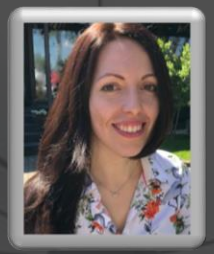
Seminars On Tactile Perception and Robotics

June 7, 2024
14:30 – 17:00 (EET)

Tactile Perception for Robotics Manipulation, Learning, and Control

UNIVERSITY OF OXFORD

Dr. Alessandro Albini, Oxford Robotics Institute
University of Oxford, UK



Innovation and Research Projects at Ocado Technology

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Dr. Jelizaveta Konstantinova
Senior Research Team Leader, Ocado Technology, UK

Robots Touching and Touching Robots

Università di Genova

Prof. Giorgio Cannata
University of Genova (Italy)

Address for in person participation: Conference Hall of ISSP UL (second floor), Kengaraga 8, Riga, Latvia
Link for online participation:
https://zoom.us/j/97605205413?pwd=QS90TjlxNnUxTjl1NUF6eWVLUmdsdz09
Meeting ID: 976 0520 5413
Passcode: 874345
Contact information: Ilze.aulika@cfi.lu.lv

Sesto senso

This project is granted from the European Commission's HORIZON EUROPE Research and Innovation Actions under GA number 101070310

Three hybrid seminars about touch sensors and robotics

Three distinguished scientists - Dr. Alessandro Albini from the University of Oxford (UK), Dr. Jelizaveta Konstantinova from Ocado Technology, and Prof. Giorgio Cannata from the University of Genova (Italy) - are visiting ISSP UL and giving seminars about touch sensors and robotics. Their visit is made possible by the HE project Sestosenso.

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Contact information: ilze.aulika@cfi.lu.lv or jelena.butikova@cfi.lu.lv

Time	Speaker, title
14:30 – 15:00	Alessandro Albini, University of Oxford (UK) *"Tactile Perception for Robotics Manipulation, Learning, and Control"*
15:15 – 15:45	Konstantinova, Ocado Technology (UK) *"Innovation and Research Projects at Ocado Technology"*
15:00 – 15:10	Coffee break
15:10 - 16:40	Giorgio Cannata, University of Genova (Italy) *"Robots Touching and Touching Robots"*
17:00	End of the seminar section

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Tactile Perception for Robotics Manipulation, Learning, and Control

Dr. Alessandro Albini
Oxford Robotics Institute, University of Oxford, UK

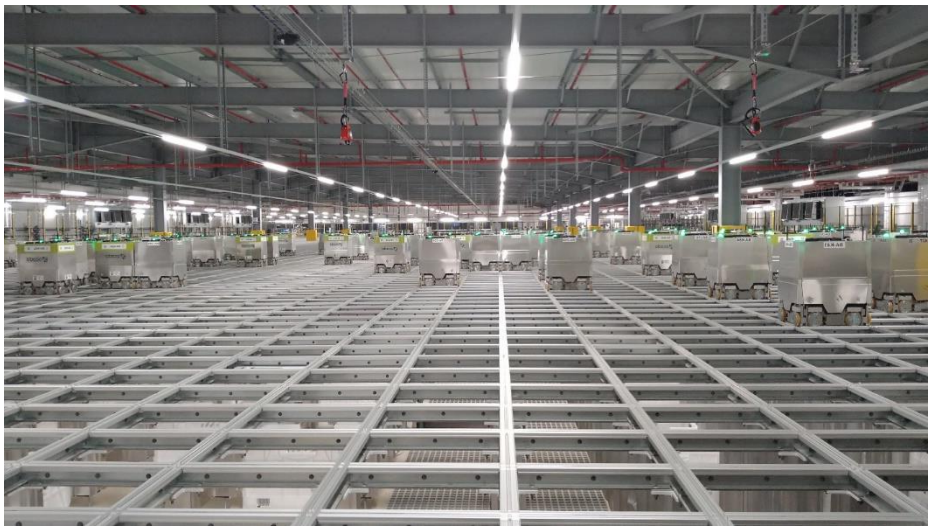
Abstract: Tactile sensing is essential to allow robots to physically interact with the external world safely. This talk will give an overview of how tactile information can be processed to provide feedback to the robot in the context of manipulation, object recognition, and control tasks. The presented approaches leverage tactile sensing to enhance the robot's ability to perceive and understand its surroundings, leading to more effective interaction capabilities. In particular, the talk will discuss data-driven architectures designed for cross-modal object recognition and tactile data generation. Additionally, we will discuss methods for processing tactile sensor data that enable the robot to navigate cluttered environments and interact with humans.

Bio. Dr. Alessandro Albini is a Postdoctoral Researcher at the University of Oxford. He holds a PhD in Robotics and Autonomous Systems from the University of Genoa. He has been involved in several European projects related to the development of large-area tactile sensing technologies and their deployment in robotics tasks. His research interests primarily focus on tactile perception for robots and the integration of tactile feedback with proximity or vision data.

Innovation and Research Projects at Ocado Technology

Dr. Jelizaveta Konstantinova
Senior Research Team Leader, Ocado Technology, UK

Abstract: Ocado Group is a software and robotics platform business providing e-commerce, fulfilment and logistics technology to some of the world's largest grocery retailers. Its team at Ocado Technology develop cutting-edge technology across robotics, artificial intelligence, machine learning and data science to enable the world's most forward-thinking retailers to offer grocery online with the best customer experiences and unmatched economic returns. This talk will cover some of the exciting innovations developed at Ocado Technology in the area of grocery handling, as well as the manipulation challenges for ongoing robotics research projects that are part of the collaborative efforts funded by Horizon Europe programme.



Bio: Dr. Jelizaveta Konstantinova is a senior research team leader in the External Collaborations group at Ocado Technology. She holds a PhD in Robotics from King's College London, and further on worked in academic research with the focus on medical robotics, tactile perception, intelligent grasping and soft robotics. Jelizaveta is leading external research projects and collaborations focusing on long term innovation at Ocado Technology. She is currently a PI for Ocado Group on Horizon Europe projects Softenable, IntelliMan and Sestosenso, focusing on the research of intelligent manipulation of complex grocery items.

Robots Touching and Touching Robots

Prof. Giorgio Cannata

Department of Computer Science, Bioengineering, Robotics and Systems Engineering – DIBRIS, University of Genova (Italy)

UNIVERSITÀ DEGLI STUDI
DI GENOVA

Abstract: The challenge in innovative industrial robotics operations is motivated by the growing need to integrate production line operators with robots, equipment, and site-specific factory information according to the principles of Industry 4.0 (interconnected automation) and the forthcoming Industry 5.0 (humanization and re-use of resources). This leads to the need for robot systems that could operate and interact safely with a limited need of out-of-the-robot infrastructure, and possibly reducing robot setup times and costs thus increasing the flexibility of the shopfloor configuration. Tactile sensing and perception are key elements to the development of tactile feedback based reactive and cognitive control solutions enabling the safe and effective human-robot interaction. Tactile sensing technology is a challenging engineering activity developed over the years and still open to major developments. Also, tactile data processing is a complex process rapidly evolving with the introduction of machine learning solutions.

Bio: Giorgio Cannata received the Master Degree in Electronic Engineering from the University of Genova in 1988 and is currently Full Professor of Robot Dynamics and Control and Automatic Control. His research interests are in the areas of robotics, mechatronics and automatic control. In particular, over the years he has worked on the development of underwater manipulators, bioinspired robotics systems, and robot tactile systems and processing technologies for robot control and safe human-robot interaction. Giorgio Cannata has been Coordinator of the European Project ICT FP7 – Roboskin, on the development of skin-based technologies and capabilities for safe autonomous and interactive robots, and is currently Coordinator of the European Project HE – Sestosenso, on the development of innovative solutions for the control of robots and human-robot interaction using augmented proximity and tactile spatial perception. Giorgio Cannata is the Coordinator of the Italian Doctorate Program in Robotics and Intelligent Machines.