



Seminar

Force and Visual Control for Safe Human–Robot Interaction

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Date : December 3, 2020 (Thursday)
Time : 3:30 p.m. – 4:30 p.m.
Link : <https://cuhk.zoom.us/j/94496668453?pwd=ak1lNldjOGxOU1o0Tzc5NU9SSUVVDZz09>
(Meeting ID: 944 9666 8453; Passcode: 812732)

Abstract

Applications of intelligent robots that work in contact with humans are increasing, and thus the problem of controlling the physical interaction between the robot and the human in a safe and dependable manner is of concern. This talk is aimed at presenting a unified framework for development of robot interaction control schemes using vision and force; vision provides global information on the surrounding environment to be used for motion planning and obstacle avoidance, while force allows adjusting the robot motion so that the local constraints imposed by the environment are satisfied. The proposed solution is to adopt position-based visual servoing when the robot is far from the object, where the relative pose of the robot with respect to the object is estimated recursively using only vision. The control schemes are experimentally tested on a setup consisting of an industrial robot with open control architecture, force/torque sensor and hybrid camera. Some results with a dual-arm system are also discussed. The final part of the talk is devoted to discussing future perspectives and big challenges of robotics.

Biography

Professor Bruno Siciliano is the Director of the Interdepartmental Center for Advances in RObotic Surgery (ICAROS), as well as the Coordinator of the Laboratory of Robotics Projects for Industry, Services and Mechatronics (PRISMA Lab), at the University of Naples Federico II. He is Honorary Professor at the University of Óbuda where he holds the Kálmán Chair. His research interests in robotics include manipulation and control, human–robot cooperation, and service robotics. Fellow of the scientific societies IEEE, ASME, IFAC, he received numerous international prizes and awards, and he was President of the IEEE Robotics and Automation Society from 2008 to 2009. Since 2012 he is on the Board of Directors of the European Robotics Association. He has delivered more than 150 keynotes and has published more than 300 papers and 7 books. His book “Robotics” is among the most adopted academic texts worldwide, while his edited volume “Springer Handbook of Robotics” received the highest recognition for scientific publishing: the 2008 PROSE Award for Excellence in Physical Sciences & Mathematics. More details are available at <http://wpage.unina.it/sicilian/>

***** ALL ARE WELCOME *****