IoT

MDPI

Editorial

Emerging Trends and Challenges in Fog and Edge Computing for the Internet of Things

Bastien Confais [1,*] and Benoît Parrein [2]

[1] Inatysco SAS, 34000 Montpellier, France
[2] Nantes Université, LS2N UMR CNRS 6004, 44306 Nantes, France; benoit.parrein@univ-nantes.fr
* Correspondence: bastien@confais.org

Current network architectures such as Cloud computing are not adapted to provide an acceptable Quality of Service (QoS) to the large number of tiny devices that compose the Internet of Things (IoT). Over the years, new paradigms have been proposed to realize a continuum between the Clouds infrastructures and the IoT: Fog and Edge computing.

The special issue "Emerging Trends and Challenges in Fog and Edge Computing for the Internet of Things" seeks to answer how to manage such a complex infrastructure composed of diverse nodes with diverse capabilities. Some of the questions the articles of this special issue will try to answer are how to provide internet working and interoperability' how to store data and perform distributed computation; and how to support mobility, scalability, availability, and security in an infrastructure with energy constraints.

The first article of this Special Issue is a bibliographical study written by Moreno-Guerrero et al. [1]. In the study, they searched for technological terms such as "Internet of Things" and "Edge computing" in a large set of publications. They showed that these terms appeared and confirmed that the topic of "Internet of things" or "Edge computing" have been considered recently and is gaining in importance among the researchers. With a correlation study, they also showed what future problematics could be of topics such as energy management.

Then, two articles focused on the low layers of the network architecture at the edge of the network. First, Carrascal et al. [2] focused on Software-Defined Networking environments for the Internet of Things. They compared two protocols, XDP and P4, and showed that XDP enables networks with lower latency than P4. However they also showed that P4 is easier to use and to deploy in most environments. Then, Fadlallah et al. [3] proposed a protocol to maintain node connectivity in harsh environments. Their protocol takes into account the different wireless technologies available on the nodes and establishes p2p collaboration between them to extend the coverage and to improve the QoS metrics such as latency.

Finally, the last article of this Special Issue was written by Ajayi et al. [4] and focuses on how to store data at the edge of a network. This is a particular challenge because storage capacities are diverse and the nodes are not always close to the where the data are. They evaluate how the blockchain technology can be used as a distributed storage system at the edge of the network. While it implies a lot of replication on edge nodes, the results show that this distributed storage provided by a blockchain can improve privacy, data ownership, security, and data auditability.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

Citation: Confais, B.; Parrein, B. Emerging Trends and Challenges in Fog and Edge Computing for the Internet of Things. *IoT* **2022**, *3*, 145–146. https://doi.org/10.3390/iot3010009

Received: 22 January 2022
Accepted: 27 January 2022
Published: 16 February 2022

References

1. Moreno-Guerrero, A.J.; Hinojo-Lucena, F.J.; Navas-Parejo, M.R.; Gómez-García, G. Bibliometric Analysis of Scientific Productivity around Edge Computing and the Internet of Things. *IoT* **2020**, *1*, 436–450. [CrossRef]
2. Carrascal, D.; Rojas, E.; Alvarez-Horcajo, J.; Lopez-Pajares, D.; Martínez-Yelmo, I. Analysis of P4 and XDP for IoT Programmability in 6G and Beyond. *IoT* **2020**, *1*, 605–622. [CrossRef]
3. Fadlallah, G.; Mcheick, H.; Rebaine, D. A Pervasive Collaborative Architectural Model at the Network's Periphery. *IoT* **2021**, *2*, 524–548. [CrossRef]
4. Ajayi, O.J.; Rafferty, J.; Santos, J.; Garcia-Constantino, M.; Cui, Z. BECA: A Blockchain-Based Edge Computing Architecture for Internet of Things Systems. *IoT* **2021**, *2*, 610–632. [CrossRef]