

Cloud Technology for Distributed Robotics

Context and Challenges

Cloud technologies today provide a flexible and scalable infrastructure, capable of dynamically adapting to user needs and available computing resources. This agility paves the way for reconfigurable systems, optimizing resource allocation in real time.

Advances in Collaborative Robotics

At the same time, collaborative robotics is experiencing rapid growth, particularly in response to complex missions such as Search & Rescue operations in the context of natural disasters. In this framework, a robot can be understood as a set of resources (optical/laser sensors, mobility, etc.) mobilized to accomplish a specific task. When a robotic system is composed of heterogeneous entities (drones, ground robots, etc.), it becomes possible to view it as a network of distributed resources, where coordination enables the execution of large-scale missions, such as victim detection or risk-area assessment.

Project Challenges and Objectives

This project aims to explore the potential of cloud technologies for architecting and programming fleets of heterogeneous robots. The main challenge lies in the ability to dynamically configure missions according to operational constraints and available resources, while ensuring optimal coordination among the different agents. The objective is to develop an approach combining cloud computing and robotics to enhance the efficiency and responsiveness of systems in critical environments.