How Does the Intelligent Transportation System Promote the Globalization and Digitalization of Cities: Take Tesla Autopilot System as an Example

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Abstract: The globalization and digitization of smart transportation and cities are facilitated by advancements like Tesla's autonomous driving technology, which revolutionizes urban mobility. This article explores their interconnection through the example of Tesla's system. Tesla's Autopilot, based on deep neural networks, utilizes cameras and ultrasonic sensors to perceive the world around vehicles, encouraging data sharing between vehicles and driving global development of smart cities. It employs artificial intelligence to assess terrain and conditions, fostering a transportation revolution in traditional cities and advancing the evolution of smart cities. Moreover, Tesla's digital impact is altering transportation solutions, increasing visibility in development, and driving global technological progress. Tesla's unique autonomous driving technology, leveraging data from nearly one million Tesla vehicles worldwide, enhances global intelligent transportation systems, promoting global sharing among Tesla users, and facilitating the convenience of autonomous driving and the flow of global traffic information. Tesla's autonomous driving mode and intelligent traffic system promote the development of smart cities, although a comprehensive analysis of its global political, economic, and legislative impacts is needed.

Keywords: intelligent transportation system, Urban globalization, autopilot system

1. Introduction

Globalization of cities requires political, social, cultural, and economic forces that bring people closer together throughout the world. The intelligentization of cities has gradually improved as globalization and digitalization have progressed. The advancement of intelligent transportation has a substantial influence on these processes. Similarly, one of the driving forces behind urban globalization is intelligent transportation.

Tesla's semi-autonomous driving technology is cutting-edge. This technology combines the most advanced artificial intelligence and hardware technology with automated driving and real-time driving updates, as a result of smart city development[1]. It has revolutionised the navigation and transportation techniques of urban traffic to some extent, as well as accelerated the globalisation and digitization of urban traffic.

As a result, this article would use Tesla's autonomous driving system as an example to explore the relationship between the globalization and digitalization of smart transportation and smart cities via Tesla's autonomous driving technology's globalisation, digitization, and mobility.

2.   Literature Review

Globalization and digitization of cities have shattered urban space and area constraints in this era of urban intelligence. According to Sassen economic globalization and digitalization generated a sort of spatiality for cities, based on de-territorial cross-border networks and territorial places with a significant concentration of resources Many scholars recognize this view in the era of rapid development of globalization and digitalization [2]. According to Canzler & Knie the processes of digitalization are speeding and degrading present mobile behaviours patterns The progress of digitalization is reflected in every sphere of intelligent cities: such as the interconnection of transportation between cities the sharing of cars and autonomous driving This point of view also demonstrates that the digital process has eroded the   original urban space and region promoted the development of smart cities and to a degree broken the urban borders and regions [3].

The development process of Intelligent Transportation System (ITS) and the progress of smart cities have a favorable link to some extent. Some cross-sectional research suggests an association between ITS and smart cities Intelligent transportation system has been regarded as one of the primary elements of any smart city [4][5]. The intelligent development and application of transportation, according to this viewpoint, is also the foundation for the operation of a smart city There is even a case to be made that there is no trustworthy and efficient system. In the transportation system, there is no smart city [4]. Simultaneously the smart cities development has also aided the advancement of intelligent transportation in the future much as has shown that globalization, urbanization, connection and personalization are some of the elements influencing the transportation's' future [5]. Hence the development of intelligent transportation and the process of smart cities are complementary and mutually reinforcing processes.

However upon further investigation, it was discovered the previous scholars' research on Tesla had been primarily distributed on the impact of its business model and new   energy models on the market while the research direction of its advanced autonomous driving mainly pays attention to the technical aspects of the car's driving mode There is little or no examination of this technology's applicability to urban digitalization and globalisation Therefore, from the perspective of Tesla's autonomous driving technology, this article hopes to analyze the correlation between the advancement of this technology and smart cities.

3.   Analysis of the correlation between Tesla' s autonomous driving technology and urban globalization and digitalization

3.1.   Tesla's autopilot promotes city globalization

Tesla's Autopilot is built on a deep neural network and perceives the world surrounding the car using cameras and ultrasonic sensors. The driver can comprehend the surrounding environment thanks to this powerful sensor and camera package enables, which is not perceivable by a single driver. This technology encourages vehicle-to-vehicle data sharing, allowing for a new level of insight in areas like commuting information, traffic mitigation, road network management, and research road utilization. Because of its massive linked infrastructure, it can break down spatial barriers between cities in order to share information, increasing the flow of information throughout the globe. Tesla's autopilot intelligent interconnection technology promotes Tesla vehicles globally to develop a huge Internet of Things. Almost every object surrounding us will be connected to the Internet through the Internet of Things (IoT) technology in the future smart city, almost [4]. What's new today is the power,

complexity, and worldwide reach of these networks, as well as the extent to which key aspects of the economy have been digitised and can now be transmitted at breakneck rates over these networks [2]. Therefore, Tesla's powerful interconnection system encourages the smart city's global development at an extremely fast speed while promoting the exchange of vehicle information and data.

3.2. Tesla's autopilot advances smart city transport digitization

Tesla's autopilot has subverted the traditional forms of transportation in traditional cities as a new sort of technology. AI evaluates the city's terrain and emergency conditions, and offers a bundle of information about the driver's possible encounters, from the requirement to manually identify paper maps, to the advent of GPS, to now have electronic navigation technology, and then to Tesla's automatic driving mode. Insights into the types of challenges in driving highly automated vehicles; entailing pattern confusion, mental model development, and support for accidental automated transitions Endsley [6]. Tesla's semi-autonomous driving technology is based on the advancement of computer engineering and the popularization of information and communication technology (ICT). This technology's development has transformed a smart city from a concept into a reality [4]. This succession of digital breakthroughs has substantially decreased the impact of human factors on driving, increased driving safety, and facilitated traffic technology update and iteration.

Moreover, Tesla's impact on the digital media platform also had given birth to a new effect on the transportation solutions between traditional cities. Stating otherwise, the emerging digital revolution has already influenced the transportation sector. A considerable amount of attention has been paid by the mass media to the testing of innovative driver assistance systems and driverless car prototypes, enhancing the development visibility and promoting the technological flow globally [5]. Also, profound changes to the transportation market has been inflicted upon by this impact, and would eventually remove the existing systems and paradigms [3]. Whether it's a new form of digital autonomous driving mode or the influence of digital media, Tesla's operating model has generated new ideas and had a significant impact on city digital growth.

3.3. Tesla's autopilot enhances intercity mobility

Tesla's unique autopilot technology not only supports the globalization of intelligent transportation systems on a technical level, but also enhances the mobility between cities through the interplay of traffic and terrain information.

When Tesla links worldwide traffic, it utilizes a special silicon chip that processes Autopilot to create a neural network that can recognise the unique driving situation of almost 1 million Teslas in real-time. This implies that, although Tesla can utilise the cameras onboard the car to comprehend the environment, it can also use the data collected by other Teslas globally to best decide the policy and strategy [7]. This technology facilitates sharing among Tesla users worldwide. Tesla owners across the world might rely on Tesla's displays to enjoy the ease of autonomous driving made possible by digital information interaction. Under these conditions, we, as locals, have discovered that much of the substance of experience and representation is a microenvironment on a global scale. This technology has not only promoted the flow of traffic information globally, but Tesla has also promoted the global auto-driving process [2].

4. Conclusion

To sum it up, it can be known that the application of Tesla's autopilot driving mode and intelligent transportation system in cities is from different perspectives such as globalization, digitalization, and mobility by assessing the role played by Tesla's autopilot system in the development of smart cities. Promote smart cities development. The beneficial aspects of the application of the system to the

development of smart cities from a positive perspective have been evaluated in this article, but it fails to analyze the comprehensive impact of the application of the system in global politics, economy, and legislation. More systematic and specialised study on the Tesla autopilot technology and city globalisation is needed.

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