Project Abstract & Info

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

1. Project number: S20-55

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

3. Team members: Harman Kailey, Daniel Anderson, Nick Han, Denys Bengizu

4. Adviser(s) name(s):

5. Up to 5 keywords that will help to classify the project scope: Computer Vision, AI, Machine Learning,

6. Project abstract (up to 250 words) to be shared with judges:
(General guidelines: The abstract should include: (a) A background review of the state of the art in the relevant field; (b) The problem addressed in the project; (c) Objective of the proposed projects; and (d) The adopted approach)

A device that is easily attachable to existing traffic lights. Device will use cameras to detect traffic at intersection down to the detail of each lane. We are considering using thermal imaging cameras but they seem to cost too much to use for the purposes of this project. If there is a necessity to use a turn signal the device will conduct traffic accordingly. It will detect which lanes are most saturated with vehicles and take priority in the conduction of traffic. If there is a lane that has not received a green light in over three minutes and has some vehicles queued, device will conduct those vehicles to go. At some intersections, such as exits, a turning lane may begin backing up since the turn signal does not last long enough. This device can keep the turn signal on long enough to reduce congestion before allowing both sides of traffic to continue. If the device loses visibility, such as in a snow or rainstorm, it will enter a default mode in which it uses a timer based, turn based system as implemented in current traffic lights. This device will function using cameras with computer vision to view the intersection, an Arduino to act as the computer, and a hard shell and robust enclosure. This allows for further development of the software to include internet connectivity. When this device uses internet it takes an IoT role.