

**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:**

Group S17-10

**2. Project title (as will appear on the poster):**

Project ThirdEye

**3. Team members:**

Talha Mahmood

Thinh Nguyen

Eun-Sol Kim

Intan Mohd

**4. Adviser(s) name(s):**

Hubertus Franke

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

Real-Time traffic sign detection for automobiles using Neural Networks

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

Over 37,000 people die in road accidents every year with 80% of all traffic accidents happening at intersections and 40% of drivers never hitting the brakes. Our team, consisting of Rutgers commuters, has decided to use our collective knowledge of Computer Vision and Software Engineering to reduce the impact of distracted driving .

Our goal at Project ThirdEye is to use computer vision and the power of neural networks for road sign detection. We are using a development board by Nvidia called the Jetson TK1 paired with a webcam to allow us to capture video and have enough compute capability to run real time detection. The board having been designed for embedded use cases consumes on average 10 Watts, having the ability to be powered by a small battery pack or the cigarette lighter socket in an automobile.

We are using the darknet framework and an algorithm called "You only look once" on the Jetson TK1. This real time object detection system applies a single neural network to the entire image. Each image is divided into smaller regions and the neural network predicts bounding boxes around objects weighing them by probabilities for each class of objects. This speeds up detection significantly at the expense of slight accuracy loss, giving our board the ability to detect road signs in real time.