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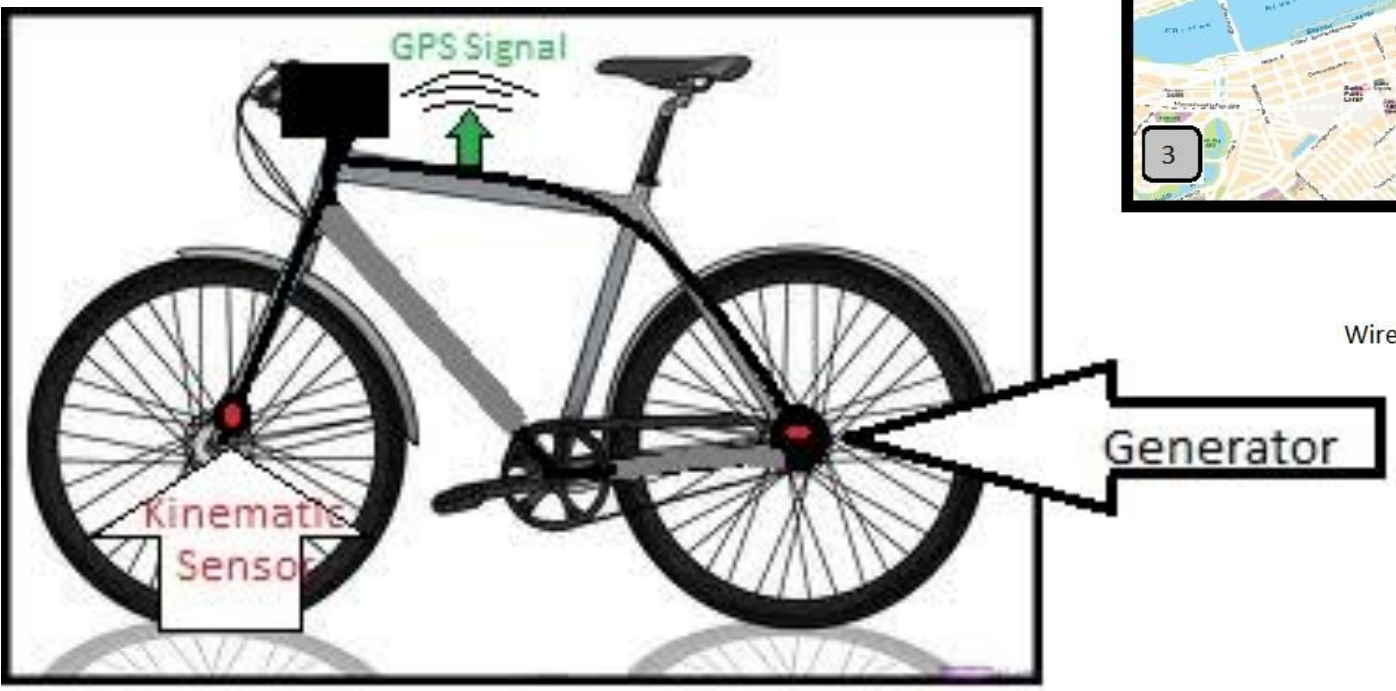
Objective

- Create an embedded system for cyclists, powered by clean, renewable energy
- Eliminate the need for multiple devices
- Increase situational awareness of biker
- Final Cost less than $300

Visualization



Wires to power and sensors

Deliverables

- Prototype of the detachable main module on a working bicycle
- Demo graphical user interface with screens for maps, bicycle diagnostics, user statistics
- Power management system implementing environmental/user supplied power
- Heart Rate system

Requirements

- Bicycle statistics- Odometer, speed, stopwatch with current time elapsed. Speed accurate to within one mile per hour.

- GPS- GPS streaming of current location within three yards.

- Heart Rate Monitoring- Accomplished via pads, handlebars or heart rate belt. Accurate to within four beats per minute

- “Trips”- Feature used to track specific rides and/or time elapsed events. Log the trips in onboard memory. Up to 20 hours stored with ability to clear all or individual trip data. Data includes odometer, time, average speed, heart rate average and max.

- Rechargeable power- Wall chargable in under twelve hours. Main functions powered for at least sixty minutes, supplemented by at least 50% through the environment (solar or turbine).

- Backup battery- Preserve date and time for up to five days when main module is detached from main battery. AAA or watch battery.

Requirements

- Continuity- All features should run simultaneously, multitasking.

- External Storage- USB 2.0 Specifications, system must be able to dump memory/trip data onto external USB drive with up to twenty hours of data in .csv, excel, or text file. Trips and aggregate data dumped.

- Non-obtrusive layout- Detachable model that can be disassembled within two minutes. Requires custom port for wire connectivity. Maximum dimensions 4.25”x4.25”x2”.

- Touch screen LCD Panel- Minimum 4” full color LCD panel, minimum color depth of 18 bits and refresh rate of 60 Hz. Resistive touch screen.

- GUI- Well designed, displays all features using different layouts. User has ability select which screen to go to from current screen with tap.

- Safety- Screen will default to a clock when rider is travelling above four miles per hour.

Competing Technologies / Patents / Other Products

- Garmin Edge Series: $149-$449

  https://buy.garmin.com/shop/shop.do?pID=331&ra=true

- Delorme Earthmate: $299-$599

  https://shop.delorme.com/OA_HTML/DELibeCCtpSctDspRte.jsp?section=10043

Standards

- IEEE USB 2.0 Specifications
- Massachusetts State and City of Boston bike laws
  http://www.cityofboston.gov/bikes/bikesafety/laws.asp

Boston University
Electrical & Computer
Engineering

ReCycle
The Bike Computer System

Team Number 14

Customer Nima Dehmamy

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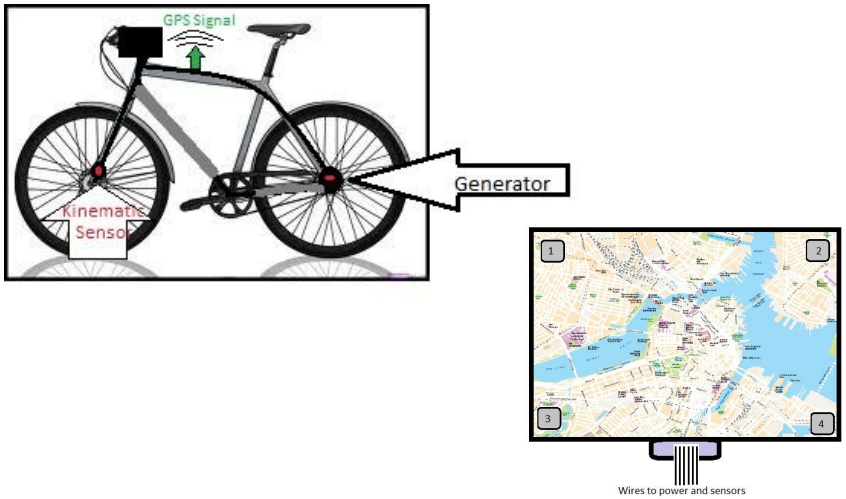

Technical Approach

Wait until Concept Review

Schedule

Wait until Concept Review

Budget / Resources