

Project Design Phase-I

Proposed Solution Template

Date	05 May 2023
Team ID	NM2023TMID22230
Project Name	Project - SQUID: Street Quality Identification
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The main challenge is to devise a system that can collect data from various sources and analyze it in real-time to provide a Comprehensive report on the quality of streets in a given area. The system should be able to identify factors such as potholes, cracks, bumps, and other deformities that affect the quality of the street.
2.	Idea / Solution description	An IoT based system can be developed that incorporates the use of various sensors and data collection devices. Sensors in the form of cameras, vibration sensors can be deployed in streets. This data collected by sensors can be transmitted to a central server through Wi-Fi, cellular networks etc. Machine learning algorithms can be used to analyze the data and classify the quality of streets. These analysed results are visualized in a map or other geographical view to provide comprehensive view of the street quality. The system can also generate reports that highlight specific issues and recommend remedial actions. It is also configured to send alerts to maintenance personnel when issues are detected. These can ultimately lead to safer and more comfortable driving conditions.
3.	Novelty / Uniqueness	Real-time monitoring, Comprehensive data collection, Machine learning algorithms, Automated alerting and scheduling are some of the unique and novel aspects that set it apart from traditional methods of assessing street quality.
4.	Social Impact / Customer Satisfaction	Safer driving conditions, improved quality of life, better resource allocation, increased customer satisfaction, environmental benefits like lower fuel consumption, reducing greenhouse gas emissions and improving air quality.

5.	Business Model (Revenue Model)	Government-funded model where the project is funded by government or municipality, public-private partnership model where government partners private companies through various means such as subscription fees, licensing, and consulting services, Asset monetization model where these are sold to third part vendors, Value added services where services such as real-time traffic information, road safety alerts etc. are provided through subscription generating revenue.
6.	Scalability of the Solution	The design is scalable depending on size of roads and customizable to the specific needs of city. When large data are detected it can be stored in cloud-based infrastructure. Wireless connections such as cellular networks, LoRaWAN can be used to transmit data to deploy many sensors.