# Task Allocation among Collaborative Connected Devices

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## Abstract

Task allocation (TA) is essential when deploying applications that rely on the jobs done by a set of devices with
dissimilar characteristics which also vary over time; the challenge is to select the devices that should be asked to perform a given task based on the current context and status and according to the set objective(s). Four are the major domains where it
has an important role: Sensor and Actuator Networks (SAN), Multi-Robot Networks (MRN), Mobile Crowdsensing (MCS) and
Internet of Things (IoT). In this speech I present the key characteristics of these four domains and how these impacts the design elements that need to be considered when defining the needed solutions. We then classify the proposed solutions in terms of the challenges that are addressed by the TA problem, the reference domain, and the performance metrics that are considered by the TA problem. The expected functionalities of a future 6G network are then discussed.

## Bio



Luigi Atzori (PhD, 2000) is professor of Telecommunications at the University of Cagliari, where he leads the activities of the MCLab laboratory (Multimedia & Communications) with around 20 affiliated researchers. Since 2018, he has been the coordinator of the master's degree course in Internet Technologies Engineering at the University of Cagliari. His research interests are in the area of Internet of Things (IoT), with particular reference to the design of effective algorithms for the realization of social networks among connected devices to create the Social IoT paradigm. His interests also cover the area of Quality of Experience (QoE), with particular application to the management of services and resources in new generation networks for multimedia communications. Lately, he has also applied the study of QoE to the design and deployment of IoT services. He is the founding partner of the GreenShare spinoff, where he currently serves as CIO; the company provides IoT services in the sustainable mobility sector. He is a regular reviewer for the EU and for Irish, Spanish and Swedish research programs. He has been the coordinator of European projects in the areas of QoE and IoT (QoE-Net, Demanes and Netergit). He serves regularly in the conference organizing committee of the sector and as associate and guest editor of several international journals (IEEE IoT journal, Ad Hoc Networks, IEEE IEEE Open Journal of the Communications Society, IEEE Communications Magazine, etc.).