TrackAnywhere

Indoor and Outdoor

Introduction

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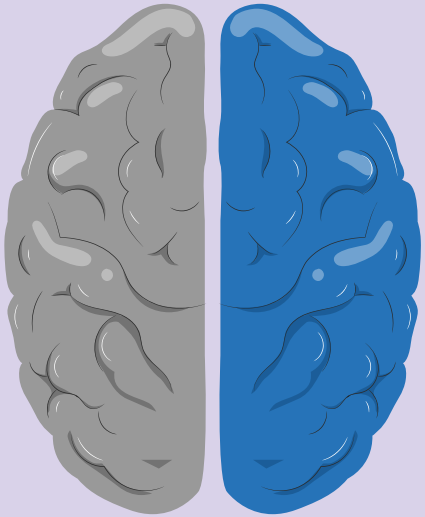
Problem Statement



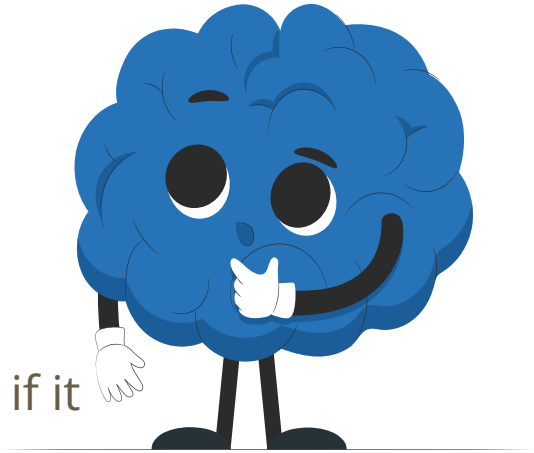
DESIGN SMART TRACKING SYSTEM USING GSM TECHNOLOGY BUT NO CELL PHONE

Literature Review

- Smart tracking system uses cell phones as the primary tracking device that are inconvenient and costly for some applications.
- One study by S.S.Raut and S.S.Dorle (2014) proposed a smart tracking system for vehicles using GSM and GPS technologies.This was designed to provide real time tracking of vehicles without relying on cell phone
- In 2017 A.J.Akinyemi and A.O.Afolayan proposed a smart tracking system for monitoring the movement of oil tanker trucks using GSM technology without the use of cell phones it was designed to monitor the location and speed of the truck.
- Overall smart tracking system using GSM technology is feasible and can be applied to a wide range of applications
- Smart tracking system can be tailored to specific application and requirement ,providing cost effective solution.

Problem

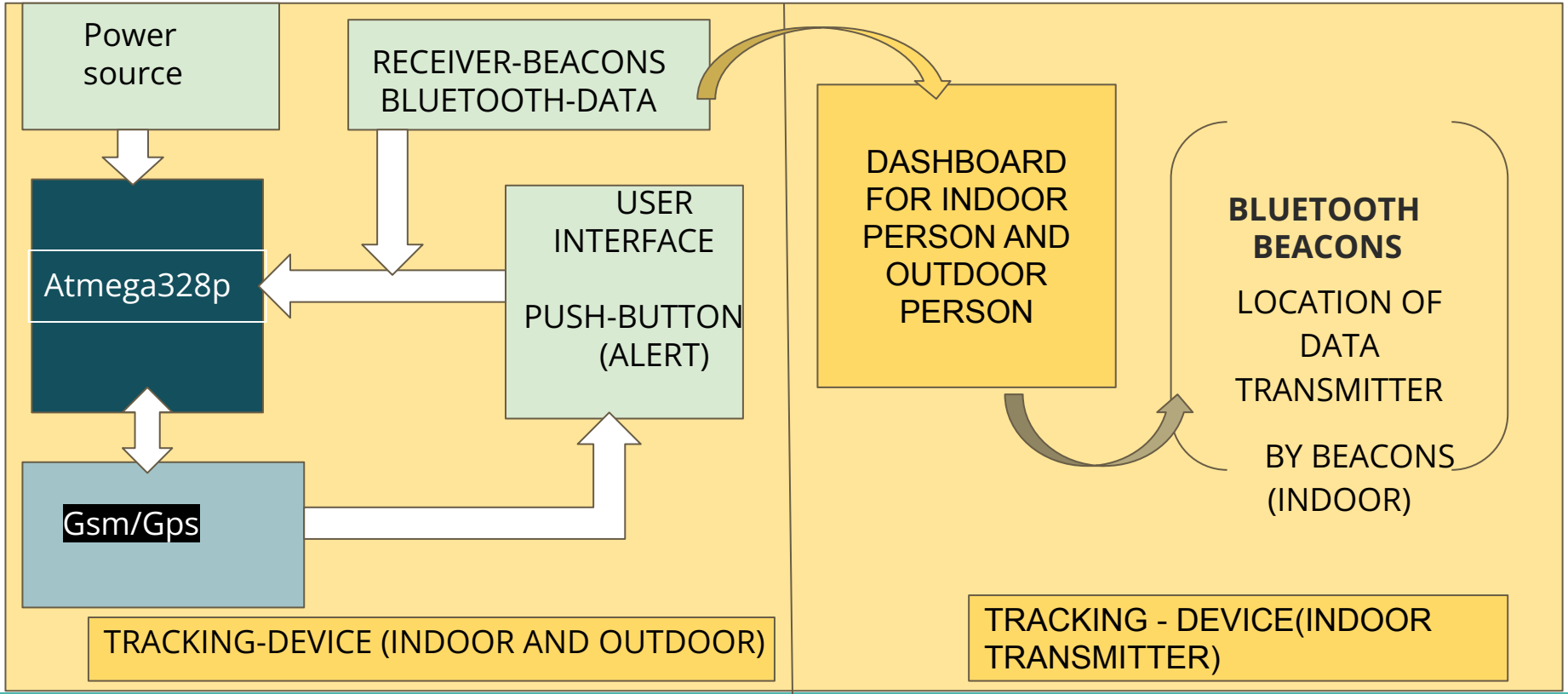
- Lack of portable Standalone tracking devices.
- Lack of indoor localisation.
- Need to use two different devices for indoor and outdoor tracking.
- Existing indoor tracking methods are expensive.
- Difficult in real-time tracking if any person or fleet if it goes out of a designated track or area.



Problem Solution

- Simultaneous tracking of Indoor and Outdoor.
- Using GSM in the device to track in Geographical area.
- A bluetooth Beacon to be used to track in the Indoor area.
- We are using Geofencing method.
- SOS button for Emergency purpose.
- Back tracking and finding the route for the destination.

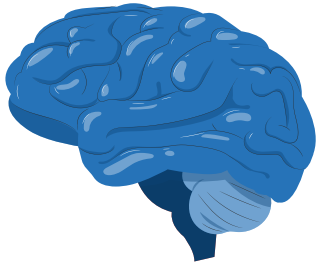
Hardware Implementation



Hardware and Software Requirement

- GSM + GPS Module (preferably 4G)
- Bluetooth Beacon
- ATMEGA-328
- Wires
- Soldering Kit
- Keypad-Small
- OLED Display
- Esp32
- Battery

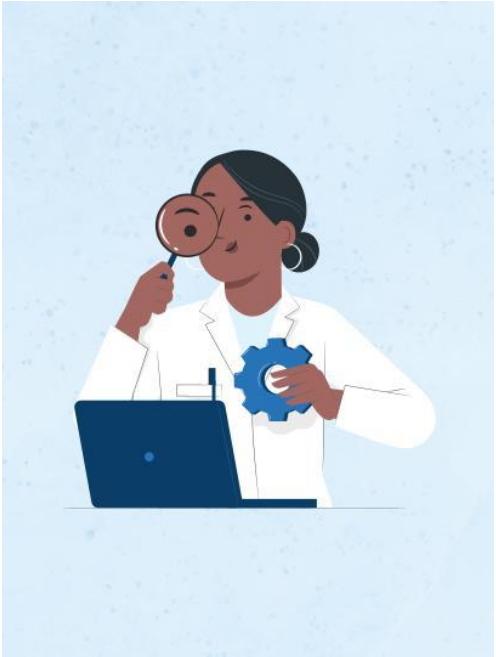
Use Cases



- ➔ Hospitals - to track the patients
- ➔ Schools and Colleges -for safety and tracking(Geofencing)
- ➔ Old age home -Monitoring of old age people
- ➔ Forest - to track the people who gone for trekking and other activities
- ➔ Tourist Place - Alerting system
- ➔ Prison - to track the prisoners
- ➔ Vehicle tracking such as Ambulance,Fire engine truck,Police vehicles,trucks and buses,etc.
- ➔ Industry - to track the automated vehicles

Benefits

- We can Track both indoor(specific areas where the Technology is available) and outdoor.
- We can use same solution architecture for multiple use cases.
- We can easily track people from anywhere.
- By using virtual geographical boundaries,trigger a response when device enters or leaves the area.
- Users can be alerted if the SOS button is pressed in the device.



Outcomes

- A portable device capable of sending the tracking details to designated user.
- Tracking from anywhere at any time without Smartphones.
- Seamless indoor and outdoor tracking.
- Effortless tracking of peoples,fleets and objects.
- Supportive in Emergency operations.

References

IEEE PAPERS

Bluetooth beacons-https://ieeexplore.ieee.org/document/9276884

GSM-https://ieeexplore.ieee.org/document/6381056

GPS-https://ieeexplore.ieee.org/document/993780