



Ljubljana robotics

Opportunità di studio e ricerca 18 November 2021 ore 17:30

Aula Magna Pacinotti Ingegneria e diretta streaming Google Meet <u>meet.google.com/kho-mipd-fep</u>

ore 17:00 *Accoglienza e saluti* ore 17:15 Rok Vrabič *Miniature robot swarms*

Recent advances in artificial intelligence, sensing, and computing technologies are revolutionising the field of robotics. The research at the Laboratory for Mechatronics, Production systems, and Automation (LAMPA), at the University of Ljubljana, focuses on reinforcement learning for robotic fleet management, human-robot collaboration using deep learning, adaptive control for advanced medical applications, and, recently, self-organisation in milli-robotic swarms

Rok Vrabič is an assistant professor at the University of Ljubljana, Faculty of Mechanical Engineering. His recent research focuses on reinforcement learning, multi-agent systems, and the application of the above to robotics and manufacturing systems. He is an author of 23 papers in SCI-indexed journals and numerous conference contributions. He has been involved in several European, national, and industrial projects, including a Horizon 2020 project ROSin and several Erasmus+ projects. He is an Associate member of the International Academy for Production Engineering CIRP and an Associate Editor of Advances in Industrial and Manufacturing Engineering (Elsevier)

ore 17:45 Marko Corn Shared manufacturing at LAMPA-lab

The shared manufacturing concept derives from the sharing economy paradigm (AirBnb) that focuses on management of unused resources in the system. Shared manufacturing topic will include: Concept presentation, Adding Blockchain layer, Current state of our research

Marko Corn is an assistant/researcher at the University of Ljubljana, Faculty of Mechanical Engineering. His recent research focuses on distributed systems, distributed manufacturing and blockchain technology

ore 18:15 Primož Podržaj Remote photoplethysmography

Remote photoplethysmography is a method of determining different physiological parameters by means of a remote sensor. The most typical variant is an assessment of heart rate by means of a digital camera. The method is based on detection of minute variations of skin color which corresponds to variations in blood pressure. It is characterized by a very low signal to noise ratio, so in order to get the best possible results we must first determine the area, where the variations are the most intense. This is typically the forehead. After getting the raw signal, various signal processing techniques are studied in order to get the best possible result

ore 18:35 Interactive course for Control Theory

Control Theory is an important part of robotics. The LAMPA lab was a coordinator of an Erasmus+ European project titled: »Interactive Course for Control Theory«. The partners were University of Pisa, University of Rijeka and Budapest University of Technology and Economics. The main result of the project is an Interactive Course which can be accessed for free at: https://icct.unipi.it including 100+ examples written in Python, also accessible, 5 accompanying handbooks with theory and excercise in English and other European languages

Primož Podržaj received his BSc, MSc and Phd from the Faculty of Mechanical Engineering, University of Ljubljana in 1996, 2000 and 2004, respectively. He is full professor at the same institution and head of the LAMPA - Laboratory for Mechatronics, Production systems, and Automation. His research interests include: Control Theory, Artificial Intelligence, Mechatronics, Machine Vision and Resistance spot welding. He published 30+ journal papers as an author/coauthor and is also a member of IEEE TC on Control, Robotics and Mechatronics

ore 18:45 Discussione



Info: Michele LANZETTA *lanzetta@unipi.it* Partecipazione gratuita, previa registrazione obbligatoria a: <u>www.cafre.unipi.it/eventi</u> (da computer/smartphone senza installare programmi/app) Registrazione integrale su <u>canale YouTube TM@UniPisa</u>, con sottotitoli automatici

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