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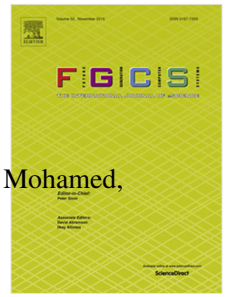

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Enabling Technologies for Fog Computing in Healthcare IoT Systems

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ABSTRACT

Context: A fog computing architecture that is geographically distributed and to which a variety of heterogeneous devices are ubiquitously connected at the end of a network in order to provide collaboratively variable and flexible communication, computation, and storage services. Fog computing has many advantages and it is suited for the applications whereby real-time, high response time, and low latency are of the utmost importance, especially healthcare applications. **Objectives:** The aim of this study was to present a systematic literature review of the technologies for fog computing in the healthcare IoT systems field and analyze the previous. Providing motivation, limitations faced by researchers, and suggestions proposed to analysts for improving this essential research field**. Methods:** The investigations were systematically performed on fog computing in the healthcare field by all studies; furthermore, the four databases Web of Science (WoS), ScienceDirect, IEEE Xplore Digital Library, and Scopus from 2007 to 2017 were used to analyze their architecture, applications, and performance evaluation. **Results**: A total of 99 articles were selected on fog computing in healthcare applications with deferent methods and techniques depending on our inclusion and exclusion criteria. The taxonomy results were divided into three major classes; frameworks and models, systems (implemented or architecture), review and survey. **Discussion:** Fog computing is considered suitable for the applications that require real-time, low latency, and high response time, especially in healthcare applications. All these studies demonstrate that resource sharing provides low latency, better scalability, distributed processing, better security, fault tolerance, and privacy in order to present better fog infrastructure. **Learned lessons:** numerous lessons related to fog computing. Fog computing without a doubt decreased latency in contrast to cloud computing. Researchers show that simulation and experimental proportions ensure substantial reductions of latency is provided. Which it is very important for healthcare IoT systems due to real-time requirements. **Conclusion**: Research domains on fog computing in healthcare applications differ, yet they are equally important for the most parts. We conclude that this review will help accentuating research capabilities and consequently expanding and making extra research domains.

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