The Automated Bicycle Lane Enforcer (ABLE) project aims to produce an automated bicycle lane monitoring and infringement system. The able system will consist of a stationary camera which will monitor a section of bicycle lane. If the system detects any infringements, the system will record evidence of this infringement. Infringements occur when a vehicle enters a bicycle lane and continues in the lane for 50m without a legal reason.

**AIM AND METHODOLOGY**

The 2011 ABLE project aims to increase the functionality of the existing system in two ways:

**SHADOW REMOVAL:**
Removal of shadows attached to objects which can cause false positives. This will be done by analysing gradient over dark areas in the image. Areas with low gradient will be shadow.

**VEHICLE CLASSIFICATION:**
Classification of objects as either vehicles or bicycles. Two cues will be used:
- Vehicle height vs width ratio
- Numberplate detection and location

**RESULTS**

**SHADOW REMOVAL:**
To test the shadow removal function a number of still images and video sequences were used and the results hand checked for success rates. **90% SUCCESS RATE** in good weather and consistent lighting conditions. **60% SUCCESS RATE** with changing lighting conditions.

**VEHICLE CLASSIFICATION:**

**Numberplate Detection:**
- Overall detection is low over a sequence due to distance from camera.
- In the majority of cases, a suitable frame can be found.
- Vehicle tracking will improve this function

**Height Ratio:**
**75% SUCCESS RATE** over a video sequence. Success rate when coupled with other cues will produce greater performance.

**REFERENCES**


The 2011 ABLE project group

**FUTURE WORK**

This project is still not complete and will require further refinement. Some key areas that have been identified for future work include:

- Upgrade of the object detection algorithm to compensate for changing weather conditions
- Introduction of temporal processing to allow vehicle tracking to improve vehicle classification
- Modification of system to meet real-time constraints

**SIGNIFICANCE**

Bicycles are a very popular form of transport across many cities in Australia. In 2006 a report by the ATSB showed that on average 35 people are killed and 2500 are injured in cycling related accidents each year.

Studies have shown that bicycle lanes help to reduce accident frequency. This project aims to further increase the safety of cyclists in bicycle lanes by increasing public awareness and allow for greater policing of infringements on bicycle lanes.