



SIMATS ENGINEERING

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Course Code: DSA0216

Slot: B

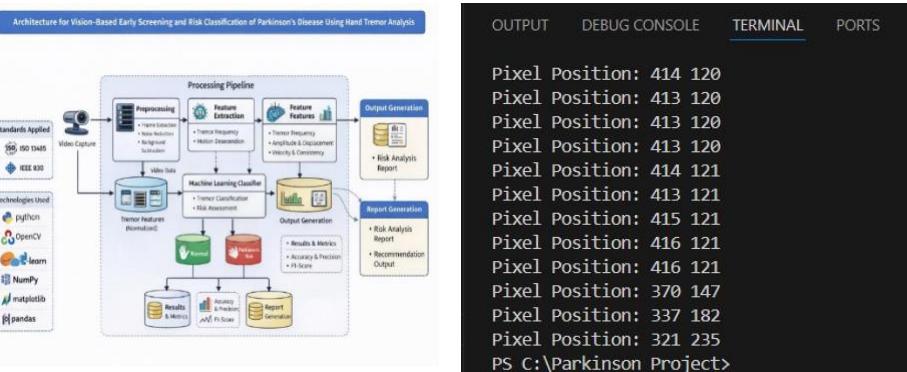
Course Name: COMPUTER VISION WITH OPEN CV

Course Faculty: DR. SENTHILVADIVU S & DR. KUMARAGURUBARAN T

Project Title:

Vision-Based Early Screening and Risk Classification of Parkinson's Disease Using Hand Tremor Analysis

Module Photographs:



Project Description: Hand Tremor Detection and Landmark Tracking using mediapipe Framework

The **Hand Tremor Detection Module** functions as the project's central motion acquisition and tracking engine, leveraging the **MediaPipe framework** to transform raw video input into high-fidelity kinematic data. By utilizing sophisticated computer vision algorithms, the module performs real-time hand landmark detection, identifying and mapping 21 distinct 3D coordinates that represent the skeletal structure of the hand. by overlaying detected landmarks and specific fingertip trajectories directly onto the video feed to monitor involuntary oscillations. To maintain the rigorous analytical assurance required for clinical or technical validation, the module incorporates advanced stabilization protocols designed to maximize tracking accuracy and minimize "jitter" or detection dropouts caused by environmental variables such as lighting fluctuations, occlusions, or complex backgrounds. By ensuring a persistent and stable lock on hand geometry, the module provides a clean, noise-reduced dataset that is essential for the subsequent calculation of tremor frequency, amplitude, and regularity.

Student Signature

Guide Signature