Camera Based Solution to Count Vehicle Decal Types inside Campus Garages

Car entering or exiting the parking garage → Image of the car captured by the camera → Localization and Segmentation of the Decal → High Resolution Image of the Decal

Challenges:
1. Localization and segmentation of the decal from the blurred input image
   a. Good quality image is difficult to capture under different lighting conditions and when the vehicle is moving
2. Decal type identification in the blurred image

Decal types count:
- S – 200
- R – 150
- E – 75
- G Z – 10
- Unknown - 5
Vision System Design

• Constraints in capturing good quality images
  – Camera properties
  – Illumination

• Localization of the decal based on
  – Size
  – Color

• Identification of the decal type
Camera Requirements

• Car moves 1 feet each frame if the video is captured at 30 frames/second

• Ordered camera with high shutter speed of over 1/1000th of a second

Stationary Car

Slow Moving Car
Lighting Requirements

Good light

Poor light
Decal Localization

Correct segmentation

Incorrect segmentation
Next Steps

• Install camera semi permanently at the entrance of the Beard Garage
• Collect data over few months
• Develop better localization algorithm
• Develop decal type Identification algorithm