**Research theme title:**

Multirobot planning and control for human-robot interaction and cooperation in the manufacturing sector

**Description:**

Trajectory control and planning are of great interest for the application of Cobots (collaborative robots) in all those application scenarios in which cooperation between robots and human beings is fundamental. In particular, the orchestration of multiple Cobots to solve tasks in robot-robot and/or human-robot cooperation is still a relevant and largely open problem. To be able to solve this problem it is necessary to have a correct interpretation of the operating context (perception), in order to guide the system towards the execution of the assigned task (control).
The main objective of the project is precisely to merge control and perception in a multirobot perspective for the execution of cooperative tasks. The control and planning of the trajectories must properly understand and represent the surrounding environment, i.e., the presence of the human operator and of the other robots, the requirements imposed by task to be performed and the achievement of an adequate level of accuracy in the estimation of the operating context and in the execution of the assigned task. Although the main target is the manufacturing industry, the developed solutions need to be general enough to be applied in different operational contexts. Distributed control and planning techniques will therefore be used, which are combined with model-based and data-driven approaches.

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Università degli Studi di Trento

**Type of scholarship:**

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