

Edge Computing: Enhancing IoT Applications with Real-Time Data Processing

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Abstract. Edge computing is reshaping the Internet of Things (IoT) landscape by bringing computation and data storage closer to the data source. This article explores how edge computing enables real-time data processing, reduces latency, and enhances the performance of IoT applications. The paper highlights key use cases in smart cities, industrial IoT, and autonomous vehicles. By distributing computational tasks to the edge of the network, businesses can achieve greater efficiency and responsiveness, paving the way for new innovations in IoT solutions.

Keywords: Edge Computing, Internet of Things, Real-Time Data Processing, Smart Cities, Autonomous Vehicles

Introduction

The emergence of edge computing has transformed the Internet of Things (IoT) by offering a more efficient way to process data closer to where it is generated. Unlike traditional cloud computing, which relies on centralized data centers, edge computing decentralizes data processing by utilizing devices at the network's edge. This approach reduces latency and enhances the performance of IoT applications by enabling real-time data processing. This article examines the benefits and challenges of edge computing, highlighting its applications in smart cities, industrial IoT, and autonomous vehicles. By understanding the potential of edge computing, organizations can leverage this technology to optimize their IoT solutions and drive innovation.

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References

1. KUMAR, Nitin; KATARIA, Vipin. Enhanced Sentiment Classification using a Multi-layered Stacked Ensemble Architecture.

2. Рагимов, Э. Р. О. (2011). Метрология элементов безопасности программных комплексов, реализующих систему защиты информации корпоративных сетей. Вопросы защиты информации, (2), 36-41.