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Smart Cities: The Future of Urban Landscape

In today's urban terrain, smart cities reflect a transformative vision. These cities implement new technologies to enhance quality of life and infrastructure services. Integrating Internet of Things or IoT, interconnected devices leverage to gather data and analyze, sustainable, innovative urban environments and foster efficiency. By grasping the energy of data and connectivity, smart cities aim to enhance efficiency. Smart city ventures usually include academia, businesses, government bodies and citizens to bring innovative ideas for the welfare of humanities and society. Since IoT is the connection of hardware and software, it plays a crucial role in flourishing in this ever-evolving digital era.

In cities, there are many challenges which hinder the smooth growth of an urban landscape. Pollution, traffic congestion and energy demands are some of the major problems. Through IoT, we seek solutions to these problems. Solving these major challenges is vital to create more sustainable and smart living. To enhance IoT in smart cities, transmission technologies become the backbone of it. Protocols like LoRaWAN ensure that the connectivity between the connected devices is seamless. Smooth flow of information and data makes results meaningful. When the connected devices are more reliable, it becomes the lifeline of smart city operations, enhancing crucial decision-making and more responsive city management. For example, when we are managing traffic congestion in a city, retrieving fast information among different traffic connected devices ensures that the whole city is following a certain path in a road, and they aren't mismatched. While talking about pollution, when we collect the waste though a gadget using IoT, it becomes more efficient. In today's era, we are seeing a rapid adoption of automatic and electric cars, which works in a fundamental principle of IoT. Automatic cars detect objects Infront of them and using their own brain power, they decide their way. Seeing its accuracy makes no wonder why IoT has become an immense part of human life. In the context of a smart city, reliability is vital for functions like public safety systems, traffic management, utilities management and smart monitoring.

Data is on which IoT technologies feed upon. The well processing and storage of data is very critical to obtaining desirable results. Generally, in smart cities, there are two keyways to collect data, Ie edge computing and centralized data centers. Both have their own importance. In centralized data centers, all the obtained data is stored in a central server or storage. All the interconnected devices send data to the centralized data centers. Where in edge computing, data is sent and stored near to the source. Both play crucial roles in reliable security and robust security measures. When we use centralized data centers, it becomes cost effective since all the data is stored in one single storage device. One single storage can also result in weak security. It becomes easier to penetrate and hack one single data center than multiple small ones. In edge computing, security is more reliable and authentic. When there is failure of a single or multiple data storage unit, other remaining will work without being affected and system can operate smoothly. Processors and chips are the hardware sections of IoT which undoubtedly is also the skeleton system of it. Without it, there is no IoT. It plays a pivotal role in shaping an urban landscape, managing data effectively for better decision making and analyzation. Some of the big tech giants'