"Attention" Project Documentation

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Vision

Attention is an Application that improves focus while driving a vehicle by warning the driver when they take their eyes off the road for too long periods of time. Attention registers when the driver takes their eyes off the road or gets distracted by their cellphone or similar. It can then warn the driver, or just gather data for statistical purposes.

By improving the driver's concentration, Attention makes traffic safer for all. Statistics gathered through the application can be used to identify problem areas, giving drivers concrete goals for improvement. More eyes on the road means fewer accidents.

User Stories

"John Smith, 27, truck driver, likes his work. The only downside is that he has to be away from his girlfriend for longer periods of time. To combat the lonliness, the two of them communicate frequently via text messages. John has had several near accidents while reading these messages, so he wants something that helps him pay more attention to the road."

"Jane Smith, 56, has been a truck driver for more than 30 years. She likes driving, but feels that she has become a bit too confident in her driving ability, especially when tired. At times she is paying more attention to her paperwork than to the traffic around her. She wants something that helps her keep her focus."

Requirements

- Detect the eyes of the driver
- Keep track of the time since last successful/failed eye detection
- Sound a warning signal when the driver looks away for too long
- Adjust the time before warning according to vehicle speed and driver distraction level
- Allow selection of camera, warning signal etc.
- Gather and compile statistics like speed, distraction level, time looking away from camera etc.

For face/eye detection, we choose to use the OpenCV computer vision library. The OpenCV project has lots of great documentation and many example programs, making it easy to work with. The statistics part had to be cut out due to insufficient time.