

Call for Participation

The Warsaw University of Technology Days at Keio University – Workshops –

Large Meeting Room, Raiosha, Hiyoshi Campus, Keio University
April 28th (Mon) and 29th (Tue), 2025 <Free Event>

聴講者募集

ワルシャワ工科大学（WUT）ワークショップ

慶應義塾大学日吉キャンパス来往舎大会議室
2025年4月28日（月），29日（火）<参加費無料>

	April 28th (Mon)	April 29th (Tue)
10:45-12:15	<u>Workshop A (Large Meeting Room)</u> The Journey Through Bio-Robotics – From Animals to Robots	<u>Workshop B (Large Meeting Room)</u> Human Activity Recognition in Images and Video – Pattern Recognition and Artificial Intelligence Techniques
12:25-13:00	Dancing Performance (Event Terrace)	Dancing Performance (Event Terrace)
14:45-16:15	<u>Workshop B (Large Meeting Room)</u> Human Activity Recognition in Images and Video – Pattern Recognition and Artificial Intelligence Techniques	<u>Workshop A (Large Meeting Room)</u> The Journey Through Bio-Robotics – From Animals to Robots
18:15-19:00	Dancing Performance (Event Terrace)	Dancing Performance (Event Terrace)

*The same contents are delivered each day.

✓ Please register from [here](#)
to participate!



QR code
for registration



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Keio University



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Workshop A



The Journey Through Bio-Robotics – From Animals to Robots

Professor Teresa Zielinska, PhD, DSc, MSc in Eng.

Faculty of Power and Aeronautical Engineering

Warsaw University of Technology

Warsaw University of Technology (WUT) has a long tradition of conducting research on bio-robotics. This workshop will share the knowledge gained and research outcomes.

Compared to current designs and capabilities of robots, the animal world offers many advantages. Animal body structures are extremely diverse and well adapted to the environments in which they live. Their behaviors enable them to cope with difficult and unexpected situations. Modern robotics requires creativity, and biological inspiration can be drawn from many aspects, including the physical structure of animal bodies, the organization of the nervous system, movement strategies, and behaviors. However, mimicking biology is not always necessary in biologically inspired robot designs. Knowledge of biological features allows researchers to propose new solutions by incorporating helpful inspirations from biology, while avoiding some of its weaknesses.

After summarizing the animal world from the perspective of body structures, the biological fundamentals of sensing, motion planning, and control will be briefly discussed. This will lead to the presentation of biologically inspired robotic solutions developed at WUT. Participants will be encouraged and guided to propose their own concepts for biologically inspired robots dedicated to practical applications.

Workshop B



Human Activity Recognition in Images and Video – Pattern Recognition and Artificial Intelligence Techniques

Professor Włodzimierz Kasprzak, PhD, DSc, MSc in Eng.

Faculty of Electronics and Information Technology

Warsaw University of Technology

The research groups at Institute of Control and Computation Engineering (ICCE WUT) have conducted research on image and video analysis for many years. An important topic has been human activity recognition, in particular gesture-, pose-, action- and two-person interaction recognition. In this workshop, we are going to review the various techniques applied in the solutions to such problems and present research outcomes.

Image and video analysis dealing with automatic person detection, recognition and tracking has over the years moved from sole academic interest into industrial research and technological practice. This process results from steady improvement of cameras and fast-growing power of computational hardware, and the maturing of computational techniques. The main difficulty of human detection in images and activity recognition in video is that a person is considered by computer algorithms as a 3D object of non-rigid structure (can take different poses and be partially visible only) and is most often acting in different environments.

In particular, the workshop is going to address our solutions in hand gesture recognition, human pose estimation, person verification and age/sex estimation, single person action classification and two-person interaction classification. Classic pattern recognition techniques applied here are based on keypoint features, image motion-estimation and model-to-image matching or HMM-based classification of video sequences. Deep learning techniques apply most often pretrained models for pose estimation to generate skeleton data for human silhouettes, and various-type networks for action/interaction feature extraction and -classification. The role of deep network models, based on CNNs, LSTMs and Graph CNNs is explained. The state-of-the-art techniques for human recognition in image/video will also be presented. Finally, we are going to discuss our prospective research tasks in machine perception based on image/video data.