

Workshop

Intelligent operations, security, and acceleration for edge computing

Organizing Projects	SERRANO (https://ict-serrano.eu) BRAINE (https://www.braine-project.eu/)
Structure	2 h, 6 papers
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Background and Motivation

Today, numerous heterogeneous devices, like cars, drones, machines, surveillance cameras and other, are getting connected to the Internet. These entities are recognized as valuable devices, at the basis of our smart cities, enabling various services and applications. The efficient provisioning of novel services, paying attention to computational, storage and networking requirements, is a challenging task.

Centralized cloud computing infrastructures are currently handling most of these requirements. Nevertheless, it has been recognized that the data generated can be pre-processed, while their size will exceed the storage capabilities of today's datacenters. At the same time the applications' performance requirements become more and more strict, e.g., in terms of latency.

Edge computing paradigm envisages the use of resources (compute and storage) for networking services, close to the end users, offloading the cloud and accelerating applications. The edge infrastructure can be managed or hosted by telco or service providers and shared between application users. In addition, enterprise premises (e.g., factory buildings), homes, stadiums and vehicles (cars, trains, planes) are only few of the possible locations, where edge resource can operate.

Currently, we are witnessing a movement from top-down-designed cloud architectures that apply centralized resource control, towards the federations of distributed edge systems. These systems

include computing, storage and networking resources, while advanced software and hardware technologies are employed.

This distributed operation, in the form of edge computing, gives rise to a number of challenges that relate to the edge-native application deployment, the intelligent orchestration of heterogeneous infrastructures, the security, privacy and trust of the edge resources and the acceleration of intensive workloads.

Edge computing paradigm, also, opens the market to new services, while improving the agility of service deployments. The development of novel operating systems, containerized software packaging, virtualization techniques, and high-speed fabric are additional challenges that arise when using edge resources.

AI (Artificial Intelligence) is impacting different application areas, such as: intelligent personal assistants, video/audio surveillance, smart cities applications, self-driving, Industry 4.0. By relying on high-performance computing capacity to the edge, Artificial Intelligence (AI) applications can be applied on field devices, enabling them to process data autonomously, while performing Machine Learning (ML) or running algorithms for advanced autonomous operations.

Topics of Interest

This workshop seeks to attract high-quality contributions covering both theory and practice over edge computing. In particular, the topics of interest include, but are not limited to the following areas:

- Security, privacy and data integrity in the edge
- Orchestration of edge resources
- Network and cloud telemetry
- Integrating AI with Edge Computing
- Machine Learning integration with Edge Computing
- Application of AI/ML at the edge
- Edge intelligence
- Applications / VNFs deployed at the edge
- Acceleration of intensive workloads
- Networking programmability at the edge
- Verticals running in the edge