DRIPRAI

Driver Profiling by Artificial Intelligence

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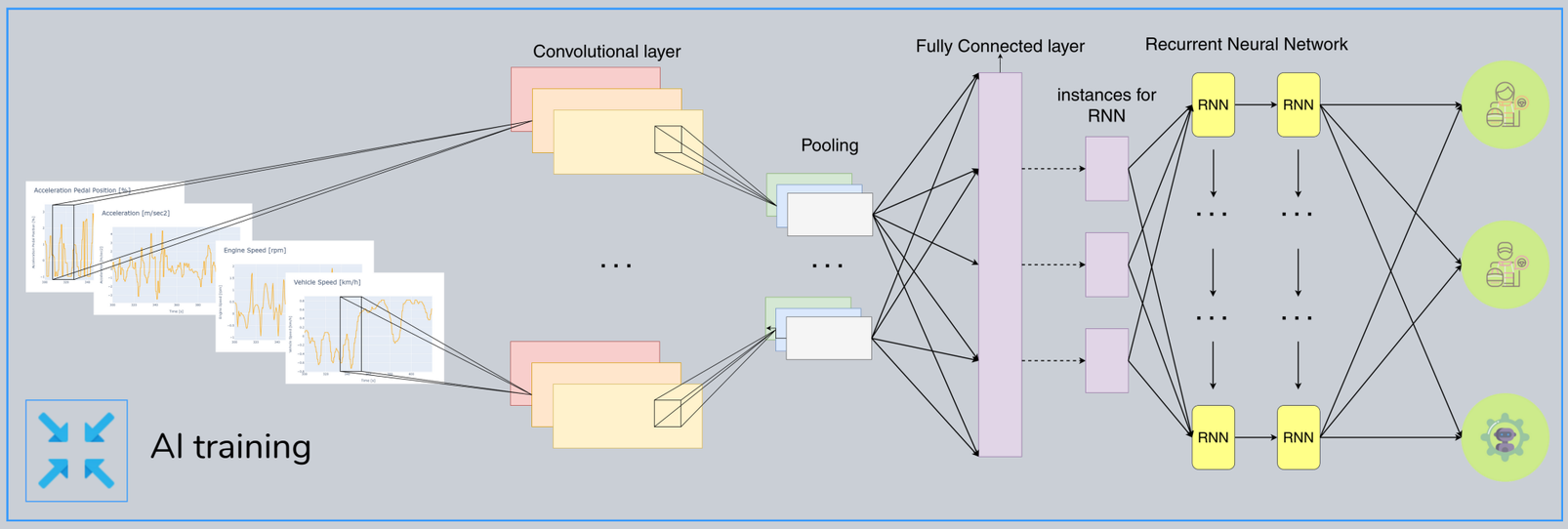
Motivation & objectives

Characterizing, understanding and predicting driver behaviour in real driving conditions will lead to fewer accidents, less breakdowns, better energy management and ultimately, getting vehicles to their destination faster and efficiently. For these reasons, we propose DRIPRAI (Driver Profiling by Artificial Intelligence) to understand, characterize and predict driver behaviours in real driving scenarios. The driving pattern is defined in the remaining as the speed profile, which includes all additional information derived from it and originally obtained from the CAN bus. In order to be able to use CAN data to characterize drivers in real application scenarios we need to solve two very challenging problems: (1) provide a methodology to consistently identify driving behaviour in a completely uncontrolled environment, and with very limited knowledge of the surrounding conditions; and (2) minimize the communication and computational load needed to solve (1).

Key Characteristics

Driver profile, Artificial Intelligence, Real driving conditions, Uncontrolled environment

Methodology



Data Collection

Test campaigns to collect real driver's data, Based on the uncontrolled environment in real driving conditions.

Data Processing

Standardised and processed raw data to use in AI algorithms.

AI Classification

Driver identification is based on driving patterns, e.g. pedal brake usage, speed profile, etc.

AI Prediction

Driver behaviour prediction is based on AI classification and external conditions, e.g. creating a speed profile from a new trip.

Research Outlook

We present an end-to-end project for driver behaviour characterization, analysis, and prediction based on machine learning techniques. In contrast to the previous works, this project proposes a novel driving campaign in a real driving condition, collecting trips in a completely undefined environment. After data collection, we propose an evaluation of AI architectures to extract information from the raw data, characterizing and predicting driving behaviours using a completely new environment and techniques.