

TECHFIESTA 2025

TITLE PAGE



- Problem Statement ID -T2K25D4
- Problem Statement Title- Incident Reporting and response system
- Domain - Women & child safety.
- Team Name - DigitalDivas (T4067)
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Empower. Protect. Act.



WOMEN SAFETY SOFTWARE :

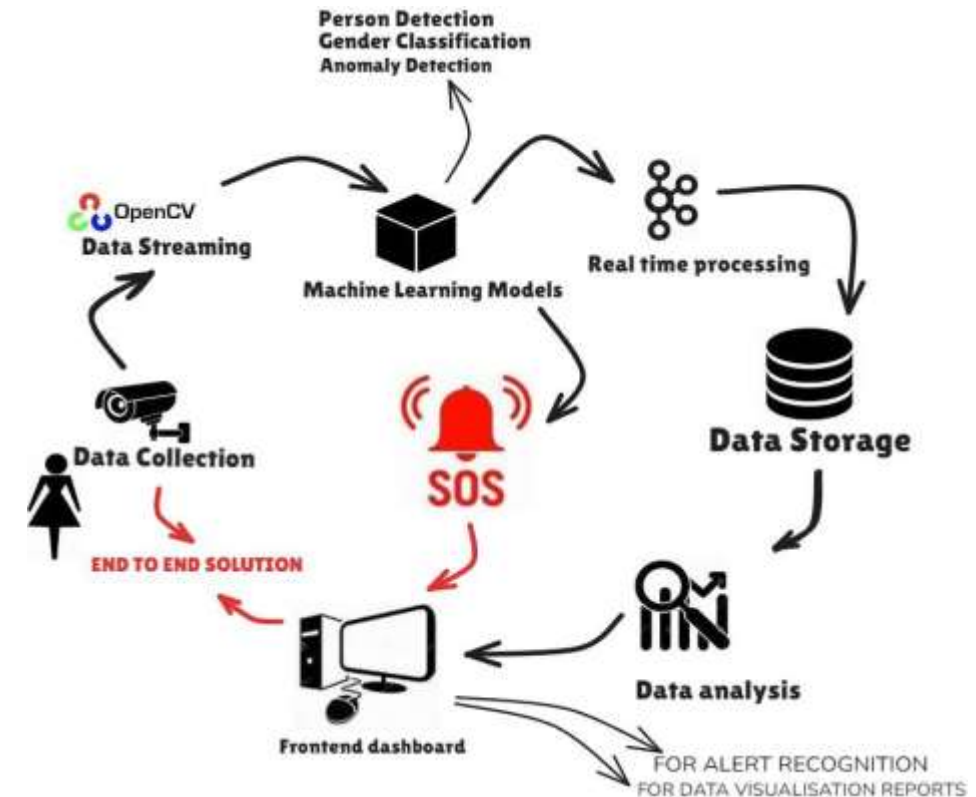
Empower. Protect. Act.

Introducing *Secure Her*, a real-time threat detection software designed to safeguard women from potential dangers. Advanced surveillance meets analytical precision to ensure safety, anytime, anywhere. The software will function as follows :

1. Person detection along with Gender Classification using Deep learning frameworks like TENSOR FLOW OR PYTORCH.
2. Gender Distribution : Count the number of men and women present in the scene which can be done using OPENCV which is an open -source COMPUTER VISION library.
3. Identifying a Lone Woman at Night time.
4. Detection of a Woman Surrounded by Men .
5. Recognizing SOS situation through gesture analytics .
6. Identifying hotspots where incidents are more likely to occur, based on the past alerts.

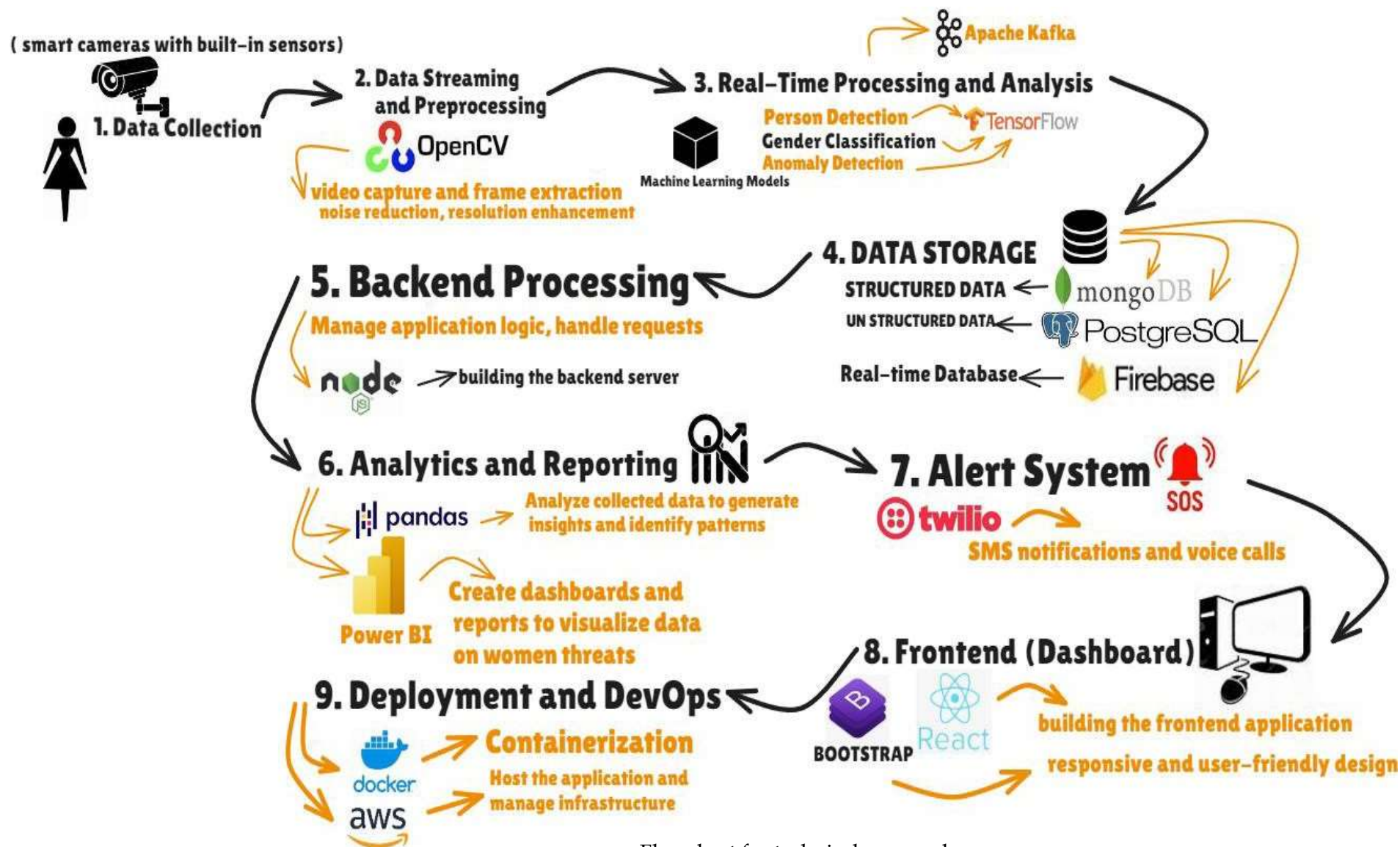


HOW DOES SECURE HER WORKS ?





PROCESS FLOW DIAGRAM & TECHNICAL APPROACH



Flowchart for technical approach



METHODOLOGY USED



The architecture of "Secure Her," a real-time threat detection software highlights the workflow as :

- Starting with data collection through smart cameras, followed by data preprocessing using OpenCV.
- Real-time analysis with machine learning (**TensorFlow**).
- Storage in databases like **MongoDB** and **PostgreSQL**.
- The backend (Node.js) manages application logic, while analytics tools (**Pandas, Power BI**) provide insights.
- An alert system (Twilio) ensures SMS and voice notifications, with a user-friendly dashboard built using React and Bootstrap.
- Finally, deployment leverages **Docker** and **AWS** for scalability and reliability.



SOLUTION CONCEPT AND FEASIBILITY



1. Technological Feasibility

Feasibility: High.

Computer vision algorithms, particularly those using deep learning, have made significant strides in person detection and gender classification.

Ensuring high accuracy in diverse conditions (e.g., lighting, crowd density) is crucial.

2. Identifying a Lone Woman at Night

Feasibility: Medium to High

Machine learning models can be trained to recognize when a woman is alone, especially in areas identified as high-risk

Context Understanding: Differentiating between situations that require intervention and those that do not

3. Recognizing SOS Situations through Gesture Analytics

Feasibility: Medium

Gesture recognition technology has advanced, with systems capable of recognizing specific gestures

Gesture Diversity: There is no universal distress gesture, and different cultures may have varying signals.

4. Social and Ethical Feasibility

Feasibility: Medium

Privacy Concerns , Public Acceptance Legal and Regulatory Compliance

Public awareness campaigns that highlight the benefits and safeguards of the system

5. Economic Feasibility

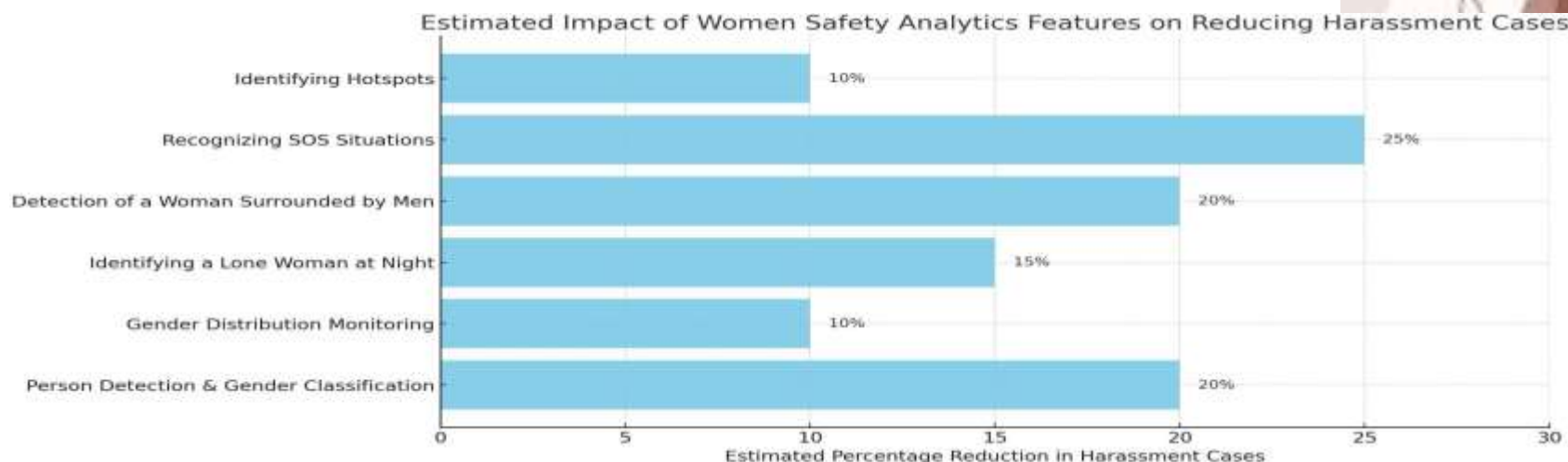
Feasibility: Medium

The initial setup costs could be substantial, including hardware (cameras, servers), software development, and ongoing maintenance. Securing funding through public-private partnerships, grants, or government initiatives can offset costs. Over time, the system's benefits in reducing crime could justify the investment.

Efficient use of resources, such as cloud- based solutions and scalable infrastructure, can reduce operational costs.



USE CASES & DESCRIPTION





TECHNOLOGY STACK USED

A comprehensive technology stack featuring tools and frameworks are used such as **Python**, **TensorFlow**, **OpenCV**, **MongoDB**, **SQL**, **Keras**, **AWS**, **React**, **Docker**, **Django**, **Node.js**, **Firebase**, **PostgreSQL**, **Tailwind CSS**, and libraries for machine learning and data analysis like **Pandas** and **Scikit-learn**. It also highlights front-end technologies (HTML, CSS, JS, Bootstrap) and cloud-based services, emphasizing full-stack development and AI/ML capabilities.





CONSTRAINTS



1. "Facial Recognition Technology: A Survey of Current Approaches and Applications"

Authors:N.M.B..A.H.S

.Shukar,A.S.Malik Published in:IEEE

Access

Link:<https://ieeexplore.ieee.org/document/8956345>

This paper provides a comprehensive overview of various facial recognition techniques, which can be useful in understanding how these technologies can be adapted for safety applications.

2. "Facial Recognition Technology: Benefits and Risks".

Authors: A. A. Arora, M. R. K. Lee

Published in: Journal of Privacy and

Confidentiality Link:Journal of Privacy and Confidentiality.

Discusses the benefits and risks of facial recognition technology, with insights into privacy issues relevant for women's safety applications.

3. "The Role of Facial Recognition Technology in Personal Safety"

Publisher: Gartner

Link: Gartner

Research

Provides an analysis of how facial recognition technology is being used in safety and security, including applications specifically designed to enhance personal safety.