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Vorträge im Rahmen des Besetzungsverfahrens der Laufbahnstelle für Informatik mit Schwerpunkt Cloud, Edge, IoT Computing

Dienstag 08. November 2022, 08:00 Uhr
Raum 3W03, Institut für Informatik, ICT Gebäude

Dragi Kimovski (Universität Klagenfurt)

The Computing Continuum in the Serverless Era: Beyond the Cloud Data Centers

Abstract:

The advent of fog and edge computing has prompted predictions that they will take over the traditional cloud for information processing and knowledge extraction in Internet of Things (IoT) systems. Notwithstanding the fact that fog and edge computing have undoubtedly large potential, these predictions are probably oversimplified and wrongly portray the relations between cloud, fog and edge computing.

Concretely, fog and edge computing have been introduced as an extension of the cloud services towards the data sources, thus forming the computing continuum. The computing continuum enables the creation of a new type of services, usually provided as reusable serverless functions. The support of the modern IoT applications, encompassing complex functions choreographies, have a large spectrum of requirements, burdensome to meet with "distant" cloud data centers. However, the introduction of the computing continuum raises multiple challenges for management, deployment, and orchestration of complex distributed applications, such as: increased network heterogeneity, limited resource capacity of edge devices, fragmented storage management, and high mobility of edge devices. These challenges primarily concern the complexity and the large diversity of the devices, managed by different entities (cloud providers, universities, private institutions), which range from single-board computers such as Raspberry Pis to powerful multi-processor servers.

Therefore, in this talk, we will discuss novel algorithms for low latency, scalable, and sustainable computing over heterogeneous resources using serverless functions for information processing and reasoning, thus enabling transparent integration of IoT applications. We will tackle the heterogeneity challenge of dynamically changing topologies of the computing infrastructure and present a novel concept for sustainable serverless processing at scale.

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Dienstag 08. November 2022, 10:00 Uhr
Raum 3W03, Institut für Informatik, ICT Gebäude

Vincenzo De Maio (TU Wien)

Distributed systems in the Post-Moore era

Abstract:

In recent years, we have experienced an exponential growth in the amount of data generated by IoT devices. Data have to be processed strict low latency constraints, that cannot be addressed by conventional computing paradigm and architectures. On top of this, if we consider that we recently hit the limit codified by the Moore's law, satisfying low-latency requirements of modern applications will become even more challenging in the future. In this talk, we discuss challenges and possibilities of heterogeneous distributed systems in the Post-Moore era.