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Hardware Implementation of Face Recognition System for Criminal Identification using YOLO v8

Group – 3

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AGENDA

- Title of the project

- Objectives of the project

- Work done so far

- Reference

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OBJECTIVE OF THE PROJECT

- We aim to develop a real-time hardware-based face recognition system for criminal identification that enhances accuracy and efficiency by integrating deep learning models with embedded systems.

- The system will be designed for law enforcement applications, ensuring secure and reliable suspect identification.

YOLO v8 and FaceNet based Recognition Results

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Fig 1: Face detection using YOLO v8 (Accuracy : 80.01%)
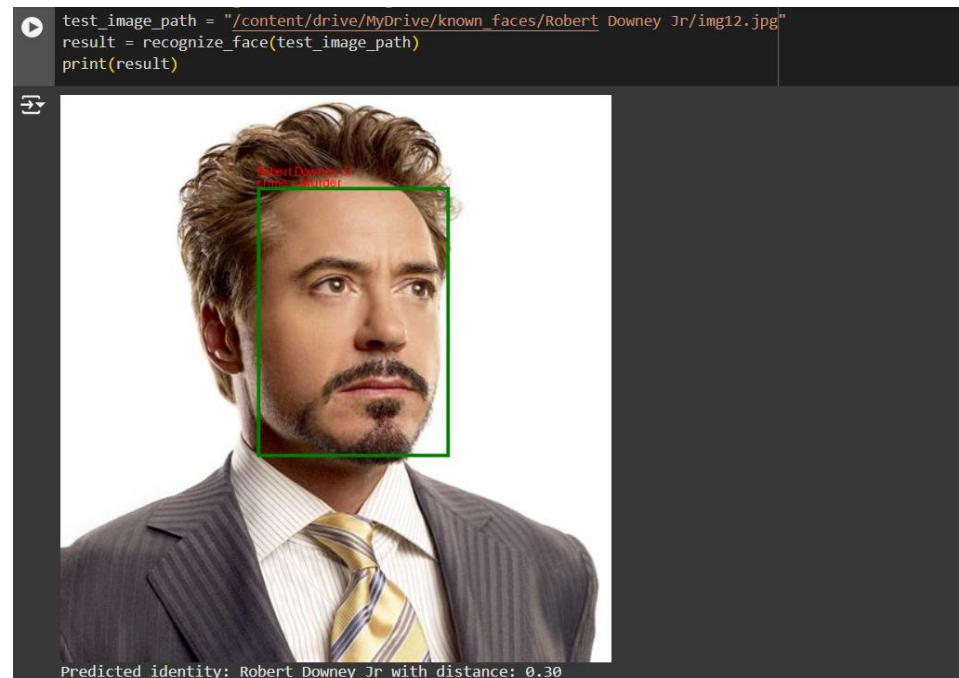
Fig 2: Face recognition using YOLO v8 and FaceNet (Accuracy : 93.21%)

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Yolo v8 – face detection and counting

- Implemented **YOLOv8** for real-time face detection.
- The system detects faces in images or live video streams and counts the total number of faces detected in a given frame..
- Optimized for fast and accurate face localization with an accuracy of 96.67%.
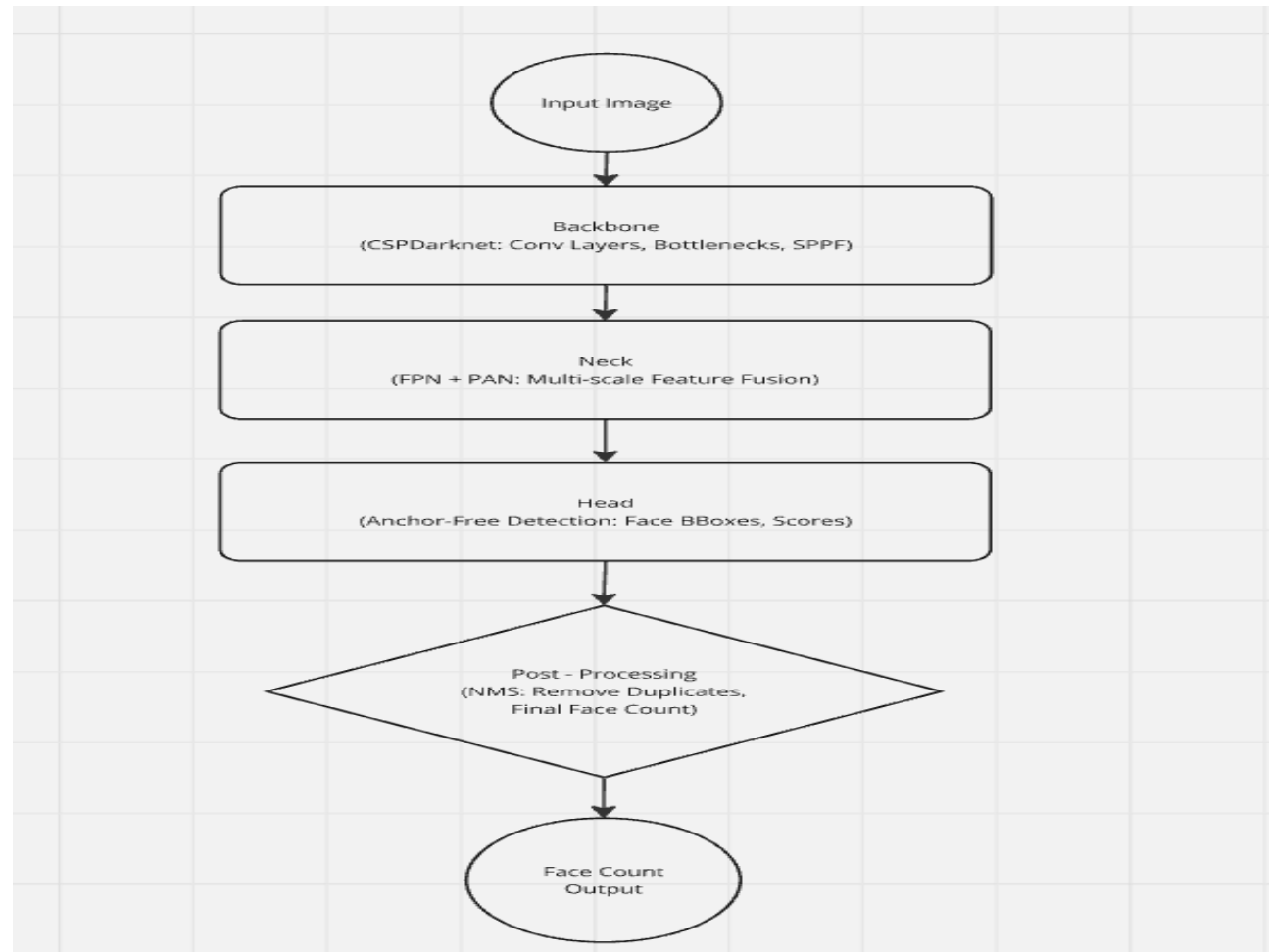- Dataset used : Random Asian faces captured(2680)

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Workflow

Fig 1: Working procedure of YOLO v8 counting system

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Results

Fig 2: Output
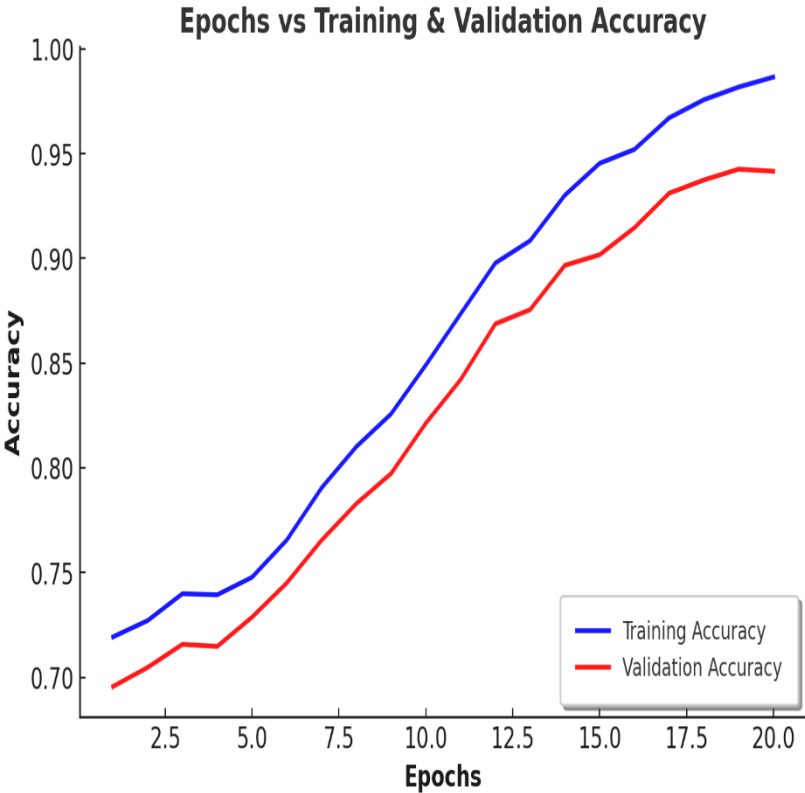
Fig 3: Epochs vs Accuracy graph

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Results
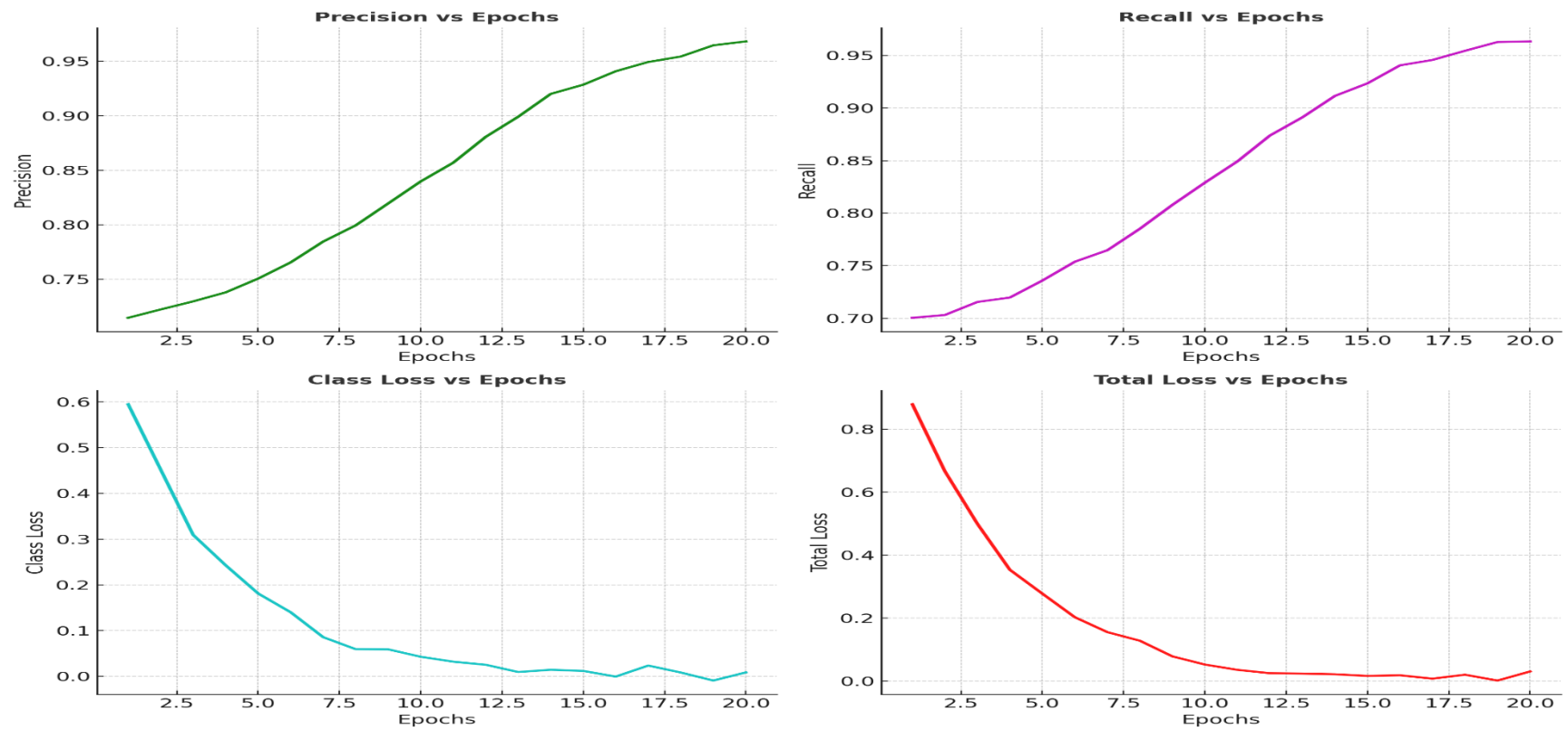
Fig 4: Output graph plots
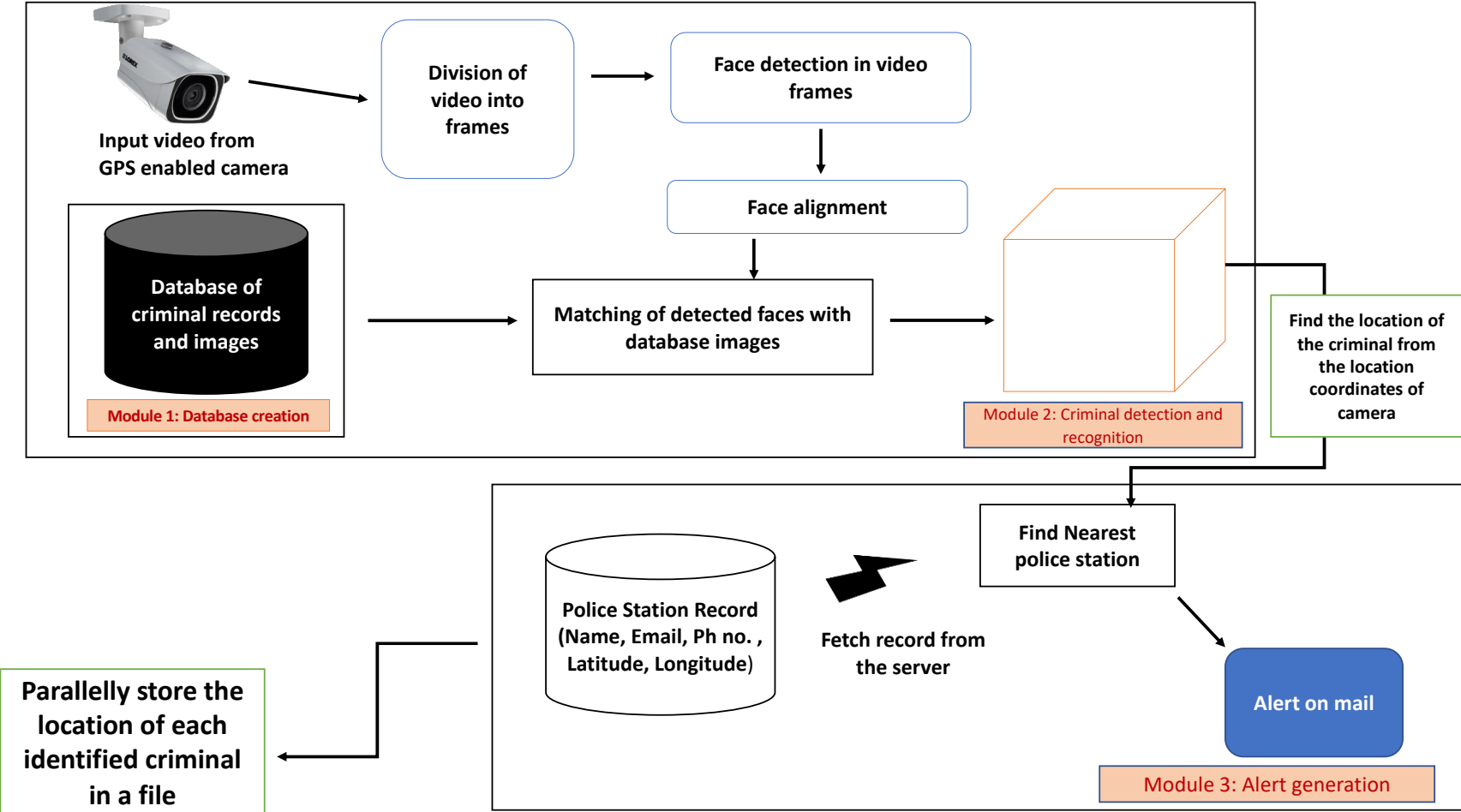
Fig 1 : Working procedure Criminal Faces Recognition

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Future Work

- We aim to deploy the model on FPGA.

REFERENCE

[1] S. K. Jayasingh, P. Naik, S. Swain, K. J. Patra and M. R. Kabat, "Integrated Crowd Counting System Utilizing IoT Sensors, OpenCV and YOLO Models for Accurate People Density Estimation in Real-Time Environments," *2024 1st International Conference on Cognitive, Green and Ubiquitous Computing (IC-CGU)*, Bhubaneswar, India, 2024, pp. 1-6.

[2] Chenhao Yu, Junzhe Feng, Zhouzhou Zheng, Jiapan Guo, Yaohua Hu, "A lightweight SOD-YOLOv5n model-based winter jujube detection and counting method deployed on Android",
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THANK YOU