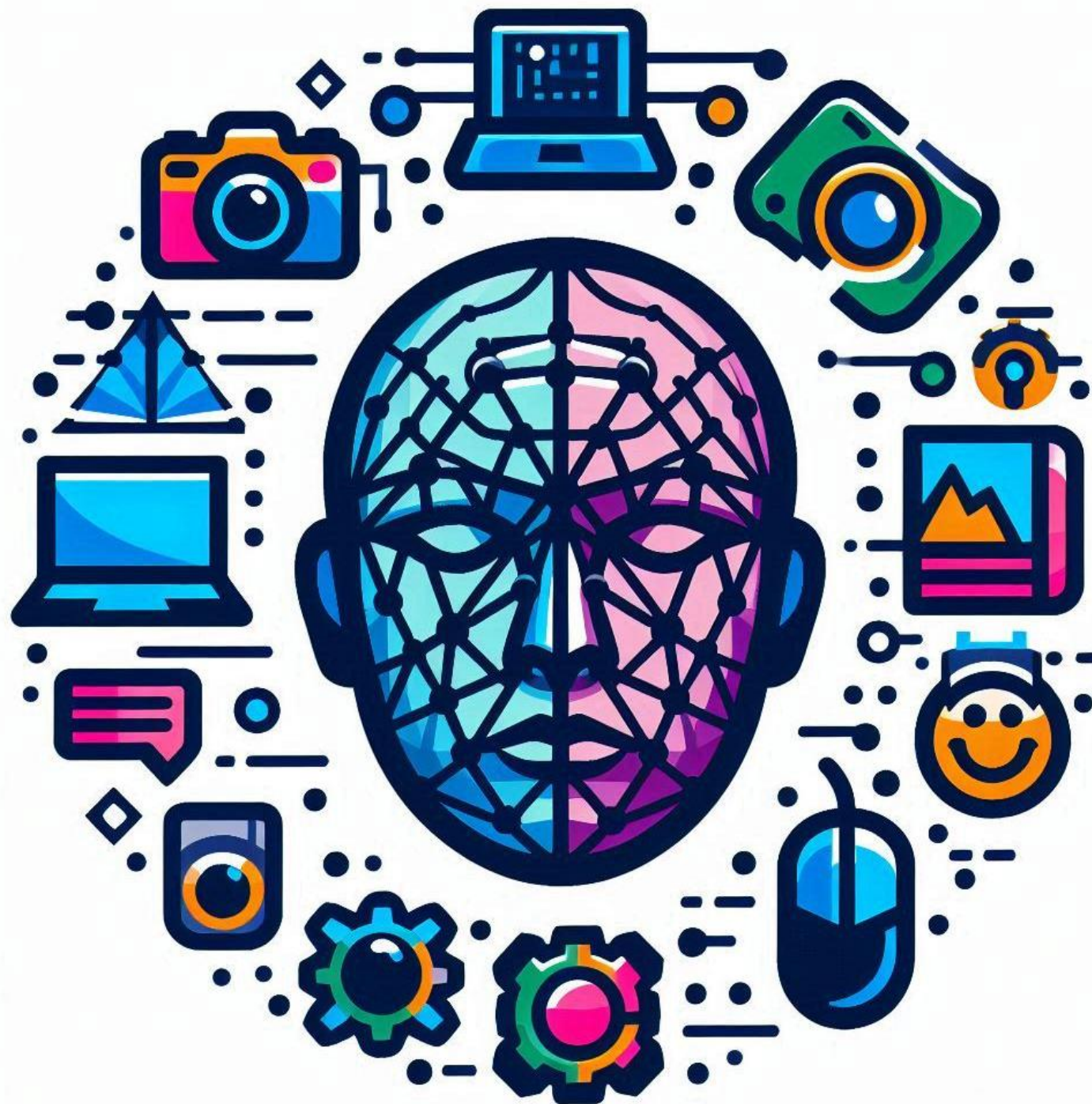


# Visum Technical Guide



# Tech Stack

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**Python**



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**Media pipe**



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**OpenCV**



# What is Mediapipe ?

**MediaPipe is an Open-Source Library By Google to provides a suite of Solution and tools for you to quickly apply artificial intelligence (AI) and machine learning (ML) techniques in your applications.**

# What is Open-CV?

**OpenCV is Library to process image in code & deal with Computer Vision**

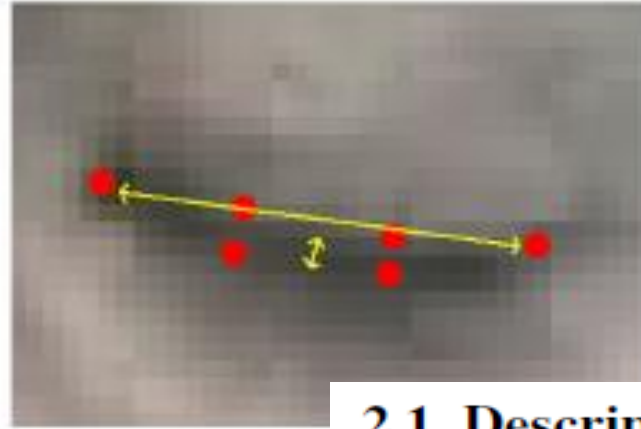
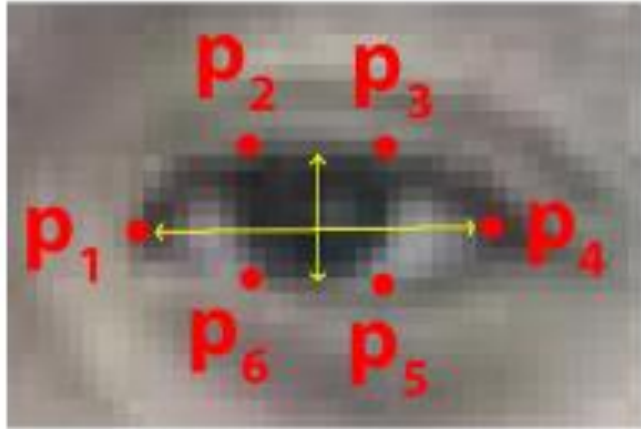
# Why Mediapipe ?



**It has Facial Landmark  
Detection**

**Using Landmark on  
face we Can Calculate  
*Eye Aspect Ratio* and Best  
Way to Find Eye Blink  
According to Research  
by *Czech Technical  
University***

# What is Eye Aspect Ratio?



**Calculates the ratio based on Euclidian distance**

**6 Landmark Points around Each Eye**

## 2.1. Description of features

For every video frame, the eye landmarks are detected. The eye aspect ratio (EAR) between height and width of the eye is computed.

$$\text{EAR} = \frac{\|p_2 - p_6\| + \|p_3 - p_5\|}{2\|p_1 - p_4\|}, \quad (1)$$

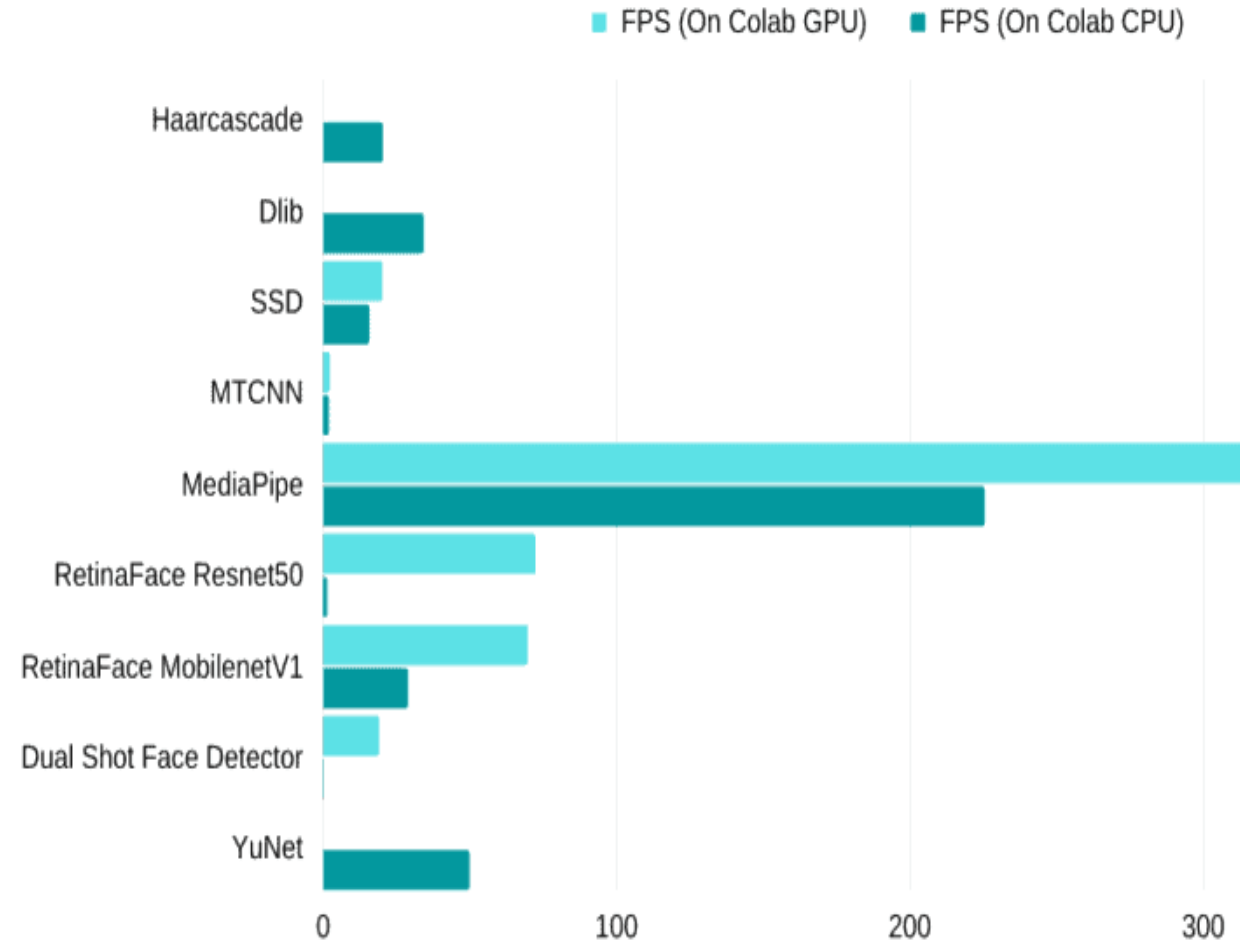
where  $p_1, \dots, p_6$  are the 2D landmark locations, de- x

# Why Mediapipe Not other Model?

Performance Comparison of Face Detectors (Speed/FPS)

Model	FPS (On Colab GPU)	FPS (On Colab CPU)
Haar cascade	–	19.95
Dlib	–	33.92
SSD	19.90	15.58
MTCNN	2.11	1.81
MediaPipe	323.63	225.34
RetinaFace Resnet50	72.24	1.43
RetinaFace MobilenetV1	69.50	28.89
Dual Shot Face Detector	18.89	0.22
YuNet	–	49.43

## Inference Speed



**Low Hardware Capable\***

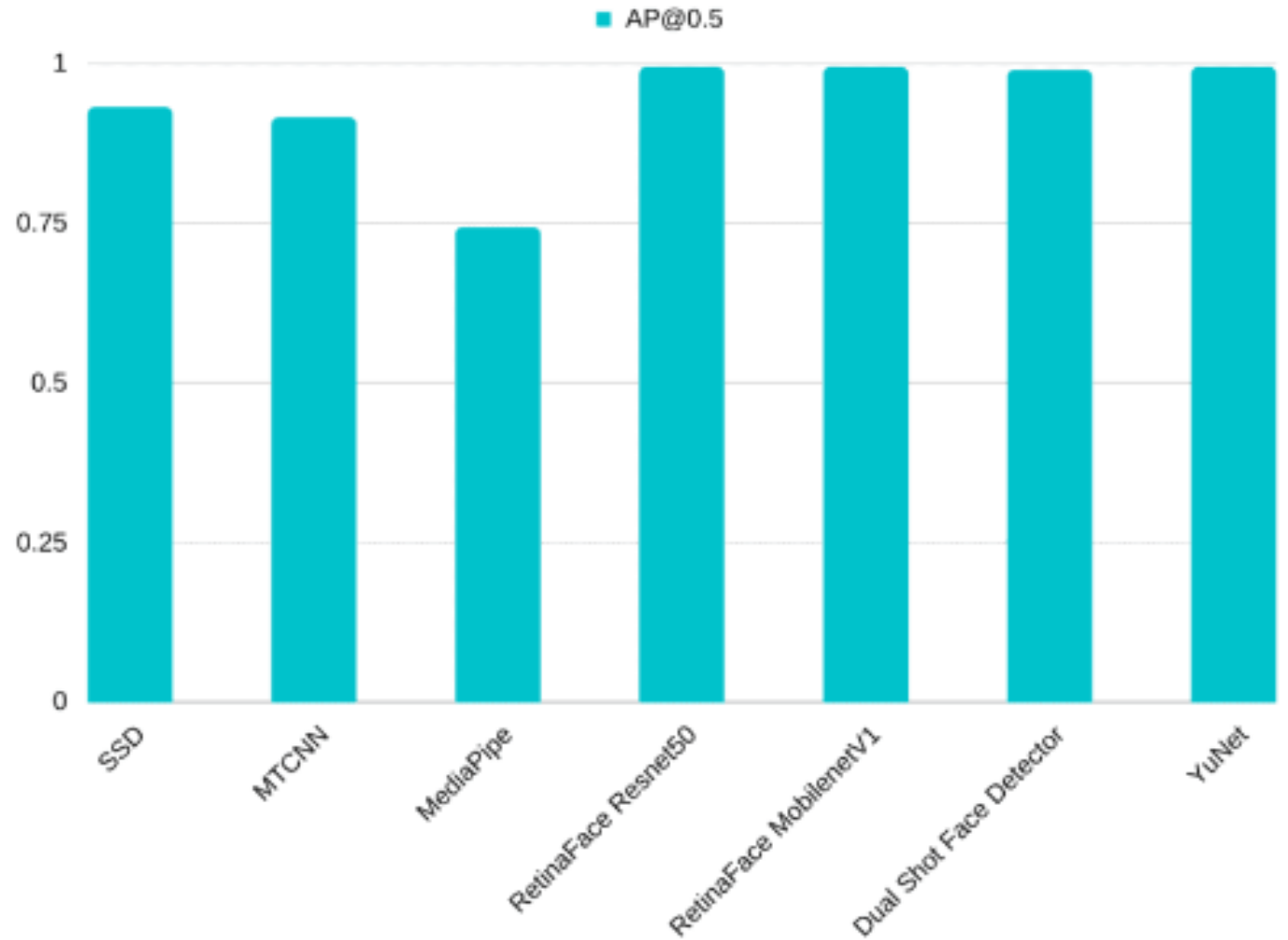


# Why Mediapipe Not other Model?

Performance Comparison of Face Detectors (Average Precision)

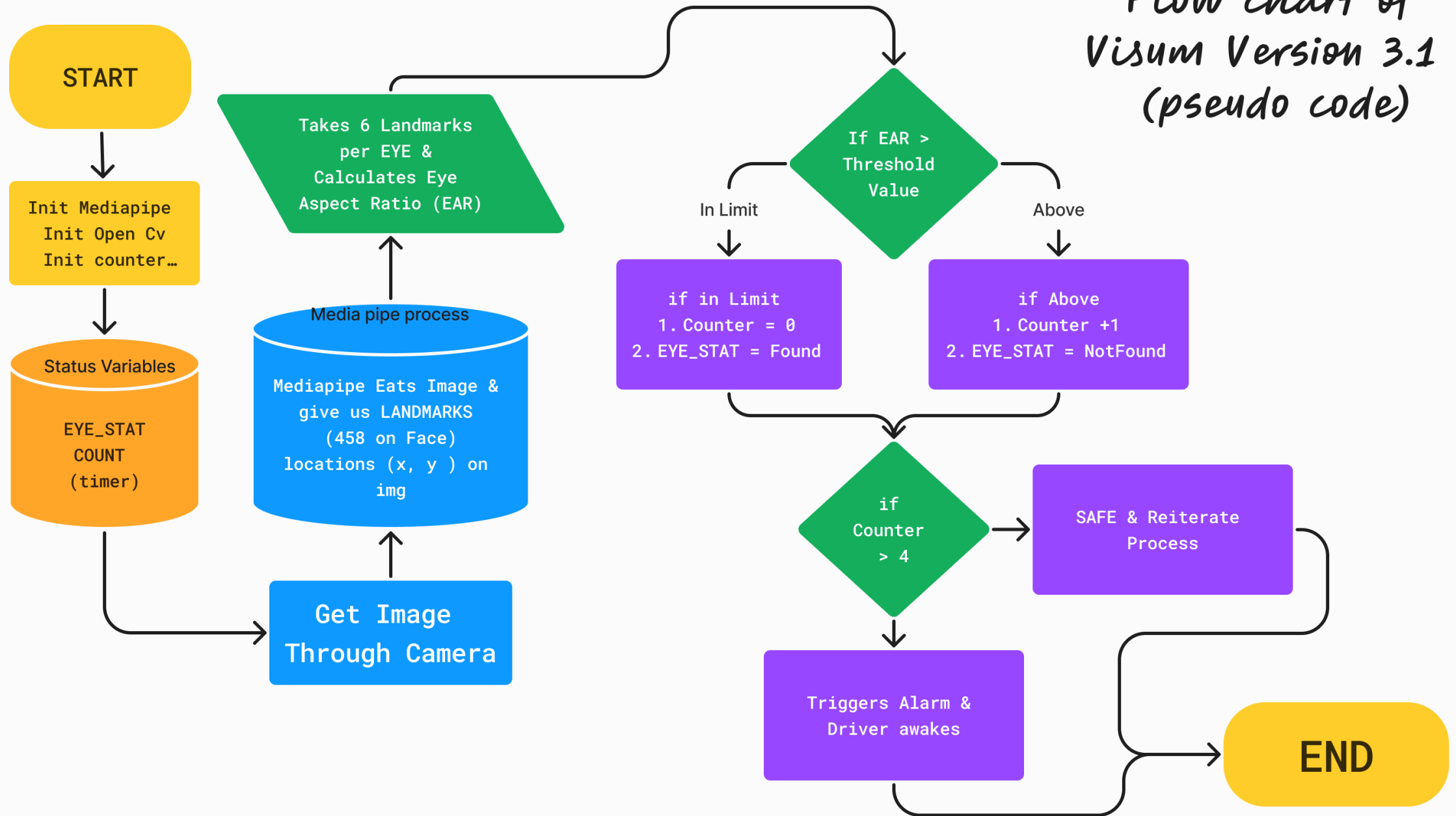
Model	AP@0.5
SSD	0.931
MTCNN	0.915
MediaPipe	0.743
RetinaFace Resnet50	0.994
RetinaFace MobilenetV1	0.994
Dual Shot Face Detector	0.989
YuNet	0.994

## Model Performance



**Good AP Rating @ 0.5 confidence**

# Flow chart of Visum Version 3.1 (pseudo code)





A glowing yellow tent is pitched on a dark, rocky mountain peak at night. The tent's interior light is visible through the mesh, creating a warm, golden glow. The surrounding landscape is rugged and dark, with snow patches visible on the mountain slopes. The sky is a deep blue, filled with stars and a bright, full moon in the upper right corner. The overall scene conveys a sense of isolation and adventure.

# It's Not a Bug .. It's an Undocumented Feature

@.@

**Anonymous**



# Thank you