Robot-Assisted Dressing

Abstract:
Assistive robots have an enormous potential to improve the life quality of patients with reduced mobility by providing assistance with activities of daily living, such as dressing. So far, development of such robotic systems has focused on using vision as the primary input for interaction, having limited or no ability to adapt to users. Safety, as well, remains a great concern for robots that closely interact with people.

The I-DRESS project addresses these issues through development of a robotic system that will provide proactive assistance with the dressing task. The proposed system consists of either one or two robotic arms, sensors for multi-modal human-robot interaction and safety features. The system comprises three major components: (a) intelligent algorithms for user and garment detection and tracking, specifically designed for close and physical human-robot interaction, (b) cognitive functions based on the multi-modal user input, environment modeling and safety, allowing the robot to decide when and how to assist the user, and (c) advanced user interface that facilitates intuitive and safe physical and cognitive interaction for support in dressing.

The final interactive system will be integrated on commercial robotic platforms (WAM and Baxter robots) and validated through experimentation with users and human factor analysis in two assisted-dressing scenarios: shoe dressing and jacket/gown dressing, which differ in task complexity. For more information on the I-DRESS project: https://i-dress-project.eu/

About the speaker:
Aleksandar Jevtić received his M.S. and Ph.D. degrees in Computer Science from the Universidad Politécnica de Madrid, Spain in 2007 and 2011, respectively.
He joined the IRI as a Beatriu de Pinos postdoctoral fellow in October 2014. Previously, he was a Marie Curie postdoctoral fellow (2011-2013) at a French robotics company Robosoft and an invited researcher (2013-2014) at the ESTIA institute, France.
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