

Collaboration of Cloud, Fog and Mist Computing for Real-Time Applications: Resource Allocation and Scheduling Challenges



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Abstract:

Cloud computing, despite its big success in all sectors of the IT domain, has shown problems related to network congestion and transmission latency. As a result, Fog and Mist computing emerged as new computing paradigms to meet the requirements of low latency. In recent years, the IoT applications' growth is rapidly increasing. The huge volume of data generated by IoT devices usually requires real-time processing, which, distant cloud resources cannot sufficiently provide. Fog computing extends the cloud closer to the IoT layer in order to reduce latency. Mist computing, which is a lightweight form of fog computing, extends the fog layer even closer to the IoT sensors and devices. The collaboration of cloud, fog and mist resources for the processing of delay-sensitive applications is a challenging task. In this keynote, we will shed light on resource allocation and scheduling approaches for real-time applications, exploring the power of cloud, fog and mist computing. We will conclude with future research directions in these computing areas.

Bio:

Helen Karatza (Senior member, IEEE, ACM, SCS) is a Professor Emeritus in the Department of Informatics at the Aristotle University of Thessaloniki, Greece. Dr. Karatza's research interests include Cloud, Fog and Mist Computing, Energy Efficiency, Resource Allocation and Scheduling and Real-time Distributed Systems.

Dr. Karatza has authored or co-authored over 240 technical papers and book chapters including six papers that earned best paper awards at international conferences. She served as an elected member of the Board of Directors at Large of the Society for Modeling and Simulation International. She served as Chair and Keynote Speaker in International Conferences.

Dr. Karatza is the Editor-in-Chief of the Elsevier Journal "Simulation Modeling Practice and Theory", an Editor of "Future Generation Computer Systems" of Elsevier, and an Associate Editor of



IEEE Transactions on Services Computing. She was Editor-in-Chief of “Simulation Transactions of The Society for Modeling and Simulation International”, Associate Editor of “ACM Transactions on Modeling and Computer Simulation” and Senior Associate Editor of the “Journal of Systems and Software” of Elsevier. She served as Guest Editor of Special Issues in International Journals. More info about her activities/publications can be found in: <https://users.auth.gr/karatza/>