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Bicycle Collision Prevention System

IP Status: Issued US Patent; **Application #:** 15/640,066

Bike Accident Alerts

A bicycle-based collision prevention system provides timely and effective alerts to both the motorist and bicyclist about impending rear and/or cross-traffic collisions. The system uses a combination of sensors, intelligent algorithms, human-computer interfaces and a display/notification system to predict and prevent rear and side crashes at intersections. The device is mounted on the bicycle, does not require cars to have any special instrumentation. The collision avoidance system includes unique custom-developed sensors. A microprocessor uses algorithms based on the sensor signals to analyze complex collision scenarios involved in a bicycle-car interaction and ensures that the system provides accurate real-time alerts to both the driver and rider. A black box video recording system that stores video images and other sensor data on the bicycle whenever a potential collision is predicted is also being developed.

Warns Motorists

Recently developed after-market collision avoidance systems on cars can detect bicycles and pedestrians, but such systems are too large and expensive to be mounted on bicycles. Newer technology on bicycles can monitor a bicycle's blind spot or detect potential rear collisions but cannot provide right-turn or side-impact collision warnings, cannot analyze side collisions that occur at a traffic intersection, cannot warn the other vehicle's driver or make any automated video camera recordings. This unique system provides significant value beyond existing systems by using a rear-facing LIDAR and side-facing ultrasound array to provide both rear-end collision warning and side-facing collision warning based on position, velocity and orientation of the vehicle. It also alerts not only the cyclist, but the motorist as well, and was designed with the cost, size and weight for a bicyclist to afford and install the device.

BENEFITS AND FEATURES:

- Rear-end collision warning
- Side-facing collision warning
- Warns motor vehicle drivers
- Appropriate cost, size and weight for bicycle
- Sensors and intelligent algorithms
- Human-computer interface
- Display/notification system
- Bicycle mounted
- Rear-facing LIDAR and side-facing ultrasound

APPLICATIONS:

- Bicycles
- Couriers
- Biking

Phase of Development - Prototype being tested.

Technology ID
20160412

Category
Engineering & Physical Sciences/Instrumentation, Sensors & Controls
Engineering & Physical Sciences/Transportation

Learn more

Site of demonstration videos - External Link (https://sites.google.com/view/smartbicycle)

Researchers

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References

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