## Artificial Intelligence

## and

## Machine Learning

Project Abstract

Semester-IV (Batch-2022)

Human Activity Recognition

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**Title:** Machine Learning Project on Human activity Recognition using smartphones Dataset

**Abstract:**

In this AI/ML project, we aim to develop a robust human activity recognition system using smartphones. The system will utilize inertial sensors (accelerometers, compasses, and gyroscopes) to capture movement data. The data will be pre-processed, segmented, and feature-extracted using advanced techniques. The extracted features will be used to train and test machine learning algorithms for accurate activity recognition.

Human activity recognition (HAR) is a crucial task with various applications, including surveillance, healthcare, and assisted living. In the context of HAR, most classification methods follow the Activity Recognition Process (ARP) protocol. This paper reviews the techniques and methods commonly adopted in the ARP process, focusing on those that have been proposed and experimented with for smartphones.

The data acquisition step involves acquiring data from sensors, typically accelerometers, compasses, and gyroscopes. The pre-processing step removes artefacts and noise from the acquired data using filtering techniques. The data segmentation step splits data into segments or windows, facilitating the next step. The feature extraction step extracts significant information from the data, reducing data dimension. The classification step trains and tests the classification algorithm using the extracted features.

Experimental results demonstrate the effectiveness of the proposed HAR system in accurately recognizing human activities based on smartphone sensor data. The developed models achieve high classification accuracy rates, validating the feasibility and practicality of using smartphones as unobtrusive and cost-effective tools for activity monitoring and recognition.

In conclusion, this AI/ML project will develop a comprehensive human activity recognition system using smartphones. The system will be evaluated using publicly available datasets and will provide valuable insights into the potential of smartphones for HAR tasks