Chapter 50
Future Blockchain Technology for Autonomous Applications/ Autonomous Vehicle

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ABSTRACT

The autonomous industry has rapidly grown for self-driving cars. The main purpose of autonomous industry is trying to give all types of security, privacy, secured traffic information to the self-driving cars. Blockchain is another newly established secured technology. The main aim of this technology is to provide more secured, convenient online transactions. By using this new technology, the autonomous industry can easily provide more suitable, safe, efficient transportation to the passengers and secured traffic information to the vehicles. This information can easily gather by the roadside units or by the passing vehicles. Also, the economical transactions can be possible more efficiently since blockchain technology allows peer-to-peer communications between nodes, and it also eliminates the need of the third party. This chapter proposes a concept of how the autonomous industry can provide more adequate, proper, and safe transportation with the help of blockchain. It also examines for the possibility that autonomous vehicles can become the future of transportation.

INTRODUCTION

Nowadays technology has grown rapidly from all points of world. And the cost behind that also grown exponentially. Also, for human need, humans have to travel every time from one location to another. But now the travelling cost, environmental damages, affects, road accidents are increasing rapidly. Thus, as a result it creates the future of transportation as Autonomous vehicle. In upcoming few years, it can be very natural that owning autonomous vehicle for all consumers. Autonomous vehicle can give a best solution to the current issues of transportation. Driving safety experts predict that once driverless technology has been fully developed, traffic collisions (and resulting deaths, injuries and costs), and caused by human error, such as delayed reaction time, tailgating, rubbernecking, and other forms of distracted or aggressive driving should be reduced soon ("Wikipedia Self-driving", n.d.).

Figure 1. Autonomous vehicle

Blockchain is a newly established secured technology. It is a novel approach to the distributed database. A blockchain is a data structure that makes it possible to create a digital ledger of data and share it among a network of independent parties (Hori & Sakajiri, n.d.). It is a growing list of records, called blocks which are linked using cryptography. Each block contains a cryptographic hash value of the previous block, a timestamp and transaction information. It allows a peer-to-peer communication without any intermediary. There are three types of blockchain: First: Public blockchain, Second: Private blockchain, Third: Hybrid blockchain. All the three types of blockchain use cryptography to allow each participant on any given network to manage the ledger in a secure way without the need of central authority (Hori & Sakajiri, n.d.). The last few years, the blockchain has gained widespread traction and is constantly attracting new investments. A wide range of industries, including finance, insurance, healthcare, logistics and supply chain management are starting to discuss and test blockchain technology in a number of use cases (Saranti et al., 2019). The main application of blockchain are in financial system, healthcare, smart grid technology, business and industry, smart parking system, cyber security, information security, big data security etc.

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