Chapter 1
5G Adaptation and Serverless Computing Connected for Electric Vehicles

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ABSTRACT

The evolution of smart electric vehicles (EVs) has been developed by serverless computing and 5G technology, which has also improved features like autonomous driving, advanced driver assistance systems (ADAS), and seamless vehicle-to-everything (V2X) connectivity. Through the use of technology, services, customer satisfaction,

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operational effectiveness, and vehicle connectivity have all improved. In recently developed EVs, practical problems like security, interoperability, and regulatory compliance have also been resolved. Innovative techniques and cooperative efforts are also used to build the EVs in order to meet consumer expectations.

INTRODUCTION

With the rise of connected electric cars (EVs), which provide improved safety, convenience, and sustainability, the automobile sector is experiencing a digital transition. Advances in automation, connection, and electrification are what are causing this transformation; EVs' data analytics and autonomous driving capabilities improve performance, economy, and user experience (Arthurs et al., 2021). In the ecosystem of today's electric vehicles, connectivity is essential for improving convenience, efficiency, and safety. The adoption of 5G technology and serverless computing are important technical advancements that offer bandwidth-intensive applications speed, dependability, and reduced latency. Large data quantities may be processed with serverless computing, which is scalable and economical compared to managing complicated infrastructure (Lim et al., 2021a).

The integration of serverless computing and 5G adaption in connected electric cars is examined in this chapter, with particular attention paid to the consequences for connection, data processing, and user experience. Because of customer preferences, legal requirements, and technology improvements, the automobile sector is going through a digital revolution. The emergence of linked cars, which have changed from being mechanical objects to complex digital platforms, is what is driving the digital revolution. These cars are able to connect with infrastructure, the transportation network, and each other thanks to advanced sensors, communication technology, and onboard computing systems (Zalaya, 2022).

In the automobile sector, connectivity is essential since it allows for real-time data access, improves driving, and creates new business opportunities. Additionally, it permits remote software upgrades, which lowers downtime and maintenance expenses. With the introduction of sophisticated driver assistance systems and autonomous driving technologies, the industry is undergoing a digital transition that is increasing traffic flow, accident reduction, and safety (Silva et al., 2021). Technologies like adaptive cruise control and lane-keeping assistance are helping the transportation sector advance, and governments are encouraging the use of electric vehicles (EVs) by enforcing tighter emissions standards and providing financial incentives. To address the issues of air pollution and climate change, automakers are making significant investments in the development of EVs (Spinelli & Mancuso, 2020).