SIMATS ENGINEERING

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Course Code: DSA0216 **Slot: B**

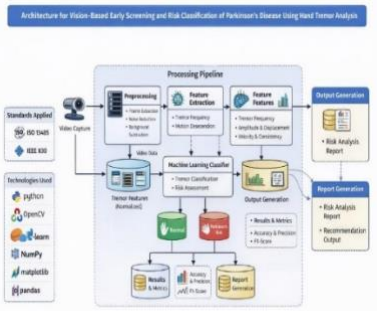
Course Name: **COMPUTER VISION WITH OPEN CV**

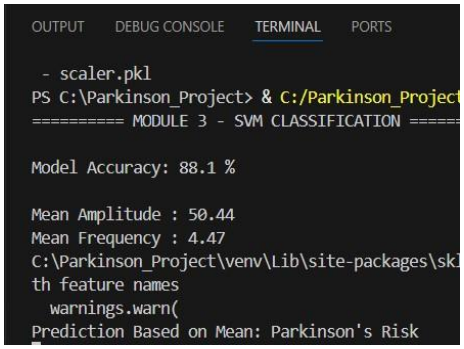
Course Faculty: DR. SENTHILVADIVU S & DR. KUMARAGURUBARAN T

Project Title:

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

Module Photographs:





Project Description: Parkinson's disease classification using support vector machine (SVM)

The Parkinson's Disease Classification Module functions as the project's central decision-making and prediction engine, leveraging a **Support Vector Machine** (SVM) to differentiate between pathological and non-pathological motion patterns. The core classification function accepts processed tremor features—specifically amplitude, dominant frequency values, and entropy—and processes them through a trained SVM model to determine the likelihood of a Parkinson's diagnosis. A critical deliverable of this module is the generation of high-impact classification visualizations, including real-time prediction labels and amplitude-frequency distribution plots that illustrate the distinct separation between healthy physiological tremors and Parkinsonian tremors. To ensure rigorous validation and analytical assurance, the system continuously monitors model performance and decision boundary integrity, verifying that the SVM hyperplane effectively separates feature clusters with a maximum-margin approach. This robust statistical framework allows the module to provide highly accurate, evidence-based predictions that are essential for supporting clinical diagnostic workflows and longitudinal patient monitoring.

Student Signature **Guide Signature**