ELECTRICAL, ELECTRONICS AND COMMUNICATIONS ENGINEERING

DET - Intelligent Computing and Sensing Services

Funded By	Dipartimento DET
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Context of the research activity	This Ph.D. program addresses the efficient and effective use of virtualization technologies as well as of data, network, and computing resources for the support of time- and mission-critical applications. The services that will be targeted are intended to improve how humans as well “things” can operate in different environments and with different purposes. To achieve this goal, new communication and computing paradigms need to be designed and developed while ensuring sustainability.
Objectives	Edge computing and efficient communication approaches have led to the creation of more and more advanced services that help humans better perceive and act in a plethora of environments. However, such services are often complex, require the collection of a large amount of data, and make use of resource-hungry artificial intelligence models. Additionally, the data that are required are multi-modal, must be gathered using different sensing techniques, and have to often represent the operational environment with high fidelity. It is thus critical to design new computing and networking paradigms that make the support of such services sustainable, while providing quality of service and quality of experience guarantees. To this end, the services themselves should be integrated with advanced techniques for the sensing of the environment and of users’ actions, and include artificial intelligent approaches that match the resources availability while ensuring a high level of quality of service and quality of experience. The methodologies that will be used range from experimental measurements to the definition of analytical abstractions of the system and of optimization approaches. Furthermore, whenever an optimal solution to the problems posed is nor practical due to the complexity of the problem itself, an algorithmic approach, possibly with proved guarantees, should be developed. The study will also require the development and/or use of a testbed to assess the performance of the envisioned solutions.
Skills and competencies for the development of	Knowledge of computer vision tasks, share memory technologies, mobile system, data analysis. Programming skills.

development of the activity	Some mathematical background.