



LumoSignal

Wearable Turn-Indication System for Cyclist Visibility



Presented By:
Cathal Foley
Lilly Bean
Sam Friel
Eoin Finnegan
Evan McCarron
Conor O'Reilly

Supported By:
MEU33B09
Universal Design
Innovation
Prof. Gareth J. Bennett,
School of Engineering

"Our mission is to improve the visibility and safety of cyclists on Irish roads through the development of innovative wearable indicator lights that signal turning intentions"

1 Stakeholder Interaction

Who?

1. A group of recreational cyclists
2. Trinity student commuter cyclists
3. Professional racing cyclist

How?

1. Interviews
2. Weekly google forms



"I don't feel safe making turns at busy junctions in town"

"When the weather or road conditions are bad, I keep my hands on the handlebars"

"Some times hand signals aren't sufficient for showing your intentions to turn to drivers"

70% of cycling accidents occur at junctions where turn intentions are unclear.

Visibility-related incidents make up to **40%** of collisions involving cyclists.



2 Problem Area

Many cyclists avoid hand signals due to instability, poor weather, or the belief that drivers may not see them, making turn intentions unclear and increasing collision risks.

3 Final Design

Our final concept focuses on three key priorities:

1. High visibility in day and night conditions
2. Affordable components suitable for mass adoption
3. Simple, intuitive user operation

Development of this product

1. Magnetic technology for adaptability with clothing/accessories. This is specially for delivery cyclists with big food bags
2. Feedback from device (like vibration) for confirmation of LEDs lighting up
3. Weatherproof Housing Options



Hardware

- 2 X Arduino R4 WiFi
- 2 X Ultrasonic Sensors
- 2 X LED Strips
- 2 X 9V batteries
- Wiring

Software

The Arduino on the handlebars communicates with Arduino on the backpack

Hold hands over both sensors to turn both LED strips on (RED)

The LED strips blink (WHITE) if sensor detects an object.

If both sensors detect an object, only the LED connected to the first sensor will blink.

Materials

- Waterproof Bag Cover
- 3D printed Arduino Covers
- 3D printed handle bar attachments

