SORS: Task Partitioning and Orchestration in Edge Computing Systems

Objectives

Abstract: Many compute-intensive applications running on mobile devices require low latency responses, such as 3D SLAM. Edge computing is a new paradigm moving Cloud features closer to end users and providing necessary computing and network resources at the edge of the network. In this talk, I present the EDGEVISION framework for computer vision applications partitioning and orchestration on heterogeneous edge computing platforms considering both CPUs and GPUs. EDGEVISION abstracts the heterogeneous hardware resources and the task runtime environments, and divides the application into separate tasks to be orchestrated and deployed into the heterogeneous edge nodes. We also propose two scheduling algorithms in our framework, MLTS and MCTS, aiming to minimize the processing latency and the overall system cost. We evaluate our framework by implementing the edge-based 3D SLAM application in our real testbed with ten heterogeneous edge devices.

Short Bio: Amir Taherkordi is a Full Professor at the Department of Informatics, University of Oslo (UiO). He received his Ph.D. degree from the Informatics Department, UiO in 2011. After completing his Ph.D. studies, Amir joined Sonitor Technologies as a Senior Embedded Software Engineer. From 2013 to 2018, he was a researcher in the Networks and Distributed Systems (ND) group at the Department of Informatics, UiO. He has so far published several articles in high-ranked conferences and journals, and he has experience from several national (Norwegian Research Council) and international (European research funding agencies) research projects. He is an Associate Editor of IEEE Transactions on Network Science and Engineering. Amir’s research interests are broadly on resource-efficiency, scalability, adaptability, dependability, mobility and data-intensiveness of distributed systems designed for emerging computing technologies, such as Internet of Things (IoT), Fog/Edge/Cloud Computing, and Cyber-Physical Systems (CPS).

Speakers

Speaker: Amir Taherkordi is a Full Professor at the Department of Informatics, University of Oslo (UiO)
Host: Peini Liu, Data Centric Computing, Recognised Researcher, CS, BSC

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