

Rethinking Robot Design with Additive Manufacturing

Description

This PhD project aims to push the boundaries of high-performance robotic systems by innovating on the design and integration of advanced mechanical architectures. The research will explore the possibilities given by the integration of several solutions e.g. cable-driven transmissions, hybrid parallel-serial kinematics, compliant mechanisms and additive manufacturing to cite a few. A further aspect of the project will be the development of robots capable of operating in unconventional environments, including space and underwater, where extreme conditions, such as limited gravity, high pressure, and restricted energy availability, demand innovative solutions. The project will involve a combination of theoretical modeling, hardware development, and experimental testing, with the goal of creating robotic systems that can perform complex, dynamic tasks in challenging environments.

Requirements

Hard skills:

- Applicants are expected to have background in engineering and interest in the design, fabrication and analysis of robots and mechanisms.
- Experience in CAD-based mechanical design is a major plus.
- Previous experience with additive manufacturing or CNC machining is a plus.
- Programming skills are also considered a plus.

Soft skills:

- Applicants shall be strongly motivated to study and design mechatronic systems.
- Effective communication skills are of the utmost importance.
- The candidates must have also a good attitude for laboratory practice and must be willing to conduct experiments.

Contact

e-mail:

- Alberto Parmiggiani: alberto.parmiggiani@iit.it,
- Giovanni Berselli: giovanni.berselli@unige.it