Scheduling Time-Critical Applications in Cloudy, Foggy and Misty Computing Environments

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Abstract:
Over the past decade, the growth of the Internet of Things (IoT) has led to the emergence of new distributed computing models, such as fog and mist computing, in order to address the inherent latency of the remote cloud resources. The vast amount of data generated by IoT sensors typically requires processing in a real-time manner, using computational resources that are located in close proximity. Fog computing extends the cloud closer to where the IoT data are generated in an attempt to minimize latency. Mist computing, a lightweight form of fog computing, extends the fog layer even closer to the IoT sensors. The collaboration of mist, fog and cloud resources for the processing of time-critical applications involves many challenges. Particularly important is the effective resource allocation and scheduling of the real-time workload on the multi-tier resources. In this keynote, we will focus on resource allocation and scheduling techniques for time-critical applications in cloud, fog and mist computing environments, exploring current trends and challenges. Furthermore, we will provide future research directions in this area.

Bio:
Helen D. Karatza (senior member of 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, fault tolerance, resource allocation, scheduling algorithms and real-time distributed systems. Dr. Karatza has authored or co-authored over 240 technical papers and book chapters including seven 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 Modelling 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 several international journals. More info about her activities and publications can be found at: https://users.auth.gr/karatza/.