SMARTBRIDGE
Let's Bridge the Gap
a Veranda Enterprise

Project Initialization and Planning Phase

Date	June 2024
Team ID	865503
Project Title	Frappe Activity:Mobile Phone Activity Classification
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

This project proposal outlines a solution to address a specific problem. With a clear objective, defined scope, and a concise problem statement, the proposed solution details the approach, key features, and resource requirements, including hardware, software, and personnel.

Project Overview	
Objective	The objective of this project is to develop a robust mobile phone activity classification system using machine learning techniques, specifically Random Forest, Decision Tree, and Bagging Classifier algorithms. The system aims to accurately identify and classify various physical activities such as walking, running, sitting, standing, and biking based on sensor data from mobile devices. Key goals include
Scope	The scope of mobile activity classification is extensive, offering numerous opportunities for innovation and improvement in various domains. As technology advances, the potential applications and impact of accurate activity classification will continue to grow.

Problem Statement	
Description	Develop and optimize a mobile activity classification system using decision trees, bagging classifiers, and random forest classifiers to accurately identify and categorize various physical activities based on sensor data from mobile devices. The system should address challenges such as computational complexity, battery consumption,
	data imbalance, sensor noise, context variability, privacy concerns, and ensure real-time processing with high accuracy and efficiency. This involves creating models that are both robust and scalable, capable of operating on resource-constrained mobile devices while providing reliable and interpretable activity classifications for applications in healthcare, fitness, safety, and more.
Impact	Personalized and activity based learning,accurate activity tracking and performance analysis,effective hazard detection and activity monitoring,Optimized customer behaviour analysis and marketing.
Proposed Solution	
Approach	The approach for devolping an effective Mobile Activity Classification system using Decision trees,bagging classifiers,and random forest Classifier.Data preprocessing handle missing values,By Model selection we get best model,model training,Deployment .Following Structure approach

	The Mobile Activity Classification System can Achieve high accuracy.
Key Features	Accurate Activity Detection: High precision in identifying various physical activities. **Real-Time Processing**: Low-latency classification suitable for realtime applications. Robustness: Handles noisy sensor data and varying user contexts effectively. **E**fficiency**:** Optimized for mobile devices to balance accuracy and battery consumption. Adaptability: Can learn and adapt to new activities and user behaviours over time. Interpretability: Decision trees provide clear and understandable decision paths. Privacy and Security: Ensures data anonymization and on-device processing to protect user privacy.

Resource Requirements

Hardware		
Computing Resources	CPU/GPU specifications, number of cores	e.g., 2 x NVIDIA V100 GPUs
Memory	RAM specifications	e.g., 8 GB
Storage	Disk space for data, models, and logs	e.g., 1 TB SSD
Software		
Frameworks	Python frameworks	e.g., Flask , sklearn , metrics

Resource Type	Description	Specification/Allocation

Libraries	Additional libraries	e.g., scikit-learn, pandas, numpy
Development Environment	IDE, version control	e.g., Jupyter Notebook, Git , Google colab
Data		
Data	Source, size, format	e.g., Kaggle dataset