Abstract

Autonomous vehicles also called 'driver-less' vehicles or self-driving vehicles are increasing constantly and the world, with the introduction of the Tesla auto-pilot system, entered into Level 2 automation of cars. According to it, the vehicle is able to take full control of the system, and handle acceleration, braking, and steering at the same time. This needs some communication to be necessary between the vehicles for the purpose of decision-making. The dissertation uses Reinforcement learning (RL), a branch of machine learning dealing with the creation of smart agents, to specifically address the issue of lane changing in connected autonomous vehicles (CAV). Connected autonomous vehicles (CAV) combine connectivity and automation to aid or replace people in the task of driving. This is achieved using sensor technology, Global Positioning System (GPS), remote processing capabilities, and telecommunication systems. Performing safe and efficient lane changing is a crucial part of automating these vehicles and the RL intelligent agent selects and executes the action by perceiving its surroundings using the data from the sensors, GPS, and other components of the vehicle. It can also be trained using several behavior patterns of drivers thus eliminating driver errors, congestion, traffic accidents, etc.,This thesis mainly focuses on developing a Lane changing strategy using a Deep Q learning Agent.