**Presentation Outline**

**Problem**

* Limited rear and blind spot visibility for motorcycle riders wearing full-faced helmets.
  + Turning head takes attention off the road in front
* Rearview mirrors are not always reliable or easy to see
  + Bar end mirrors
  + Vibration
* Safety and riding awareness
  + Lane positioning
  + Traffic density

**Objective**

A working prototype that will give visual indication of position of close proximity traffic to the rear and sides of the motorcycle behind the rider’s field of view.

**Alternatives**

* Reevu MSX-1 Rear-View Helmet - $399.99
  + Internal rear-view mirror, works off rear-reflection
* Skully AR-1 Helmet - $1499
  + Rear-view camera, internal HUD
* Lucky Bike Motorcyle Rear-View Camera System - $89
  + 4.3” Video display with night vision

**Requirements**

* Easy to use
* Cost effective
* Non-distracting

**Approach**

Detect objects in rear and sides in three ranges, < 5ft, < 10ft, <15ft

Give visual indication to rider of distance from objects

**Design**

**Implementation**

**IP and Prior**

Ultrasonic sensors

Arduino bootloader and IDE

**Testing Strategy and Plan**

*Prototype Testing*

Individual sensor testing with Arduino Uno

Individual Arduino code testing with Uno

Display breadboard test

Full system test

*Final Testing*

Processor bootload and programming (on board)

Power supply test

Display logic test

Latch test

Demux test

Processor blink test with display

Full system short range test (indoor)

Full system long range (indoor)

Full system outdoor test

**Results**

What worked

What didn’t

**Contributions**

**Lessons learned**