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Edoardo Battaglia

Towards transferring medical expertise through haptics and sensing: telementoring for needle insertion

Percutaneous needle insertion can be a life-saving procedure in trauma patients. However, incorrect needle placement can generate greater patient morbidity, potentially leading to severe complications and even death. Because of the fact that it occurs in emergency situations, this procedure often has to be performed by individuals who are not experienced in its execution, with a greater potential for mistakes. To address this, we introduce a wearable collaborative robotic system to provide a remote mentor with critical kinematic and kinetic information regarding how a medical trainee is performing a task, as well as allowing the mentor to provide intuitive guidance cues to the trainee through the haptic channel. This talk will focus on two recent works, where we introduced a vibrotactile sleeve to offer directional cues to trainees along three degrees of freedom, with a discrimination accuracy of up to 95%, and evaluated the effectiveness of visual and haptic feedback in conveying information on the trainee action to the mentor.

Edoardo Battaglia joined the Mechanical Engineering Department of University of Utah as an Assistant Professor in 2022. He is a Core Faculty in the University of Utah Robotics Center and the direction of the Human-Centered Haptics and Robotics (h-CHAR) lab. He received his bachelor's degree in Mechanical Engineering and his master degree in Robotics and Automation Engineering at University of Pisa, in 2009 and 2013 respectively. He received his PhD in Information Engineering (Robotics Track) from University of Pisa in 2018. Before joining University of Utah he was a Postdoctoral Fellow in the Human-Enabled Robotic Technology Laboratory lab (HeroLab) at the University of Texas at Austin. His research interests include design and validation of haptic interfaces, mathematical modeling of the sense of touch and human manipulation, and user-centered medical robotics and human-robot interaction.

When: July 20th 2023, starting at 16:00

Where: Vandal Lab - Covivio - Corso Ferrucci 112