Pedestrian Conveyance Safety Device

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PROBLEM STATEMENT

Traffic increase in urban cities causes pedestrian conveyance transportation to suffer a high risk of injury or fatality.

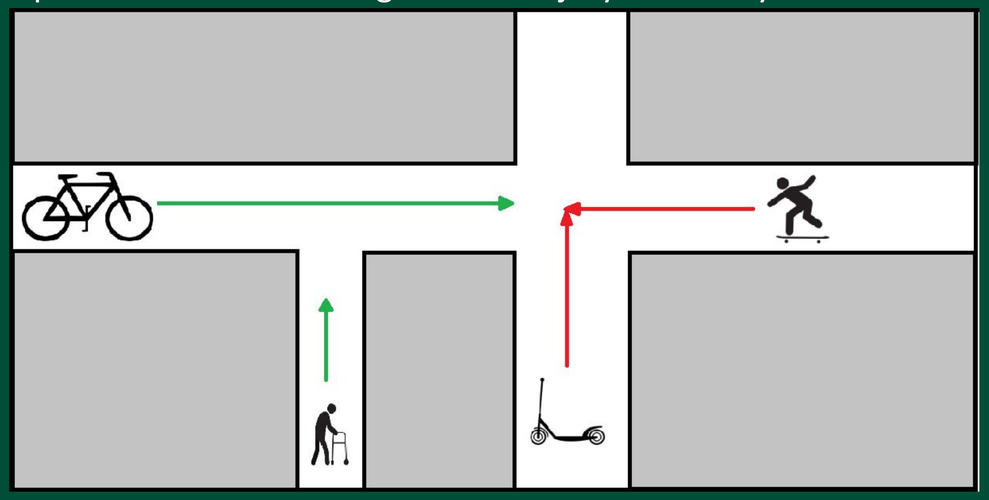

Figure 1: Example of multiple Users implementing device in a city block setting

BACKGROUND

Pedestrian conveyance: "any human powered device by which a pedestrian may move other than by walking or by which a walking person may move another pedestrian".

- Directly impacts the financial, medical and environmental sector of society.
- Financially, there is a huge cost that comes from necessary infrastructure alterations
- Medical costs that result from pedestrian conveyance injuries and fatalities.
- This discourages pedestrian conveyance vehicle usage and more motor-vehicle usage.
- Our design idea addresses this issue and introduces a device that communicates with replicas of itself to prevent pedestrian vehicle accidents/fatalities.

SUMMARY OF WORK

Our project aims to create a device that will assist in the safety of low speed personal vehicles such as bicycles.

- Tracks the user and outputs their current position to all nearby users and notifies the user if two of its users are on the same trajectory.
- Collision detection system: Uses the coordinates & velocity of the vehicles to calculate the time to collision with a copy of the device.
  - Communication feature outputs and receives the data between vehicles.
  - This feature will be determined by a certain radius around the device.
  - User interface: LEDs and a sound system will signal the user to determine the safety of the current trajectory.

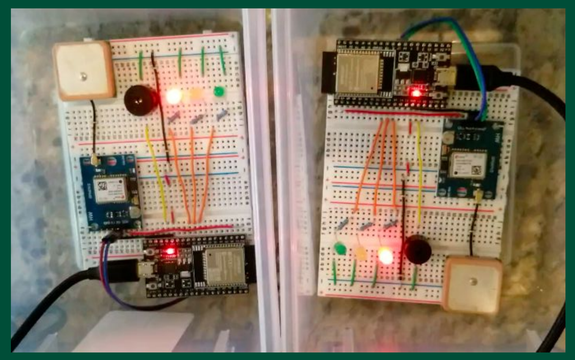

Figure 2: Collision Detection Device

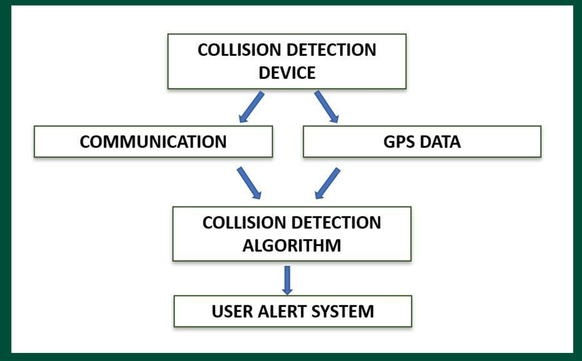

Figure 3: Functionality of device.

IMPACT ON COMMUNITY

Providing safe methods of transportation and travel has been an increasing priority for many communities globally. The amount of pedestrian conveyance related accidents continues to rise due to a late recognition of necessary adjustments. We predict with our device more people will be willing to use pedestrian conveyance vehicles. Ideally, three sectors of society can be improved with our device.

- Financial: Less infrastructure costs.
- Medical: Reduction in health care costs due to less accidents.
- Environmental: Less pollution means less greenhouse gas emissions.