

Abstract

This report explores the necessity for increased cyclist safety in urban settings, leading to the birth of a product which aims to drastically reduce the risk of accidents while heightening the sense of safety overall. The project outlines and details the product development process of a consumer-friendly vehicle detection system, with a holistic scope which includes technical rapid prototyping and coding, team dynamics, decision making process, and change management. Two formal prototypes were developed before a functional final product was identified and constructed, each iteration drastically improving practicality and efficiency of detection. The final product underwent extensive testing in both simulated and natural environments with a maximum range of 45 meters, with a field of view of 1.28 degrees. These parameters were critical in defining the positional angle of the sensor on the bicycle frame. Paired with an LED strip along the top tube of the bicycle frame, the sensor system accurately detects vehicles approaching from the cyclist's blind spot, and feeds back via the lighting and color of the LED's to both the cyclist and driver, in both light and dim settings.