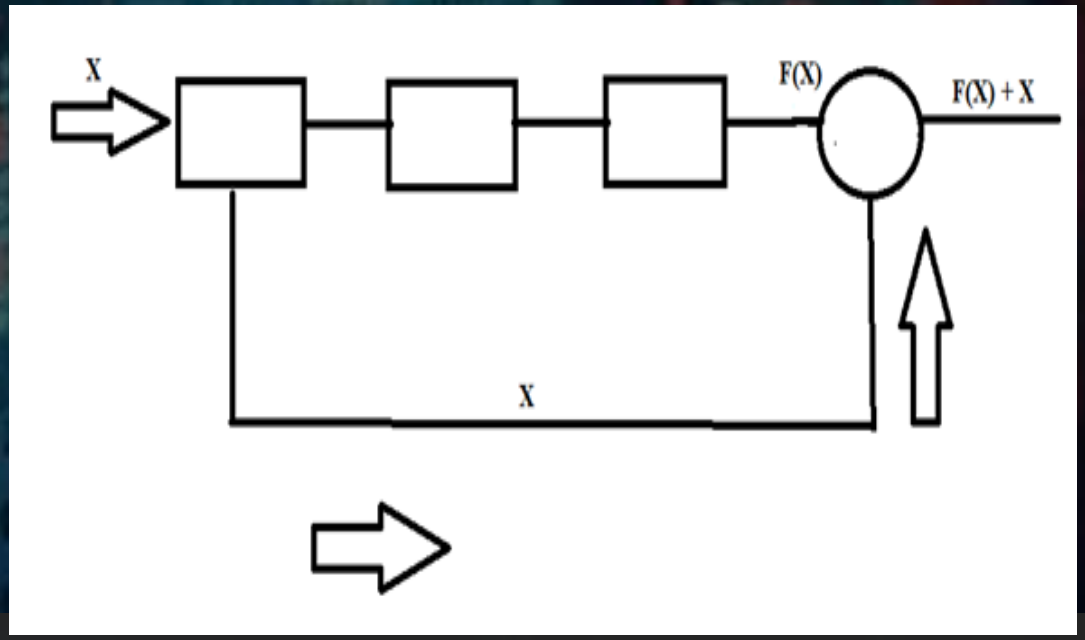
* Problem overcome by: Residual Networks

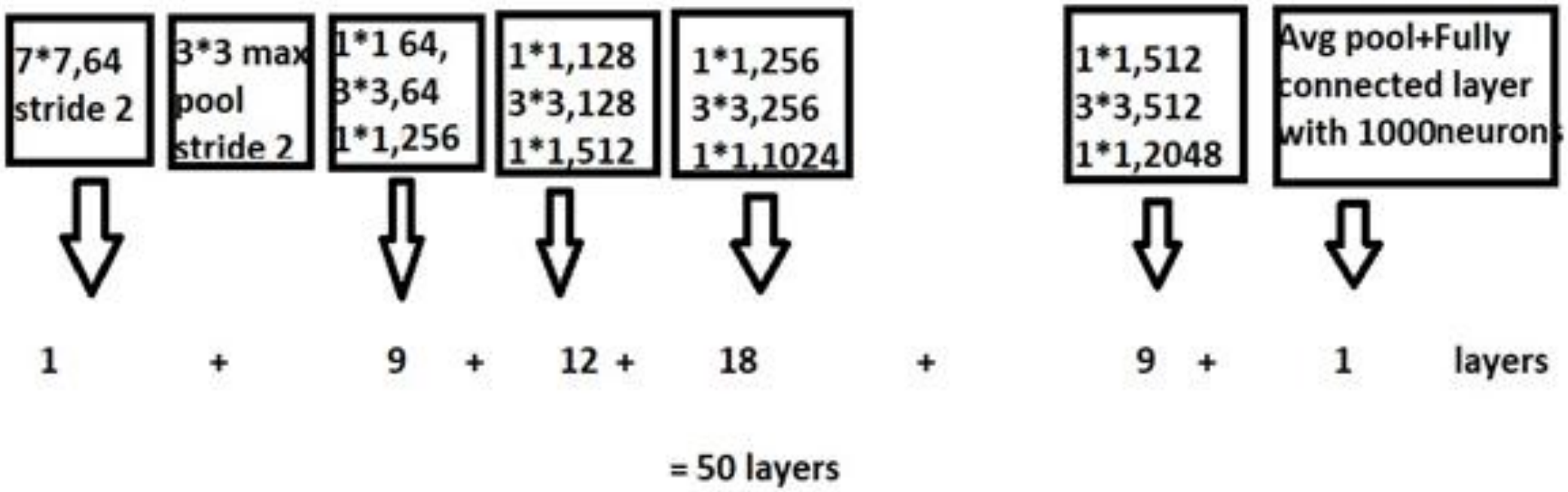
* Res Net overcomes this problem by using a concept called Skip connection in which the original input is added to the output of convolutional block

Residual Networks

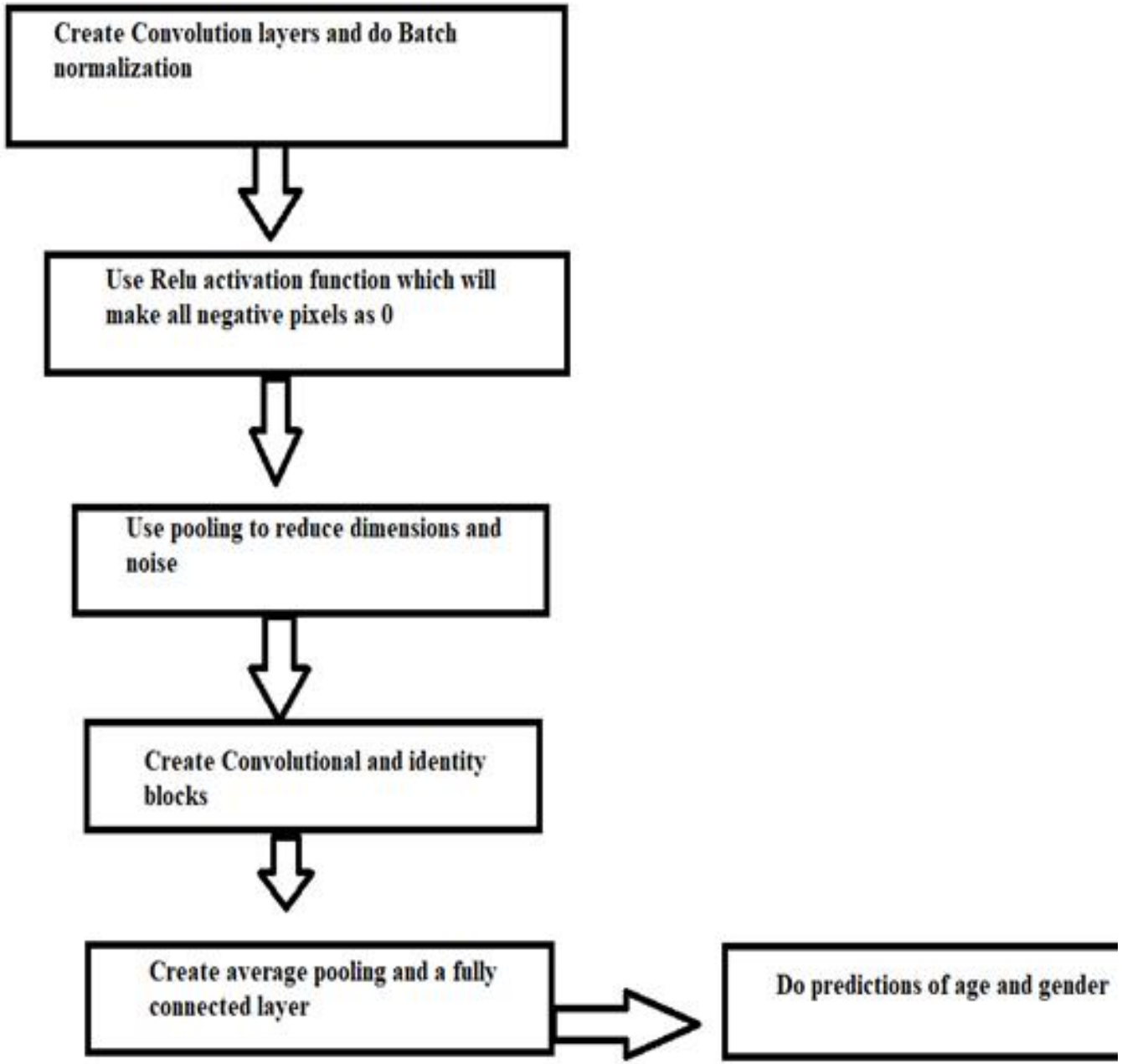
Y= F(X)+X

The main idea of Res Net is to make output equal to input. For that make F(X)=0 so that Y=X. As Input= Output, so accuracy is maximum.





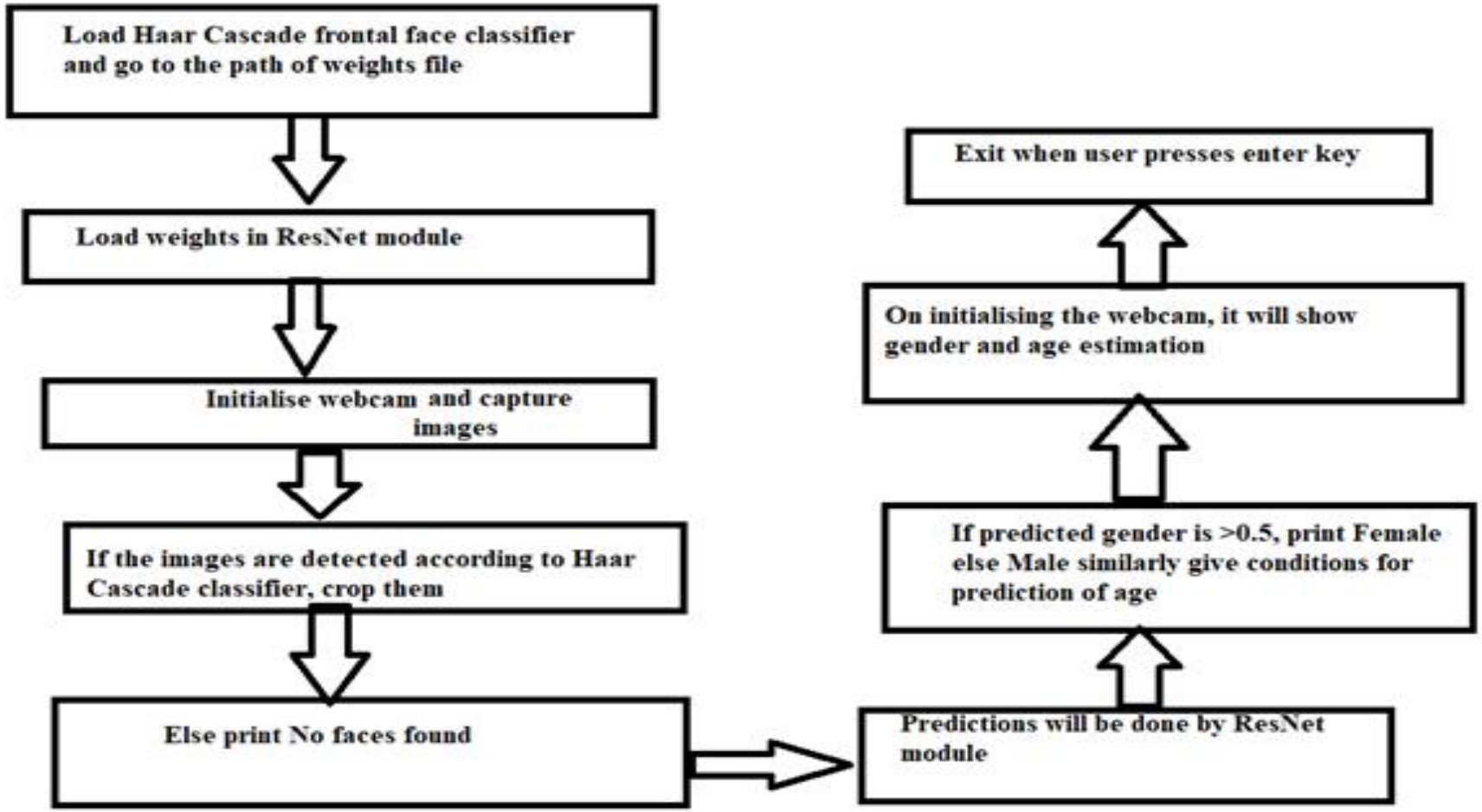
RESNET ARCHITECTURE



WORKFLOW OF MODULE 1

(RESIDUAL NETWORKS)

WORKFLOW OF MODULE 2 (Real time demo)



RESULTS AND OUTCOMES

The algorithm is able to predict gender and age of the user correctly through laptop webcam.

Testing

1) Unit Testing - Each Module i.e, Module 1 and Module 2 is tested seperately first and both are found to work perfectly

2) Integration Testing - When Unit Testing is done , we have run all Modules i.e, whole project intergrated to check whether it is working as per requirement or not and it is found to e working perfectly

3) Acceptance Testing - It is done by Dr. Sapna Juneja (Professor) and found project working

References

https://docs.opencv.org/master/d6/d00/tutorial_py_root.html

https://docs.opencv.org/3.4/javadoc/org/opencv/face/LBPHFaceRecognizer.html

K. Kadir, M. K. Kamaruddin, H. Nasir, S. I. Safie, and Z. A. K. Bakti, "A comparative study between LBP and Haar-like features for Face Detection using OpenCV," 2014 4th Int. Conf. Eng. Technol. Technopreneuship, ICE2T 2014, vol. 2014-Augus, pp. 335–339, 2015, doi: 10.1109/ICE2T.2014.7006273.


THANK
YOU