

MECHANICAL ENGINEERING

Mobile robot for hospital environments

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Context of the research activity	Development of autonomous machines, tailored on the requirements and needs of hospital environments
Objectives	<p>The goal of the project is the development of a mobile robotic platform on wheels that is able to perform useful operations in a hospital environment, thus supporting healthcare professionals in carrying out basic operations that do not necessarily require the intervention of qualified personnel. The target is to develop a prototype capable of demonstrating the feasibility and effectiveness of using these technologies in a hospital / healthcare environment. Among the numerous possible scenarios, some particularly relevant features can be identified:</p> <ul style="list-style-type: none">- handling and transport of small objects: consumables, medical records, samples to be analyzed. This basic functionality could be used to move material within the structure without having to employ qualified personnel;- remote monitoring for patients who are in a condition of precautionary isolation. To limit contacts with people in isolation, healthcare professionals could use the platform to remotely monitor and interact with the patient. In this way it would be possible to limit the risks for the patient due to contact with

operators and at the same time the system could be used to protect healthcare professionals from the risks deriving from contact with patients in infectious conditions, such as those highlighted by the pandemic for Covid-19.

To perform these operations, the mobile robot will be equipped with sensors for autonomous navigation, with a collaborative articulated manipulator equipped with a vision system and with a set of specific tools and sensors for each application.

Skills and competencies for the development of the activity

- Design of innovative robotic applications,
- Mechanical design skills. In particular, a marked proneness to strictly defined methodological design processes, made necessary by both the modularity at the base of the project and the plurality of non-trivial engineering issues involved.
- Electrical, electronic, and control basic skills
- Experimental abilities.