# CASE STUDY

## Streetwise (Innovate UK, 2019-2020)



## The Challenge

The StreetWise project aimed to develop a pipeline for evaluating the safety performance of automated vehicles. A key part of this project was using machine learning to study the behaviour of the vehicles within a computer simulation environment.

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## Our Approach

Common types of collisions were first identified from GB road collision data (STATS19). The high level of detail available from in-depth accident data (the RAIDS database) was then used to recreate a number of these commonly occurring cases in a simulation environment. Within this simulation environment, the safety performance of automated vehicles was evaluated by placing the vehicles in similar scenarios to those observed in the collision cases.

Use of this environment allowed great flexibility. A large number of simulation runs were completed, with various testing conditions adjusted, in order to investigate the behaviour of the vehicles in a wide variety of scenarios. For example, one simple case involved a pedestrian walking into the path of an oncoming vehicle. For this case, a wide variety of scenarios were tested by adjusting a number of conditions, such as starting distance between vehicle and pedestrian, speed of vehicle, speed of pedestrian, tyre friction etc.

## The results

By applying Bayesian and machine learning algorithms to the simulation data, key aspects of the risk perception and decision-making processes of the vehicles can be inferred. In addition, breaking points in their logic can be revealed.

This project is also an additional example of the wide range of applications of machine learning algorithms, an issue which is discussed further in The best approach to unlock the value from your datasets Whitepaper.