Smart Bike Companion

SE 101 | Project Proposal

Group Members

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Summary

The Smart Bike Companion turns any bike into a smart bike with anti-theft and location tracking capabilities. The main goal to allow the owner of a bike to track its location through their smartphone. The system also acts as an anti-theft system as it detects when the bike is being moved without the owner's presence.

Software

- Frequently broadcast its GPS coordinates via SMS (GSM module)
- Pair with the owner's smartphone when they are in range (Bluetooth module)
- Detect when the device is being tampered with (accelerometer module)
- Sound an alarm when theft or tampering is detected (speaker module)
- Mobile/web app to connect to and manage the device

Hardware

- Arduino Uno
- SIM808 GPS/GSM shield
- accelerometer module
- HT-05 Bluetooth module
- speaker module
- Lithium-ion battery bank

Potential Challenges

- Sending, receiving and parsing data over SMS
- Creating a user-friendly initial Bluetooth pairing process
- Detecting tampering
- Integrating with third-party mapping service such as Google Maps

Prototype Plan

The Smart Bike Companion is meant to evolve on in the path of evolutionary prototyping due to its broad functionality and the fact that it could be a real product, constantly updating and changing its features. The Smart Bike Companion should also be always working during its development process so new features could be built upon and integrated with existing features.