



Intel Unnati Industrial Training Program 2024

# PROJECT PRESENTATION

GROUP : ElectroNauts



# Problem Statement

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## INNOVATIVE MONITORING SYSTEM FOR TELEICU PATIENTS

ICUs are critical care units in hospitals where patients with severe and life-threatening illnesses or injuries are closely monitored. The concept of a TeleICU involves using technology to extend the reach of ICU care to patients who might not be in a traditional ICU setting, such as those in remote areas or smaller hospitals without specialized ICU staff.



# Solution



By leveraging technologies like video processing and computer vision, the innovative monitoring system for TeleICU patients can significantly enhance patient care by providing continuous, real-time monitoring and alerting medical staff to potential emergencies, thereby improving patient outcomes and optimizing healthcare resources.

# Features Offered



**01**

## REMOTE MONITORING

Utilize cameras to gather patient data remotely.



**02**

## TELECOMMUNICATION

Enable video communication between patients, remote ICU specialists, and local healthcare providers.



**03**

## SCALABILITY

The system is designed to be scalable, so it can be deployed in various healthcare settings, from large hospitals to small clinics.

# Process Flow

01

## PERSON IDENTIFICATION

The model identifies the different people in the image frame and labels them as patient, doctor, nurse, family.

02

## MOVEMENT DETECTION

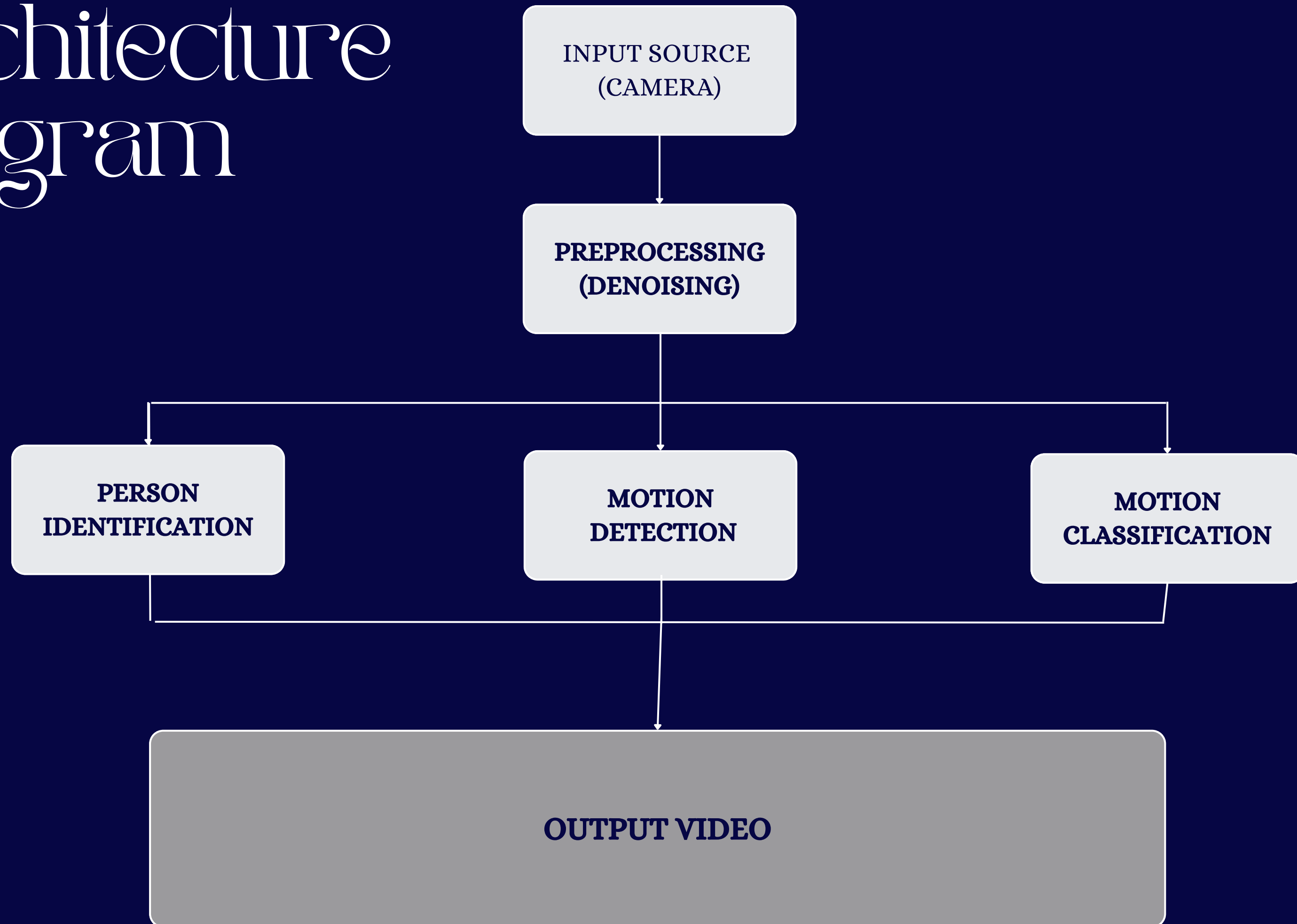
The model detects motion by finding the difference between two consecutive image frames of the input video.

03

## TYPE OF MOVEMENT

The model classifies the motion into different types like seizure(patient) and walking.

# Architecture Diagram



# Technologies Used



- Open CV: OpenCV is used for various computer vision tasks such as video capture, image processing, and object detection.
- IPython Display: Used to display video files within a Jupyter Notebook environment.
- NumPy (Numerical Python): NumPy is used for numerical computations, such as creating kernels for morphological operations.

# Team Members and Contribution

PALAK SONI - Model 1: Person Identification

VARTIKA SHARMA - Model 2: Motion Detection

VATSALA MISRA - Model 3: Motion Classification



# Conclusion



The development of an innovative monitoring system for TeleICU patients using video processing and deep learning presents a promising advancement in critical care. This system offers continuous, real-time monitoring of ICU patients through high-definition video feeds, leveraging state-of-the-art deep learning models to detect and alert medical staff of critical events. By integrating various technologies such as OpenCV for video processing, model training and scalable data processing and storage, the system ensures timely and accurate detection of patient distress and medical emergencies.

This innovative monitoring system has the potential to revolutionize TeleICU care by providing enhanced patient monitoring, early detection of critical events, and improved patient outcomes. By harnessing the power of video processing and other technologies, healthcare providers can offer more proactive and responsive care, ultimately saving lives and optimizing the utilization of healthcare resources.