

عنوان مقاله:

Analyzing the Impact of Wireless Channels on the Efficiency of Edge Computing in IoT Applications

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خلاصه مقاله:

The Internet of Things (IoT) has provided a platform for different devices to interact extensively over the Internet. This technology produces a large amount of data that needs to be stored and processed in devices. On the other hand, hardware constraints on IoT devices pose a major challenge to energy consumption and latency. Edge Computing (EC) has brought many benefits as a promising solution to increase the computing and storage capacity of internet-connected devices. It is expected that EC helps IoT to reduce energy consumption and computational delay of devices. However, the conditions of the wireless channel and specifically the possibility of errors in data transmission over wireless links could have an adverse impact on the performance of the whole system. In this paper, by performing calculations in both local and edge environments and by considering the retransmission of data to eliminate possible errors, the role of wireless channels in the efficiency of offloading to the EC is investigated. The results show that offloading the calculations to EC does not always reduce energy consumption and delay. Therefore, the conditions of the wireless channel should be considered for an appropriate decision regarding the offloading of tasks to the EC or its execution in IoT devices.

کلمات کلیدی:

Internet of Things, Edge Computing, Wireless Channel Error, Queuing Delay

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