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For IoT-Enabled Smart Grid Edge Computing in Future

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INTRODUCTION

The rapid growth of electrical engineering at the beginning of the 19th century signalled the beginning of the second industrial revolution, which replaced steam power with electrical energy and altered the course of human history. Electricity may be used in a wide range of industries, including transportation, heating, lighting, telecommunications, and computing, thanks to its adaptability. Electric energy sources today are formed by many diverse technologies, including hydroelectricity, solar power, wind power, coal power, etc., thanks to the breakthrough development of science and technology. Grid networks that carry electricity to cities, businesses, and residences for life and work are formed by connecting these energy sources. All current technology today are based on electrical energy.

We do a thorough analysis of edge computing for IoT-enabled smart grid systems in this paper. In addition, current IoT and edge computing-based smart grid frameworks are explored, key requirements are laid out, and problems and outstanding concerns are highlighted. The smart grid, in our opinion, will be the energy system of the future in the age of the Internet of Things. We anticipate that the findings of this study will provide crucial direction for future, in-depth research on smart grids and green energy.

DESCRIPTION

Today, electrical power serves as the foundation for all contemporary technologies. The prediction states that global electricity consumption will rise by almost 70% over the next three decades, from 25,000 to 42,000 terawatt-hours by 2050. Renewable energy sources are predicted to be the world's largest source of electricity, making up about 56% of all produced electricity like that shown. Electricity is created using a variety of resources as science and technology advance. To safely control, monitor, and transmit electricity, as well as to reduce power consumption, the power grids are simultaneously and seamlessly connected to one another.

The Smart Grid (SG) is a foundational technology that will allow customers, energy resources, and existing power infrastructures to evolve significantly. It is a solution to the problems caused by the rising energy consumption, energy waste, and lack of security and privacy, and dependability issues that make the use of conventional grids impractical. In SG, there are a tonne of smart sensors, Internet of Things (IoT) devices, and terminals that continuously collect data. As a result, SG has been exerting pressure on the backbone's bandwidth through massive energy consumption, long service response times, and impractical real-time application monitoring and control.

CONCLUSION

EC is incorporated into the SG design to address these issues. To increase energy efficiency, energy stability, reliability, and real-time service response time, SG applications based on EC and IoT offer comprehensive control and monitoring solutions. As a result, it is seen as the energy of the future in the digital age. We have presented a thorough overview of EC-IoT based SGs in this paper. The framework for SG apps has been discussed, and key prerequisites for deploying SG applications built on top of the EC-IoT are outlined. Finally, SG applications built on the EC-IoT face some obstacles and open concerns. This survey should serve as a beneficial resource for future EC-IoT enabled SG applications.

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