CASE STUDY

HUMAN DRIVE

Using machine learning to develop natural, human-like vehicle control

INTRODUCTION

This ten-member international consortium has an ambitious target; to develop a human-like autonomous driving controller that will traverse a 200+ mile journey across the UK, through live traffic and in natural conditions, by late 2019. This 30-month, £14m project is part funded by Innovate UK.

BACKGROUND

The most complex autonomously controlled journey yet attempted in the UK, the HumanDrive project will develop a prototype Connected and Autonomous Vehicle (CAV) with the aim of successfully demonstrating a lengthy end-to-end journey in a variety of settings, including country roads, A-roads and motorways through live traffic and different weather conditions.

The project is being led by Nissan, supported by Hitachi, Cranfield University, Aimsun Ltd., Horiba-Mira, University of Leeds, Atkins, Highways England, SBD Automotive Ltd. and the Transport Systems Catapult.

Discover more at **humandrive.co.uk**

CATAPULT Transport Systems

OBJECTIVES

One of the most significant innovative aspects of the project will be the development of an advanced vehicle control system, designed to allow the vehicle to emulate a 'natural' human driving style using machine learning. Before the car is introduced to UK roads, the system will be developed and subjected to a robust testing process using a range of facilities, including simulation, hardware in the loop, private test track and small sections of public roads.

HumanDrive will:

1. develop a vehicle capable of safe autonomous driving, in a range of conditions
2. develop a machine learning system able to satisfactorily demonstrate 'natural' autonomous driving
3. demonstrate a 200+ mile autonomous drive across the UK
4. develop testing, validation and safety methodologies which position UK industry and academia at the forefront of autonomous vehicle knowledge and expertise
5. advance vehicle security features to effectively marshal a dynamic and real-world CAV environment
6. understand the implications of autonomous vehicles on the wider transport system in terms of traffic and infrastructure.

> "developing an A1 to enhance the user's comfort, safety and experience"

BENEFITS

Successful completion of this project will take the UK one step closer to having autonomous vehicles on the road, helping the UK government to fulfil its ambition of seeing fully driverless cars on the road by 2021.

Society

CAVs have the potential to significantly improve safety on our roads, reduce pollution and congestion, increase accessibility for vulnerable groups, improve our public transport, support business and the economy, release driver time for other uses, ease the pressure on a stretched transport infrastructure, and improve the transport network across the whole UK (and beyond).

Growing UK business

Transport Systems Catapult estimates the UK CAV market to be worth £28bn in 2035, and the Catapult is supporting a range of innovative projects. For UK businesses involved in HumanDrive and other CAV projects, the learnings and exposure will be significant, and will help to maintain the UK's standing as a leader in this area.

Job creator

Transport Systems Catapult expects 1.1m CAVs jobs to be created in the UK (32.2m globally) by 2035. This includes jobs in manufacturing and assembly, research and development, and indirect supply chain jobs.

A destination for R&D

The UK is a leading player for CAV research, development and testing, backed by £100m government investment in Intelligent Mobility, world-leading universities, and an open and innovative business environment. Learnings and technologies from this project will help to develop the autonomous vehicles and fleets of tomorrow. As more and more companies look to develop driver assistance and autonomy in their vehicles, the UK is increasingly on attractive destination for CAV innovators and businesses.

Discover more at **humandrive.co.uk**

CATAPULT
Transport Systems