WOMEN SAFETY ANALYTICS: Protecting Women from Safety Threats

Mini Project Report

Submitted by

Sayali Khatkar

Yash Mhasekar

Abhay Patil

Harshvardhan Sathe

In partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE AND ENGINEERING

Kolhapur Institute of Technology's
College of Engineering(Autonomous), Kolhapur

Year 2024-2025

Certificate

This is to certify that following **S. Y. B.Tech (CSE)** studentsfrom KIT's College of Engineering ,Kolhapur have completed Mini project successfully in partial fulfilmentfor the award of degree of B.Tech.(C.S.E).They worked on " WOMEN SAFETY ANALYTICS " project during **SEM-III, 2024-2025** under the supervision of **Prof**. (**Dr.) Mamta Kalas.**

Place: KITCoE,Kolhapur

Date: 21 November 2024

Prof. (Dr.) Mamta Kalas	**Prof. (Dr.) Lingaraj Hadimani**	**Prof. (Dr.) M Vanarotti**
Guide	**HOD, CSE**	**Director**

KOLHAPUR INSTITUTE OF TECHNOLOGY'S
COLLEGE OF ENGINEERING (AUTONOMOUS), KOLHAPUR

Declaration

I hereby declare that the Project entitled**,**

"WOMEN SAFETY ANALYTICS: Protecting Women from Safety Threats"

submitted to **KIT's College of Engineering, Kolhapur, Maharashtra, INDIA** in the partial fulfillment of the award of the Degree of **B Tech** in **Computer Science and Engineering** is a bonafide work carried out by me. The material contained in this Project has not been submitted to any University or Institution for the award of any degree.

Name of students:	**Roll No.:**
1) Sayali Khatkar	A-41
2) Yash Mhasekar	A-43
3) Abhay Patil	A-46
4) Harshvardhan Sathe	A-56

KOLHAPUR INSTITUTE OF TECHNOLOGY'S
COLLEGE OF ENGINEERING (AUTONOMOUS), KOLHAPUR

Acknowledgement

We are highly grateful to **Prof**. (**Dr.) Lingaraj Hadimani**, HOD CSE, KIT's College of Engineering, Kolhapur, for providing this opportunity to carry out the Project at CSE department and also thankful to **Prof**. (**Dr.) Mamta Kalas** Mam for your supervision. We would like to expresses our gratitude to other faculty members of CSE department for providing academic inputs, guidance & encouragement throughout this period. We would like to express a deep sense of gratitude.

Finally, we express my indebtedness to all who have directly or indirectly contributed to the successful completion of our project.

Name of students:	**Roll No.:**
1) Sayali Khatkar	A-41
2) Yash Mhasekar	A-43
3) Abhay Patil	A-46
4) Harshvardhan Sathe	A-56

Table of Contents

1.ABSTRACT

The "Women Safety Analytics – Protecting Women from safety threats" project is designed to address the growing concern for women's safety in various urban environments by leveraging advanced real-time monitoring and analytics. The system aims to create safer public spaces for women by detecting potential threats and alerting law enforcement before incidents escalate. Key functionalities include person detection with gender classification, analysis of gender distribution, identification of lone women during nighttime, detection of suspicious scenarios like a woman surrounded by men, recognition of SOS situations through gesture analytics, and hotspot identification based on past alerts. This proactive system not only enhances public safety but also provides valuable data for strategic planning and law enforcement.

2. INTRODUCTION

The safety of women is a critical issue in today’s society, with rising incidents of violence and harassment. Traditional safety measures often fail to provide timely responses or adequate protection. This project focuses on developing an innovative Women Safety Analytics system that uses real-time threat detection to ensure prompt alerts and intervention. By leveraging modern technology, the system aims to enhance women’s safety in various environments.

3. LITERATURE REVIEW

This section reviews current research papers and articles to consolidate existing knowledge and findings, both theoretical and methodological, on women's safety. The selected papers discuss various issues concerning women’s safety, security, awareness, and the development of safety systems, applications, and models.

1.**Women Safety Analytics (Dr. S. Aarthi et al.)**: Dr. S. Aarthi and her team outline an innovative AI-based surveillance system designed to bolster women's safety in public areas. This system incorporates real-time video analysis, facial recognition, and gesture detection to identify threats and notify law enforcement promptly. Additionally, it features automated high-risk situation recognition and integrates crime hotspot mapping for safer route suggestions. This comprehensive approach aims to bridge existing public safety gaps by leveraging proactive, AI-driven monitoring and swift interventions

2. **The Safety of Women in Journalism (Adedoyin F. O. and Felicia Awolope)**: Authored by Adedoyin F. O. and Felicia Awolope, this study highlights the pervasive safety challenges confronting female journalists, including physical and digital harassment. Such abuse often results in self-censorship and psychological strain, impacting their work. The authors call for stronger legislative measures, gender-sensitive workplace policies, and specialized training to create safer, supportive environments for women in journalism. These changes aim to empower female journalists and address critical gaps in protection and support

3. The paper, titled "**Convolutional Neural Network Driven Computer Vision Based Facial Emotion Detection and Recognition**," authored by **Tsega Asresa, Getahun Tigistu, and Melaku Bayih**, focuses on the application of Convolutional Neural Networks (CNN) for facial emotion recognition. It explores the significance of facial emotion recognition in fields such as security, social communication, and law enforcement. The authors discuss the role of AI and CNN in detecting emotions like anger, happiness, sadness, fear, disgust, neutral, and surprise from facial images. Using the FER-2013 dataset, the authors trained the CNN model, achieving 93.8% accuracy in training and 75% accuracy in testing. The research highlights the potential of CNN in advancing human-computer interaction and improving various applications that rely on emotion detection, such as security and commercial enterprises.

4.The research paper titled *"***Computer Vision-Based Gender Detection from Facial Image***"* by **Emon Kumar Dey, Mohsin Khan, and Md Haider Ali** focuses on developing an intelligent system for gender detection using facial images. Published in 2013, the paper proposes a method that combines several computer vision techniques for gender classification, aiming to improve accuracy in applications such as surveillance, human-computer interaction, and biometric authentication. The system detects faces in images using the Viola-Jones algorithm and processes the detected region of interest (ROI) with Local Binary Patterns (LBP) and Discrete Cosine Transformation (DCT) for feature extraction. The results are then classified using a supervised learning model based on a gender knowledge base, which improves the system's accuracy. The research tested the system on a database of over 4000 facial images, predominantly from the subcontinent, achieving an average accuracy rate of 78%. The paper discusses previous work in the field, including methods based on facial features and image pixel properties, and presents the effectiveness of low-level information approaches for gender classification.

4. PROBLEM DEFINITION

Women face increasing safety threats in public and private spaces, including harassment, violence, and abduction. Despite various safety measures, timely intervention remains a challenge due to delayed response and lack of effective monitoring. This project aims to develop a real-time threat detection and response system that enhances women's safety by providing instant alerts and enabling quicker intervention, ensuring a safer environment for women.

5. OBJECTIVES

- To develop a system to monitor and identify potential safety threats to women in real-time using sensors, data analytics, and machine learning techniques.

- To Create an automated alert system to notify emergency contacts and authorities immediately when a safety threat is detected, ensuring timely intervention.

- ToDesign a simple, intuitive interface for easy access to safety features, such as emergency alerts, tracking, and monitoring, for women in distress.

6. Proposed Work

6.1 Minimal Interface

Home page:

- A home page consists of concise, clear title that communicates what your website or service is about.
- The prominent buttons like "Login", "Get started", "Resources", "Contact", etc.
- The safety resources provides links to key pages like "Emergency Contacts", "Self-Defence Tips", "Support group".

Signup/Registration Page:

- The registration page allows users to create an account by providing their name, email, and password.
- A "Submit" button submits the registration form.
- A "Login" link is provided for users who already have an account.
- The page has a clean and minimal design for easy navigation.

- **Main Page (After Signup/Login):**

- The main page displays the **Real-Time Detection Module**, which is activated by clicking a **Start Real-Time Detection Button**.
- Once the detection module starts, a live **Camera Feed** is displayed, capturing the surroundings in real time.
- The **Detection Status** section updates with the current safety status (e.g., "Safe" or "Threat Detected"), based on the model's analysis.
- **Basic Controls** include the option to stop the detection and return to the homepage

6.2 Features :

A women safety analytics system would typically offer the following features in its interface:

- LiveCameraFeed:Display a live video stream from surveillance cameras monitoring areas for women's safety..

- Person Detection and Gender Classification:Detect individuals in the camera's field of view and classify them by gender.

- Basic Controls and Settings: Include control options to start or stop monitoring, adjust sensitivity settings, and define alert parameters.

This system provides a proactive approach to women's safety by leveraging real-time monitoring, behavior analysis, and alerting, making it an effective tool for law enforcement and public safety agencies..

6.3 Efficiency :

- **Real-time Threat Detection:**
An efficient Women Safety Analytics system quickly detects potential safety threats in real time, enabling immediate alerts and prompt intervention, which enhances overall safety and reduces response time.

- **Instant Alert and Emergency Response:**
The system automates the alert process by notifying emergency contacts and authorities as soon as a threat is detected, ensuring swift and efficient emergency response, reducing delays in critical situations.

- **User Interface Efficiency:**
The system features an intuitive, minimalistic interface that simplifies navigation, allowing users to easily start and stop detection, access emergency functions, and view live camera feeds without confusion or unnecessary steps.

- **Resource Optimization:**
The system is optimized for performance, running efficiently on standard hardware with minimal resource consumption, ensuring smooth operation without draining device resources or slowing down performance during real-time detection.

7. DESIGN FLOW/PROCESS

7.1 Concept Generation

i)Problem Identification & Research: Identify the need for a real-time women's safety solution, analyze existing systems, and gather user requirements.

ii)Concept Generation & Selection: Brainstorm and evaluate potential solutions like real-time detection, alert systems, and simple interfaces, choosing the most feasible option.

iii)Prototype Design & Integration: Develop initial designs, integrate necessary hardware and software components (e.g., camera feed, detection models), and create a workflow.

iv)Testing & Finalization: Test the prototype in real-world scenarios, refine based on feedback, and finalize the design for implementation, ensuring reliability and usability.

7.2 Evaluation & Selection of Specifications/Features

•**Real-time Threat Detection:** Accurately identify safety threats from live camera feeds using advanced detection algorithms.

•**Instant Alert System:** Enable quick alerts to emergency contacts and authorities upon threat detection.

•**User-friendly Interface:** Ensure easy navigation for users, allowing quick access to safety features and real-time detection.

•**Data Processing Optimization:** Use efficient data processing techniques to analyze camera feeds without heavy resource consumption.

•**Scalability and Performance:**Ensure the system can scale for various environments, maintaining high performance and reliability.

7.3 Design Constraints

i)Detection Accuracy: Ensure high accuracy in threat detection with minimal false positives or missed alerts.

ii)Real-Time Processing: Provide instant processing of camera feeds for immediate threat detection and alerts.

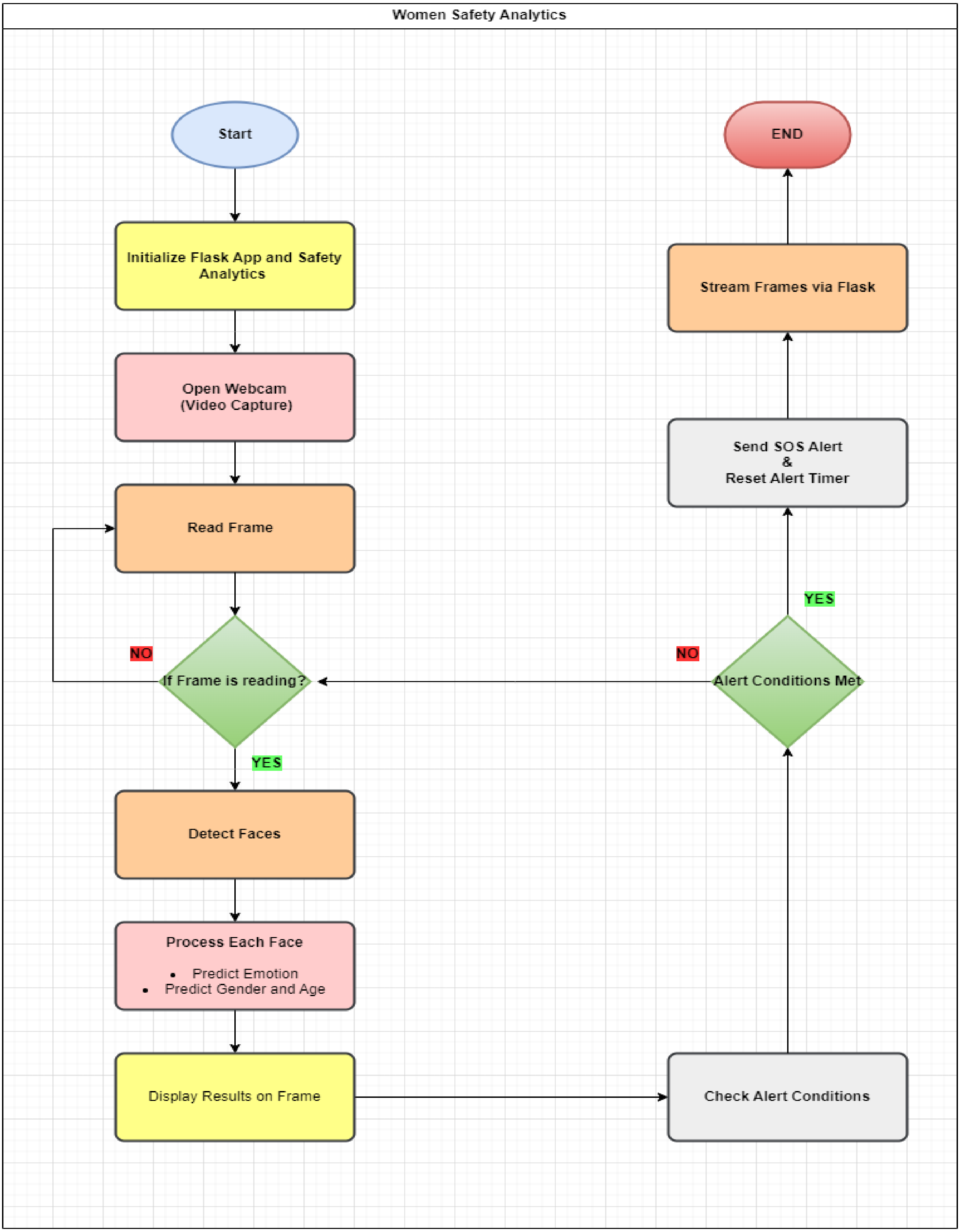
iii)Environmental Robustness: Operate effectively in varying lighting and environmental conditions for reliable detection.

iv)Adaptability to Movement: Maintain accurate detection even during user movement or dynamic environments.

v)Privacy Compliance: Ensure data security and compliance with privacy regulations for user information.

vi)User-Friendliness: Offer an intuitive interface with minimal steps for quick activation and alerts.

vii)Resource Efficiency: Optimize battery and resource usage for smooth operation on mobile devices.


Women Safety Analytics
Start
Initialize Flask App and Safety Analytics
Open Webcam (Video Capture)
Read Frame
NO
If Frame is reading?
YES
Detect Faces
Process Each Face
Predict Emotion
Predict Gender and Age
Display Results on Frame
Check Alert Conditions
Alert Conditions Met
NO
YES
Send SOS Alert & Reset Alert Timer
Stream Frames via Flask
END

8. HARDWARE AND SOFTWARE REQUIREMENTS:

8.1. System:
- Processor: Intel Core i3/i5/i7/i9 (compatible and recent gen)
- RAM: 8 GB
- Storage: 512 GB SSD
- Graphics Card: NVIDIA GTX 1650
- OS: Windows 7/8/10/11, macOS or Linux

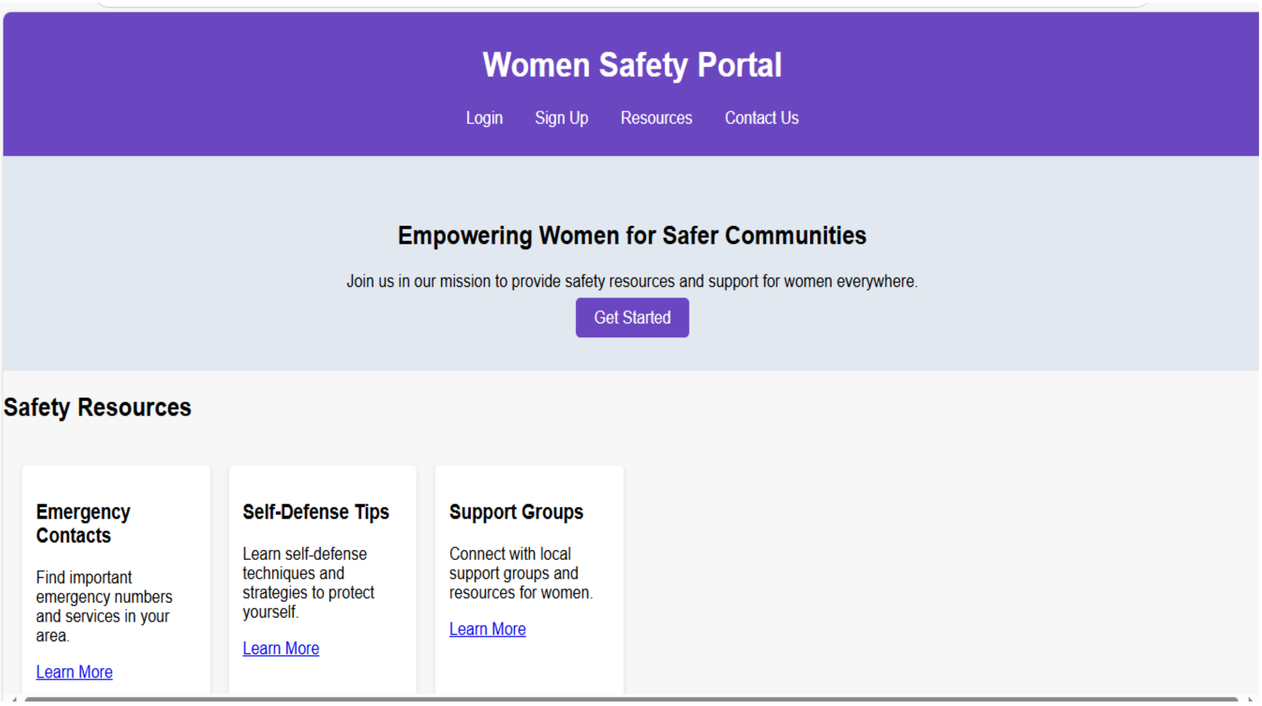
8.2. Cameras:
- Indoor: HD IP cameras (1080p), night vision, motion detection
- Outdoor: Weatherproof HD IP cameras (1080p), night vision
- Specialized: 360-degree or panoramic cameras (if needed)

8.3. Website Requirements
- Operating System: Windows 7/8/10/11/Linux or macOS
- Browser: Any browser with latest version.
- Coding Language: HTML, CSS, JavaScript, Python.
- Code Editor: VS Code.
- Database: Firebase, MongoDB.

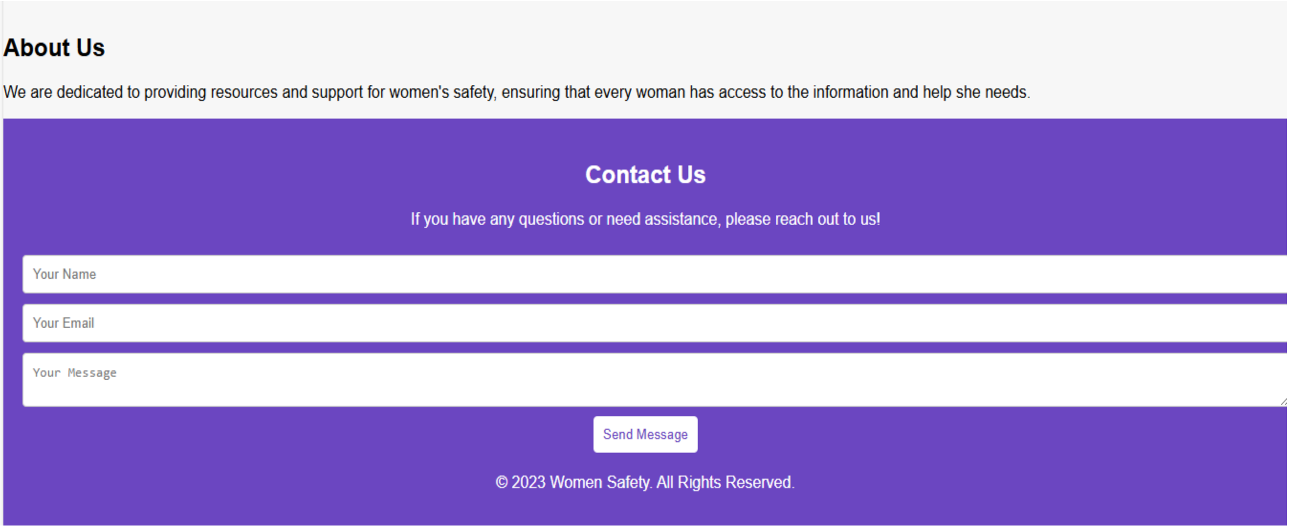
9. Here are the Screen Shots and everything related to Project

9.1 Home Page:

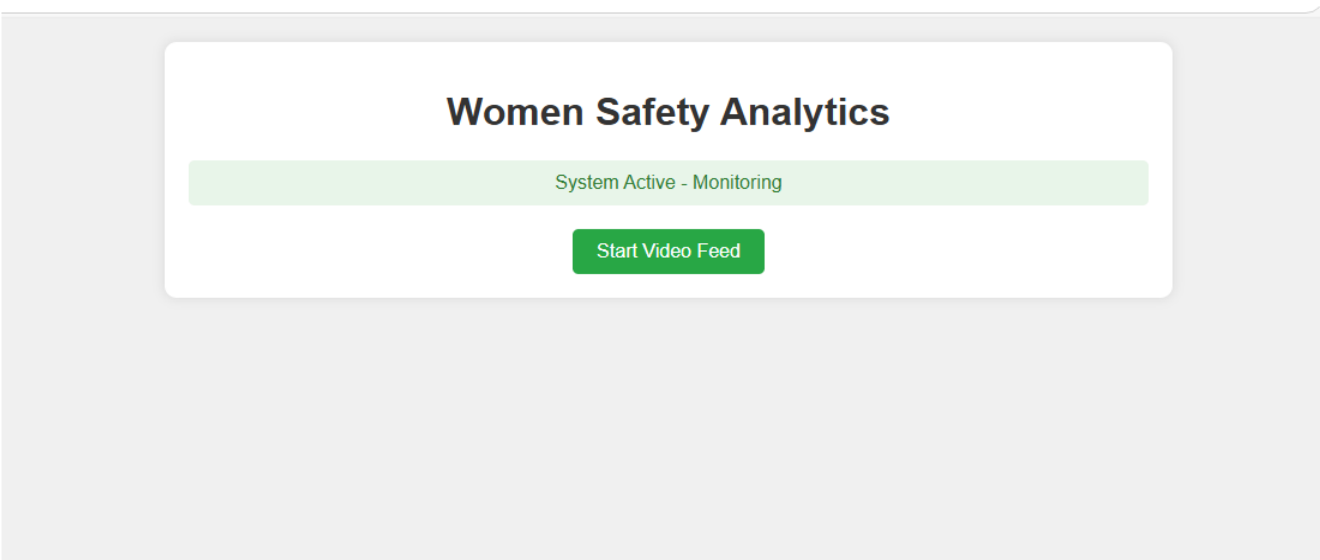
9.1.1.



9.1.2

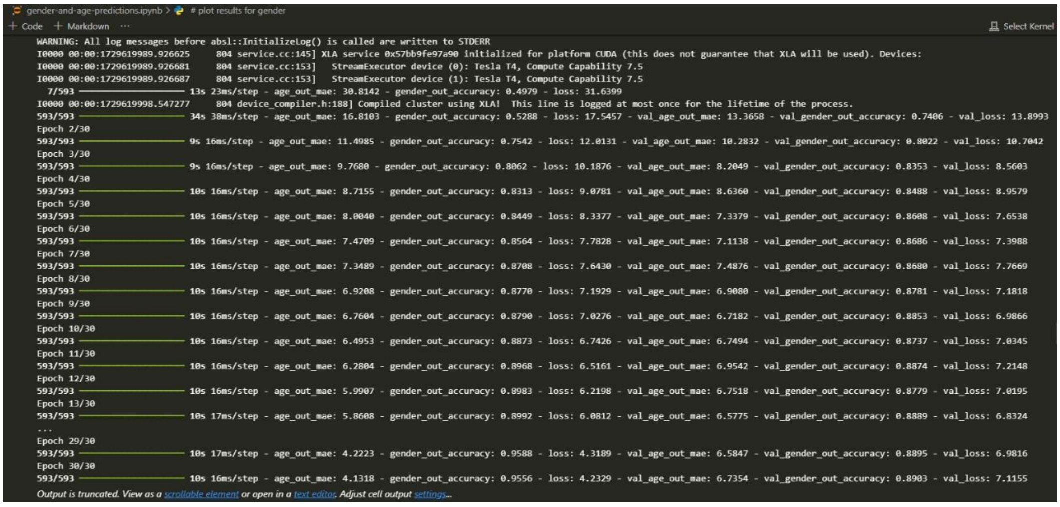

About Us
We are dedicated to providing resources and support for women's safety, ensuring that every woman has access to the information and help she needs.
Contact Us
If you have any questions or need assistance, please reach out to us!
Your Name
Your Email
Your Message
Send Message
© 2023 Women Safety. All Rights Reserved.

9.1.3


Women Safety Analytics
System Active - Monitoring
Start Video Feed

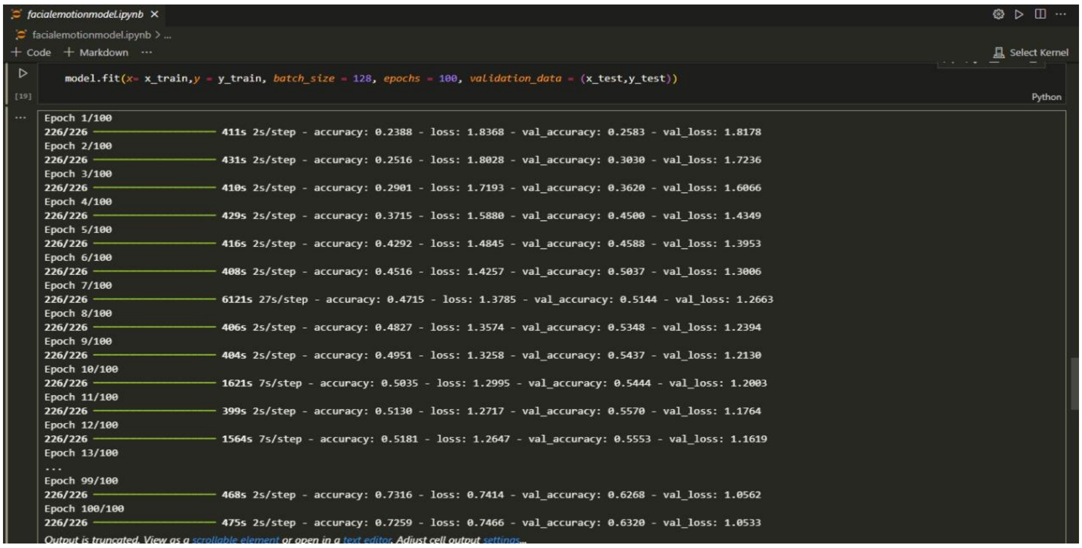
9.2 Model Training:

9.2.1 Gender Detection



```
gender-and-age-predictions.ipynb > # plot results for gender
+ Code  + Markdown  ...                                                    Select Kernel
WARNING: All log messages before absl::InitializeLog() is called are written to STDERR
I0000 00:00:1729619989.926625     804 service.cc:145] XLA service 0x57bb9fe97a90 initialized for platform CUDA (this does not guarantee that XLA will be used). Devices:
I0000 00:00:1729619989.926681     804 service.cc:153]   StreamExecutor device (0): Tesla T4, Compute Capability 7.5
I0000 00:00:1729619989.926687     804 service.cc:153]   StreamExecutor device (1): Tesla T4, Compute Capability 7.5
  7/593 ━━━━━━━━━━━━━━━━━━━━ 13s 23ms/step - age_out_mae: 30.8142 - gender_out_accuracy: 0.4979 - loss: 31.6399
I0000 00:00:1729619998.547277     804 device_compiler.h:188] Compiled cluster using XLA!  This line is logged at most once for the lifetime of the process.
593/593 ━━━━━━━━━━━━━━━━━━━━ 34s 38ms/step - age_out_mae: 16.8103 - gender_out_accuracy: 0.5288 - loss: 17.5457 - val_age_out_mae: 13.3658 - val_gender_out_accuracy: 0.7406 - val_loss: 13.8993
Epoch 2/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 9s 16ms/step - age_out_mae: 11.4985 - gender_out_accuracy: 0.7542 - loss: 12.0131 - val_age_out_mae: 10.2832 - val_gender_out_accuracy: 0.8022 - val_loss: 10.7042
Epoch 3/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 9s 16ms/step - age_out_mae: 9.7680 - gender_out_accuracy: 0.8062 - loss: 10.1876 - val_age_out_mae: 8.2049 - val_gender_out_accuracy: 0.8353 - val_loss: 8.5603
Epoch 4/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 10s 16ms/step - age_out_mae: 8.7155 - gender_out_accuracy: 0.8313 - loss: 9.0781 - val_age_out_mae: 8.6360 - val_gender_out_accuracy: 0.8488 - val_loss: 8.9579
Epoch 5/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 10s 16ms/step - age_out_mae: 8.0040 - gender_out_accuracy: 0.8449 - loss: 8.3377 - val_age_out_mae: 7.3379 - val_gender_out_accuracy: 0.8608 - val_loss: 7.6538
Epoch 6/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 10s 16ms/step - age_out_mae: 7.4709 - gender_out_accuracy: 0.8564 - loss: 7.7828 - val_age_out_mae: 7.1138 - val_gender_out_accuracy: 0.8686 - val_loss: 7.3988
Epoch 7/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 10s 16ms/step - age_out_mae: 7.3489 - gender_out_accuracy: 0.8708 - loss: 7.6430 - val_age_out_mae: 7.4876 - val_gender_out_accuracy: 0.8680 - val_loss: 7.7669
Epoch 8/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 10s 16ms/step - age_out_mae: 6.9208 - gender_out_accuracy: 0.8770 - loss: 7.1929 - val_age_out_mae: 6.9080 - val_gender_out_accuracy: 0.8781 - val_loss: 7.1818
Epoch 9/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 10s 16ms/step - age_out_mae: 6.7604 - gender_out_accuracy: 0.8790 - loss: 7.0276 - val_age_out_mae: 6.7182 - val_gender_out_accuracy: 0.8853 - val_loss: 6.9866
Epoch 10/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 10s 16ms/step - age_out_mae: 6.4953 - gender_out_accuracy: 0.8873 - loss: 6.7426 - val_age_out_mae: 6.7494 - val_gender_out_accuracy: 0.8737 - val_loss: 7.0345
Epoch 11/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 10s 16ms/step - age_out_mae: 6.2804 - gender_out_accuracy: 0.8968 - loss: 6.5161 - val_age_out_mae: 6.9542 - val_gender_out_accuracy: 0.8874 - val_loss: 7.2148
Epoch 12/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 10s 16ms/step - age_out_mae: 5.9907 - gender_out_accuracy: 0.8983 - loss: 6.2198 - val_age_out_mae: 6.7518 - val_gender_out_accuracy: 0.8779 - val_loss: 7.0195
Epoch 13/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 10s 17ms/step - age_out_mae: 5.8608 - gender_out_accuracy: 0.8992 - loss: 6.0812 - val_age_out_mae: 6.5775 - val_gender_out_accuracy: 0.8889 - val_loss: 6.8324
...
Epoch 29/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 10s 17ms/step - age_out_mae: 4.2223 - gender_out_accuracy: 0.9588 - loss: 4.3189 - val_age_out_mae: 6.5847 - val_gender_out_accuracy: 0.8895 - val_loss: 6.9816
Epoch 30/30
593/593 ━━━━━━━━━━━━━━━━━━━━ 10s 16ms/step - age_out_mae: 4.1318 - gender_out_accuracy: 0.9556 - loss: 4.2329 - val_age_out_mae: 6.7354 - val_gender_out_accuracy: 0.8903 - val_loss: 7.1155
Output is truncated. View as a scrollable element or open in a text editor. Adjust cell output settings...
```

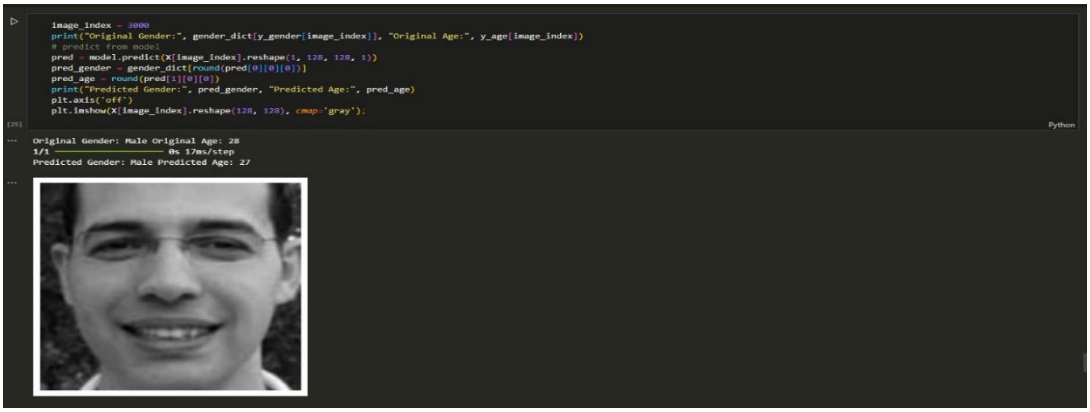
9.2.2 Emotion Detection



```
facialemotionmodel.ipynb
facialemotionmodel.ipynb > ...
+ Code  + Markdown  ...                                                    Select Kernel
[19]  model.fit(x= x_train,y = y_train, batch_size = 128, epochs = 100, validation_data = (x_test,y_test))
                                                                                 Python
Epoch 1/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 411s 2s/step - accuracy: 0.2388 - loss: 1.8368 - val_accuracy: 0.2583 - val_loss: 1.8178
Epoch 2/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 431s 2s/step - accuracy: 0.2516 - loss: 1.8028 - val_accuracy: 0.3030 - val_loss: 1.7236
Epoch 3/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 410s 2s/step - accuracy: 0.2901 - loss: 1.7193 - val_accuracy: 0.3620 - val_loss: 1.6066
Epoch 4/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 429s 2s/step - accuracy: 0.3715 - loss: 1.5880 - val_accuracy: 0.4500 - val_loss: 1.4349
Epoch 5/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 416s 2s/step - accuracy: 0.4292 - loss: 1.4845 - val_accuracy: 0.4588 - val_loss: 1.3953
Epoch 6/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 408s 2s/step - accuracy: 0.4516 - loss: 1.4257 - val_accuracy: 0.5037 - val_loss: 1.3006
Epoch 7/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 6121s 27s/step - accuracy: 0.4715 - loss: 1.3785 - val_accuracy: 0.5144 - val_loss: 1.2663
Epoch 8/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 406s 2s/step - accuracy: 0.4827 - loss: 1.3574 - val_accuracy: 0.5348 - val_loss: 1.2394
Epoch 9/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 404s 2s/step - accuracy: 0.4951 - loss: 1.3258 - val_accuracy: 0.5437 - val_loss: 1.2130
Epoch 10/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 1621s 7s/step - accuracy: 0.5035 - loss: 1.2995 - val_accuracy: 0.5444 - val_loss: 1.2003
Epoch 11/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 399s 2s/step - accuracy: 0.5130 - loss: 1.2717 - val_accuracy: 0.5570 - val_loss: 1.1764
Epoch 12/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 1564s 7s/step - accuracy: 0.5181 - loss: 1.2647 - val_accuracy: 0.5553 - val_loss: 1.1619
Epoch 13/100
...
Epoch 99/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 468s 2s/step - accuracy: 0.7316 - loss: 0.7414 - val_accuracy: 0.6268 - val_loss: 1.0562
Epoch 100/100
226/226 ━━━━━━━━━━━━━━━━━━━━ 475s 2s/step - accuracy: 0.7259 - loss: 0.7466 - val_accuracy: 0.6320 - val_loss: 1.0533
Output is truncated. View as a scrollable element or open in a text editor. Adjust cell output settings...
```

9.3 Testing :

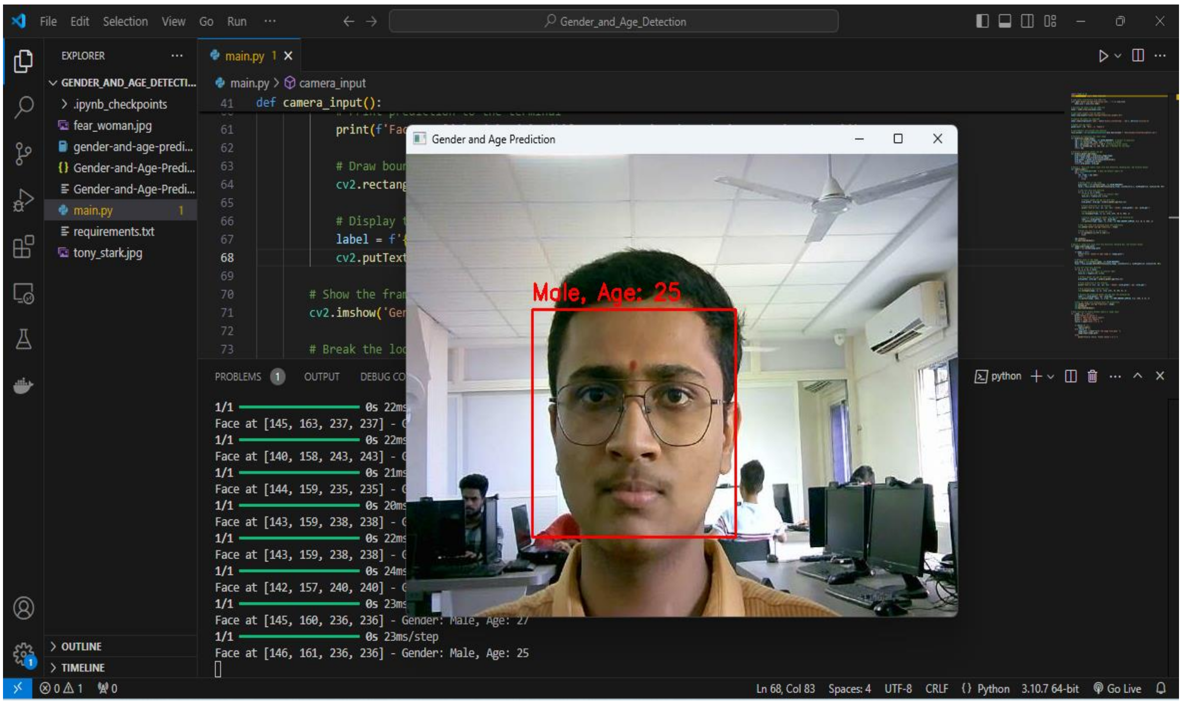
9.3.1



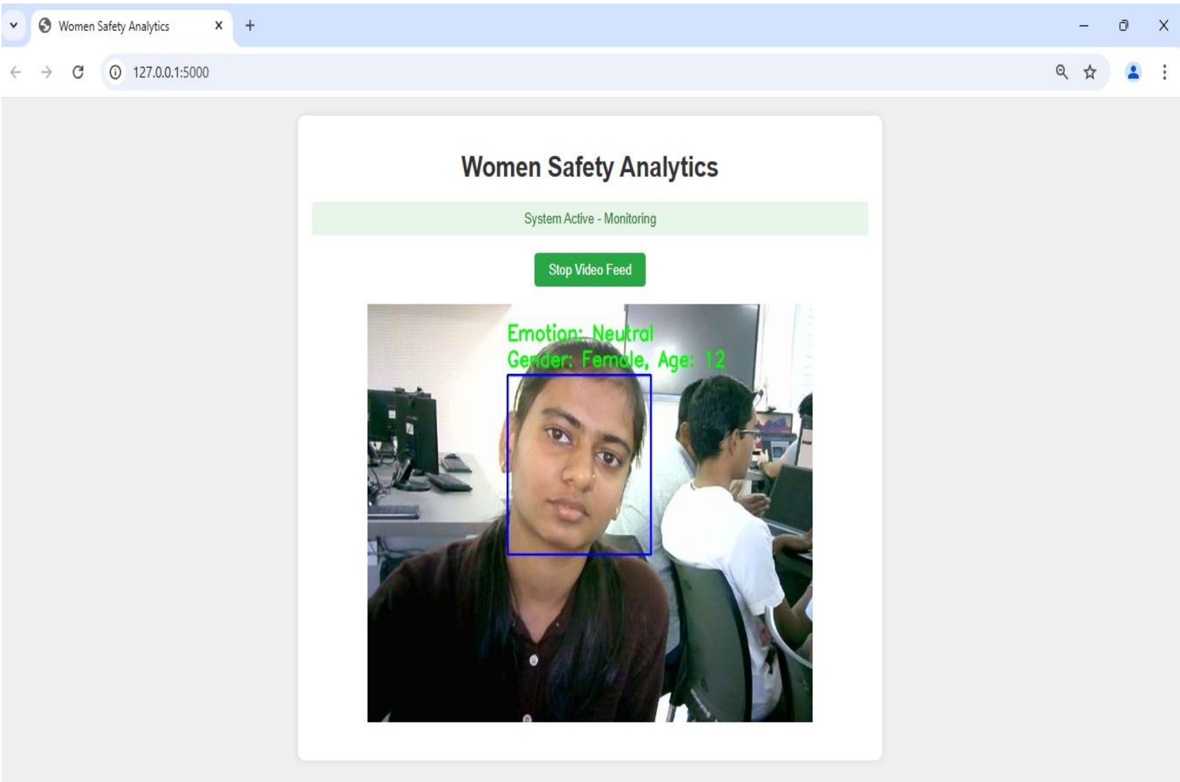
```
image_index = 3000
print("Original Gender:", gender_dict[y_gender[image_index]], "Original Age:", y_age[image_index])
# predict from model
pred = model.predict(X[image_index].reshape(1, 128, 128, 1))
pred_gender = gender_dict[round(pred[0][0][0])]
pred_age = round(pred[1][0][0])
print("Predicted Gender:", pred_gender, "Predicted Age:", pred_age)
plt.axis('off')
plt.imshow(X[image_index].reshape(128, 128), cmap='gray');
```

```
Original Gender: Male Original Age: 28
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 17ms/step
Predicted Gender: Male Predicted Age: 27
```

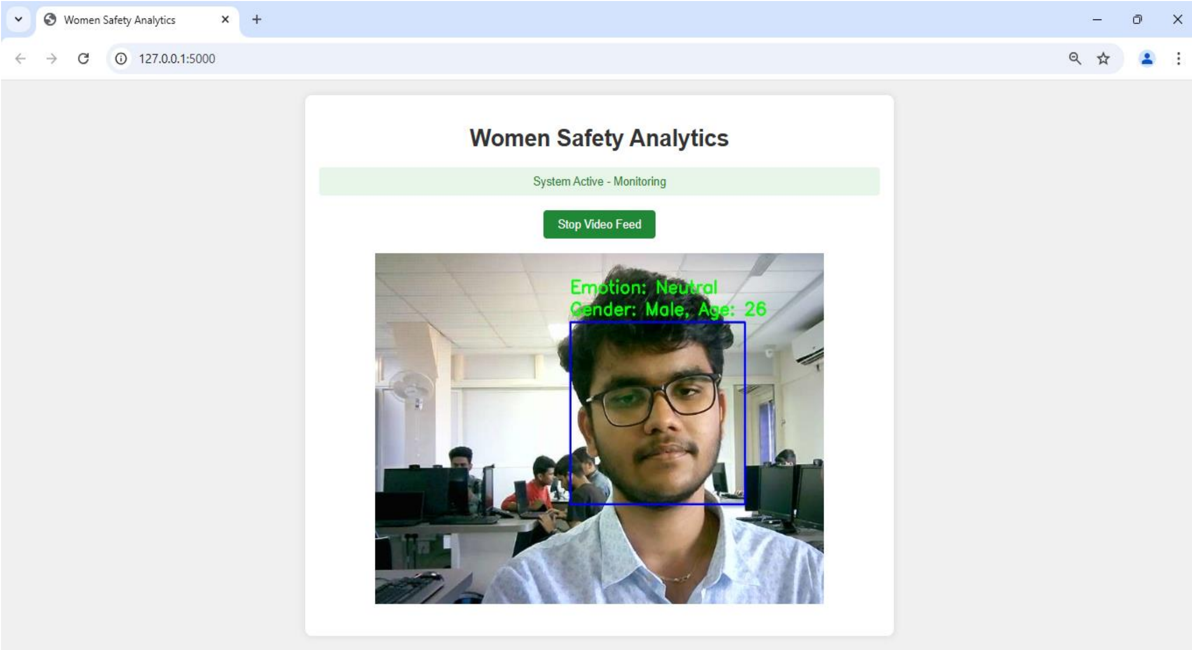
9.3.2


File Edit Selection View Go Run
Gender_and_Age_Detection
EXPLORER
GENDER_AND_AGE_DETECTI...
.ipynb_checkpoints
fear_woman.jpg
gender-and-age-predi...
Gender-and-Age-Predi...
Gender-and-Age-Predi...
main.py
requirements.txt
tony_stark.jpg
OUTLINE
TIMELINE
main.py > camera_input
def camera_input():
Gender and Age Prediction
Male, Age: 25
PROBLEMS OUTPUT
Face at [145, 160, 236, 236] - Gender: Male, Age: 27
Face at [146, 161, 236, 236] - Gender: Male, Age: 25
Ln 68, Col 83 Spaces: 4 UTF-8 CRLF Python 3.10.7 64-bit Go Live

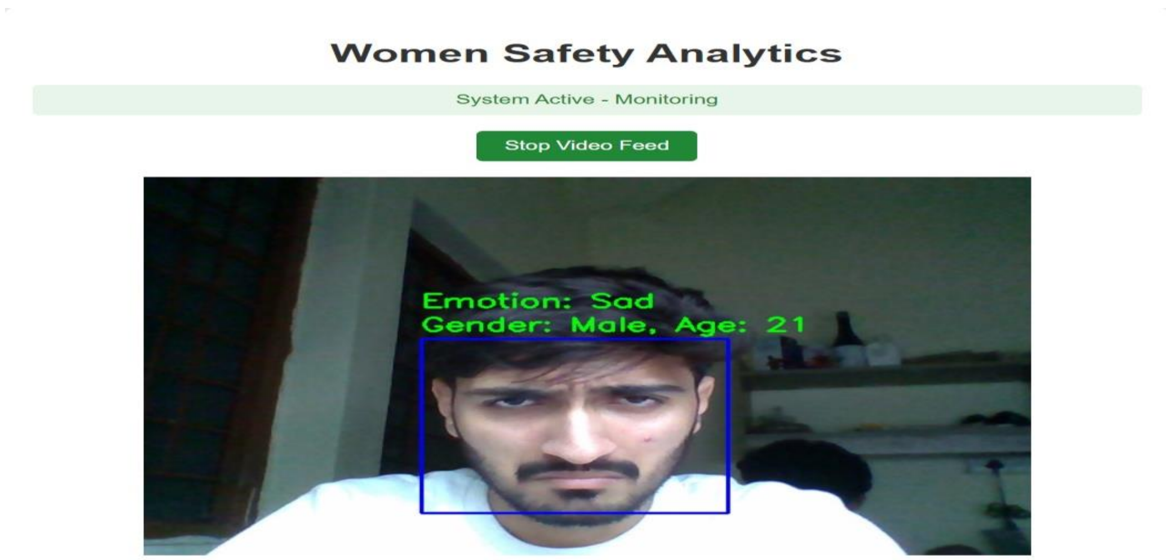
9.3.3


Women Safety Analytics
127.0.0.1:5000
Women Safety Analytics
System Active - Monitoring
Stop Video Feed
Emotion: Neutral
Gender: Female, Age: 12

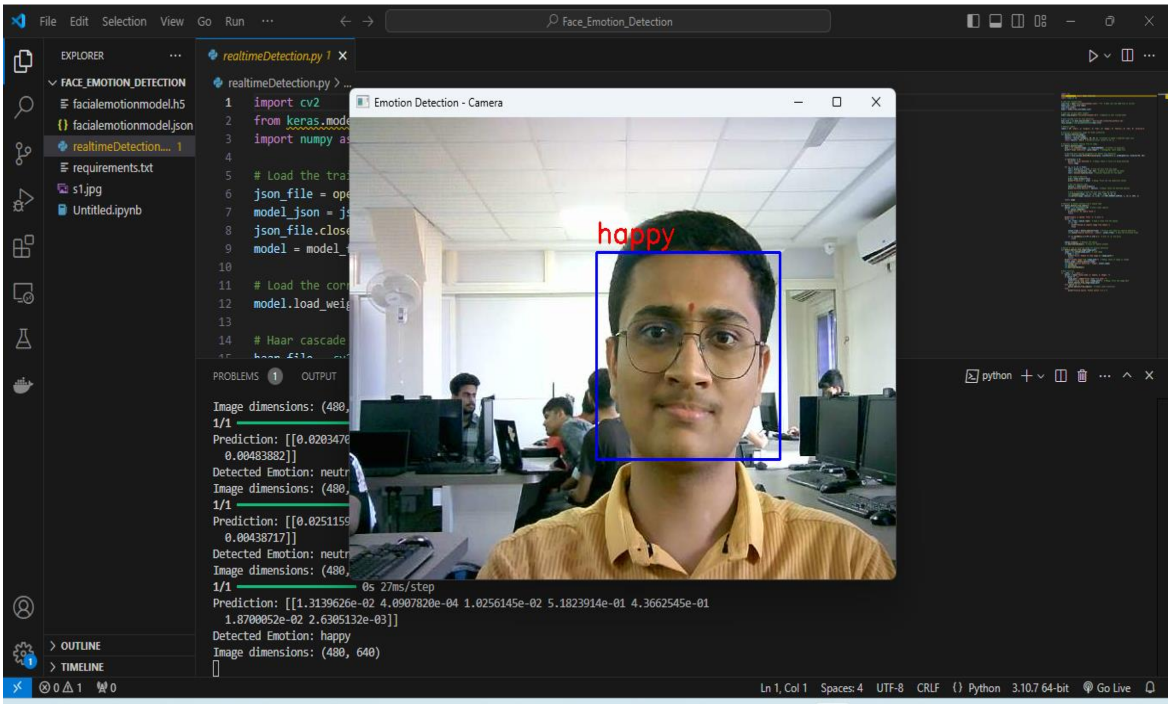
9.3.4


Women Safety Analytics
127.0.0.1:5000
Women Safety Analytics
System Active - Monitoring
Stop Video Feed
Emotion: Neutral
Gender: Male, Age: 26

9.3.5


Women Safety Analytics
System Active - Monitoring
Stop Video Feed
Emotion: Sad
Gender: Male, Age: 21

9.3.6



For detailed description :
https://github.com/abhay-patil-cse27/women-safety-analytics-mp-01

10. CONCLUSION AND FUTURE WORK

The Women Safety Analytics system leverages two key machine learning models: Person Detection with Gender Classification and Recognizing SOS Situations through Gesture Analytics. These models effectively detect individuals in various environments, classify their gender, and identify distress gestures, providing real-time alerts for potential safety threats. This proactive approach enhances women's safety by enabling early intervention in critical situations.

For future improvements, the system can focus on enhancing the accuracy of these models, reducing false positives, and expanding threat detection capabilities. Integrating additional models for other types of danger, improving real-time alert systems, and developing mobile applications for broader accessibility will further strengthen the system's functionality and impact.

11.References:

[1] Dr. S. Aarthi et al, "Women safety analytics: Protecting women from safety threats," vol. 1, no. 1, pp. 1-10, Jan. 2024.

[2] F. O. Adedoyin, "The safety of women in journalism: A dissertation on the safety of women in journalism," M.A. dissertation, [University of Ibadan].

[3] Tsega Asresa, Getahun Tigistu, and Melaku Bayih, "Convolutional neural network driven computer vision based facial emotion detection and recognition," Indian Journal of Computer Graphics and Multimedia (IJCGM),ISSN:2582-8592(online), Issue-2 August 2023, Volume-3.

[4] Emon Kumar Dey, Mohsin Khan, and Md Haider Ali, "Computer vision-based gender detection from facial image," International Journal of Advanced Computer Science,No.8,Pp 428-433, Aug 2013,Volume 3.