SmartCityX: The AIoT Hackathon

Ideation Phase REPORT

Team Lead and Roll Number:

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Theme: Urban Healthcare

Track: 1D model

Idea Brief:
Our idea is to make the location of wheelchairs in hospitals more convenient and hence save time. We can facilitate this by linking the real time data to an app on a smart device. The app on the smart phone will provide the direction towards the wheelchair including the floor its on. This device will bring hospitals one step closer to modern development.

Required Hardware:

- ESP32 microcontroller
- BMP280 Barometric pressure and altitude sensor
- Neo6m GPS module
- 9V battery
- Switch

Usage of Cloud platforms:
In this project, the ESP32 microcontroller is used to collect and transmit GPS coordinates along with other relevant parameters. These values are sent to the ThingSpeak cloud platform using its API. MIT App Inventor is then used to retrieve and display this data in real time, enabling seamless communication between the hardware and the mobile application.

Feasibility:
The proposed project is highly feasible in terms of technical, economic, and operational aspects. Technically, it leverages the ESP32 microcontroller, which offers built-in Wi-Fi capabilities, making it well-suited for IoT applications such as real-time GPS tracking. The system integrates easily with GPS modules and sensors, and communicates data to the ThingSpeak cloud platform using its simple HTTP API. Economically, the project is cost-effective, using affordable components and free platforms like ThingSpeak (on its free tier) and MIT App Inventor for mobile application development. Operationally, the system is

user-friendly and can be implemented by individuals with basic programming and electronics knowledge. MIT App Inventor provides an intuitive interface to retrieve and display data from ThingSpeak in real time. While the free version of ThingSpeak imposes some limitations on data update frequency (15 seconds per channel), it is sufficient for most small-scale applications. Overall, the project is practical, low-cost, and scalable within the constraints of its intended use.

Budget:

S.NO	HARDWARE	PRICE	TRUSTABLE PURCHASE LINK	ETA FOR DELIVERY
1	ESP32	₹343	http://robu.in/product/esp32-38pin-development-board-wifibluetooth-ultra-low-power-consumption-dual-core/	3-5 Working days
2	BMP280	₹145	https://www.amazon.in/BMP280-Barometric-Pressure-Altitude-Sensor/dp/B08P62PX1L	3-5 Working days
3	Neo6m GPS module	₹230	https://robu.in/product/ublox-neo-6m-gps-module/	3-5 Working days
4	9V battery	₹20	From an electronics store	-
5	Switch	₹10	From an electronics store	-
	Total	₹748		

Wokwi Simulation Link:

https://wokwi.com/projects/437374790317884417