



# 17th APCA International Conference on Automatic Control and Soft Computing (CONTROLLO 2026)

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<https://controlo2026.apca.pt/>

## Special Session on PhAIROS: Physical AI in Intelligent Robotic Systems

### Organised by

Tiago Barros, University of Coimbra, (Portugal), [tiagobarros@isr.uc.pt](mailto:tiagobarros@isr.uc.pt)  
Cristiano Permebida, Universidade of Coimbra,(Portugal) [cpremebida@isr.uc.pt](mailto:cpremebida@isr.uc.pt)  
Luís Garrote, Universidade of Coimbra, (Portugal), [garrote@isr.uc.pt](mailto:garrote@isr.uc.pt)  
Shuoyuan Xu, Loughborough University (UK), [s.xu2@lboro.ac.uk](mailto:s.xu2@lboro.ac.uk)  
Iago Gomes, Federal University of São Carlos (Brazil), [iagogomes@ufscar.edu](mailto:iagogomes@ufscar.edu)

### Call for Papers

#### Description:

The special session “Physical AI in Intelligent Robotic Systems (PhAIROS)” explores the emerging paradigm of Physical AI in intelligent robotic systems, bringing together novel contributions that enhance the ability of robots to perceive, understand, interact with, and act in the physical world.

The session welcomes contributions from all areas of robotics, including perception, localization, mapping, planning, control, learning, navigation, human–robot interaction, multi-robot systems, robot design, and system integration. Papers addressing theoretical advances, algorithmic innovations, experimental studies, and real-world applications are all encouraged. Contributions may span a broad range of domains, including industrial automation, service robotics, healthcare, agriculture, autonomous driving, aerial robotics, marine robotics, and field robotics.

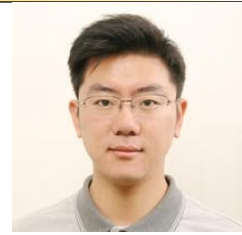
#### Topics of interest include (but are not limited to):

- Robot perception and multimodal sensing
- Localization, mapping, and SLAM
- Motion planning and autonomous decision-making
- Robot control, estimation, and adaptive systems
- Machine learning and deep learning for robotics
- Physical AI and embodied intelligence
- Manipulation, grasping, and dexterous robotics
- Mobile robotics and autonomous navigation
- Simulation, digital twins, and sim-to-real transfer
- Service, industrial, and healthcare robotics
- Pharmaceutical robotics and laboratory automation
- Assistive and medical robotic systems
- Robot system integration, robustness, and deployment

## Short CV of Each Organizer

<p>Tiago Barros is a Postdoctoral Researcher at the University of Coimbra and an Invited Assistant in Electrical and Computer Engineering. He obtained his PhD in Electrical and Computer Engineering from the University of Coimbra in 2025. His research focuses on machine learning, 3D LiDAR perception, SLAM, place recognition, and autonomous robotic systems for real-world applications. He collaborates with the Institute of Systems and Robotics (ISR-UC), the LUCAS Lab at Loughborough University (UK), and the DREAM Lab at Georgia Tech Lorraine (France). He has been a visiting researcher at the AutoNOMOS Lab (Freie Universität Berlin, Germany) and at the DREAM Lab (UMI2958 GT-CNRS/Georgia Tech Lorraine, France). Tiago Barros has authored over 25 publications in leading venues such as IEEE RA-L and IROS, and has participated in national and international projects, including PharmaRobot, VESTA, AgriBotics, AGVPosys, AI+Green, GreenBotics, and Xpro.</p> <p><a href="https://scholar.google.com/citations?user=mabN76EAAAAJ&amp;hl=en">https://scholar.google.com/citations?user=mabN76EAAAAJ&amp;hl=en</a></p>	
<p>Cristiano Premebida is Lecturer in the Department of Electrical and Computer Engineering (DEEC) at the University of Coimbra (UC), Portugal. His main research interests are autonomous robots (including agricultural robotics), self-driving vehicles, robotic perception, sensing and artificial perception, probabilistic machine learning (ML), sensor fusion, and applied ML in real-world problems. He collaborates with the Institute of Systems and Robotics (ISR-UC), the LUCAS Lab (Loughborough University, UK), and the DREAM Lab (GeorgiaTech Lorraine, FR). He is IEEE senior member of the RAS and ITS societies, serving as AE for ITSC, IV, IROS, and other conferences. C. Premebida has been collaborating in many national (e.g., VESTA, AgriBotics, AGVPosys, InGestAlgae, iProMo, AI+Green, PDCS, EVSIM, PMIT, MTDTS) and international projects (e.g., GreenBotics as Coordinator, XPro, AutoCITS where he led the WP4, COST Safe2Wheeler as MC member) in the areas of robotics, AI/ML, autonomous systems. Recently, he is the coordinator of a Horizon MSCA-DN project (AIGreenBots 2.4M eur, 7 partners from 5 countries), is PI of the FCT project GreenBotics (ranked in 1st by the respective evaluation panel), PI of the XPro bilateral collaboration project (FCT-DAAD Germany). C. Premebida has published more than 80 peer-reviewed papers, attracting over 3.8K citations, and h-index = 30 and i10-index=53.</p> <p><a href="https://scholar.google.com/citations?user=RuHUvNMAAAAJ&amp;hl=en">https://scholar.google.com/citations?user=RuHUvNMAAAAJ&amp;hl=en</a></p>	
<p>Luís Garrote is a postdoctoral researcher at the University of Coimbra and at the Institute of Systems and Robotics (ISR-UC). He obtained his PhD in Electrical and Computer Engineering from the University of Coimbra in 2021. His research focuses on motion planning, adaptive planning, multimodal perception, bio-signal classification, and human-robot interaction. Garrote has contributed to multiple funded research projects in deep learning/robotics/AI, including NewGenVIP, GreenAuto, GreenBotics, LANDMARK, MATIS, and XPRO. He has authored more than 50 scientific publications, accumulating more than 1200 citations. He was one of the program chairs of the IEEE International Conference on Autonomous Robot Systems and Competition (ICARSC2024) and has been an active member of the Program Committees of the following conferences: SeGAH (since 2023), ROBOT (since 2023), ICARSC (since 2023) and ICINCO2024.</p> <p><a href="https://scholar.google.com/citations?user=8JqzcUoAAAAJ&amp;hl=en">https://scholar.google.com/citations?user=8JqzcUoAAAAJ&amp;hl=en</a></p>	

Shuoyuan Xu is a Research Associate in Mobile Robotics at Loughborough University, where his research focuses on SLAM, sensor fusion, semantic perception, and autonomous navigation. His current work centres on developing perception and localisation methods for agricultural robots operating in challenging polytunnel and orchard environments, with an emphasis on robust and low-cost solutions for real-world deployment. Prior to joining Loughborough, he worked on perception, tracking, and fusion methods for counter UAV systems, and previously held a research position at Cranfield University, where he developed navigation algorithms for autonomous systems in GNSS-challenging environments. He received his PhD in Aerospace Engineering from Cranfield University, with doctoral research on multi-target tracking and sensor networks. His work has been disseminated through peer-reviewed international journals and conferences in the areas of robotics, autonomous navigation, and sensor fusion. His broader academic interests include mobile robotics, field robotics, multi-sensor perception, and intelligent autonomous systems.



Iago Pachêco Gomes is an Assistant Professor in the Department of Computer Science at the Federal University of São Carlos, Sorocaba, São Paulo, Brazil. He received his Ph.D. in Computer Science from the Institute of Mathematics and Computer Sciences at the University of São Paulo (ICMC/USP) in 2024 and his M.Sc. in Computer Science from the same institution in 2019. His research lies at the intersection of robotics, machine learning, and perception systems, with emphasis on autonomous vehicles, multimodal perception, trajectory and behavior prediction, semantic segmentation (2D/3D), sensor fusion, and decision-making under uncertainty. His work combines theoretical modeling, end-to-end systems integration, and experimental validation, with hands-on experience deploying real-time solutions on real vehicles using ROS 1 and ROS 2 architectures. He has published in leading robotics and artificial intelligence venues and has collaborated with industry partners in the development of robust intelligent systems.

