

This research theme aims at solving the problem of the robotic characterization and selection of electronic boards in WEEE disposal plants, currently performed 3 manually, during the related de-manufacturing process. The proposal is organized into three complementary development lines and specifically in the following macroactivities: 1) Design and development of computer vision techniques to recognize and classify electronic boards as well as their components; 2) Develop an automatic sorting setup for electronic boards in which the a human operator supervises the behaviour of, collaborates with, and corrects the operations of one or more robotic manipulators; 3) Conduct an in-depth analysis of the currently operational manual processes involved in the disassembly of laptops and tablets, in order to formulate an overall evaluation of the benefits introduced by a system such the one envisaged here. These lines will be integrated in a robot sensing and control architecture specifically designed for human-robot collaboration. While the use of collaborative robots in manufacturing scenarios have been proposed to be deployed alongside human operators to perform a series of tasks traditionally considered stressful, tiring or difficult, their use in de-manufacturing processes for WEEE waste management is still largely unexplored. Recently, we have proposed a comprehensive human-robot collaboration (HRC) framework called FlexHRC showing interesting results on the Baxter dual-arm robot and on cooperative mobile manipulators.