

**ECE Capstone program
Spring 2017
Summary Project info**

Please provide the following information to be shared with on capstone information exchange platform:

1. Project number: S18-63

2. Project title (as will appear on the poster): Sleep/Hypnosis Detection

3. Team members:

- Lee, Kyungsuk
- Eng, John
- Ariyawansa, Trirmadura
- Kim, Chris

4. Adviser(s) name(s):

- Striki, Maria

5. Up to 10 keywords that will help to classify the project:

Safety, Eye-tracking, Computer Vision

6. Project abstract (up to 200 words) to be shared with judges:

By utilizing integrated computer vision libraries and protocols, we can apply basic facial recognition technology to optimally track a user's eye movements with parallel programming. This includes the use of Haar Cascading to divide the recognition into stages of classifiers, as well as basic mathematical approaches to track the eyes themselves. The primary application for this project is to record a user's gaze in real time while he/she drives and to detect signs of drowsiness and highway hypnosis.

Drowsy and distracted driving accounts for a large portion of vehicular accidents every year; traffic safety data have shown that the number of drowsy driver related fatal accidents have increased. It has also been researched that the crash rate of drivers rises exponentially with every hour of sleep lost. In order to help solve this problem, our goal is to preemptively signal the driver of his/her condition before an accident may occur. Some ocular variables to consider are frequency of blinks, duration of gaze, and duration of eye closure. By sensing danger and sending physical alerts, this project could make it possible to intervene in imminent motor vehicle accidents before they happen using real-time identifiers in sleepiness.