

Special Session Proposal

ICA2S 2026 – International Conference on Advances in Artificial Intelligence for Society

Session Title

Physical AI for Intelligent Robotics: AI in Robotics, Soft Robotics, Smart Actuators, Human Biomechanics, and Safe Autonomous Systems

Session Overview / Scope

Physical AI is an emerging area of research which integrates knowledge and methods from machine perception, machine control, mechanical design, machine learning and human machine interaction.

This session seeks to connect the advances being made in artificial intelligence (AI) theory with the practical needs of the development of physical robots.

Robotic systems require safe, robust, interpretable and adaptable operation in order to interact safely with people and operate effectively in uncertain and changing physical environments.

Original research contributions are invited in all areas including : AI driven robotics; Soft robotics; Intelligent actuators; Rehabilitation robotics; Wearable sensors for human biomechanic monitoring; Autonomous systems; Physics informed learning; World modeling for embodied agents; Safe foundation models for physical systems; Interdisciplinary approaches combining: Machine learning and robotics; Mechanical engineering; Biomedical engineering; Human centred computing.

Emphasis will be given to papers demonstrating inter-disciplinary work across these fields aimed at solving real world problems facing humanity.

Goals of this session include:

- Provide a forum for researchers working at the interface of AI and physical systems
Promote the use of safe, interpretable, and deployable AI for both robotics and autonomous vehicles
- Encourage research into the use of soft robotics for assistive technologies and human biomechanics
- Foster strong collaborations between academics and industry partners involved in developing next generation intelligent physical systems
- Identify new directions of embodied intelligence and Physical AI for society

ICA2S 2026 shares a similar goal through providing opportunities to advance impactful AI-based solutions in healthcare, robotics, industrial automation, and human wellness.

Organizers Details

Dr. Vishwanath Bijalwan

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Short Biography

Dr. Vishwanath Bijalwan is an Associate Professor of Computer Science at Amity University Punjab, India, with over 14 years of teaching experience. He is an accomplished researcher in computer vision, soft robotics, deep learning, and signal processing, with 26 SCI-indexed publications. During 2022–23, he served as a Postdoctoral Fellow at the ICRS Robotics Lab, **Hanbat National University, Daejeon, South Korea**. He is a recipient of the prestigious **DAAD AI NET (Artificial Intelligence Network) Fellowship (04/2024)**. Dr. Bijalwan is a Senior Member of IEEE, serves on the editorial boards of several Q1 journals, and has received multiple honors, including the Uttarakhand State Government Excellence Award for Research (2021). His current research focuses on developing practical, deployable AI-driven algorithms for real-world sensing and analytics, particularly in machine learning and timeseries/signal analysis. Through this special session, he aims to bring together interdisciplinary contributions that combine robust biomedical signal processing with AI to enable reliable wearable sensing and impactful digital health solutions.

Dr. Ravi Kumar Mandava

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Short Biography

Dr. Ravi Kumar Mandava is an Assistant Professor (Grade-I) in the Department of Mechanical Engineering at IIITDM Kurnool. He completed his Ph.D. in Robotics from the Indian Institute of Technology Bhubaneswar. His academic expertise spans Robotics, Soft Computing, Manufacturing, and Human-Robot Interaction.

Dr. Mandava has led several funded research projects, including the design and development of autonomous systems such as coconut harvesting robots and automated rainwater samplers. He holds multiple patents related to robotic devices and prosthetics, with several international publications in top-tier SCI journals.

With years of professional experience, Dr. Mandava has worked at renowned institutions such as Maulana Azad National Institute of Technology Bhopal and Vignan's Foundation for Science, Technology, and Research, Guntur. He is passionate about shaping the future of robotics through teaching and research, with a focus on safe and sustainable autonomous systems.

Dr. Vijay Bhaskar Semwal

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Short Biography

Dr. Vijay Bhaskar Semwal is working as an Assistant professor in the Dept. of Computer Science and Engineering, Maulana Azad National Institute of Technology, Bhopal (MANIT Bhopal) since February 2019. He has also worked with NIT Rourkela, IIIT Dharwad and NIT Jamshedpur as Assistant Professor prior to join NIT Bhopal. He is having more than 7 years of teaching & research experience. He has earned his doctorate degree in Robotics & AI from IIIT Allahabad, Prayagraj in year 2017, M.Tech. Wireless Communication and Computing from IIIT Allahabad in 2010 and B.Tech. (IT) from College of Engineering Roorkee, Uttarakhand (2008). His research includes Human robot interaction, IoT, wearable sensor based health monitoring system, Bipedal Robotics, Gait Analysis and synthesis, Artificial Intelligence, algorithm prospective of machine learning and Theoretical Computer Science. He has published more than 50 research papers in SCOPUS/SCI indexed journals and International Conferences. He is an active reviewer of many Elsevier, IEEE and Springer journals/conferences. He has organized/conducted more than 10 STTPs/workshops and 3 international conferences. He has been awarded Early Career Research Award /Grant (ECRA) of 25 lakhs by DST-SERB, government of India in 2019. He is also a senior member of IEEE, International Association of Engineers (IAENG), Indian Academy of Neuroscience (IAN), and Soft computing Research society (SCRS) professional bodies. He has completed 03 research projects of 50 lakhs, funded by Science and Engineering Research Board (SERB), Govt. of India, competitive research of Technical Education Quality Improvement Program (TEQIP-III) by Uttarakhand Technical University Dehradun, and SEED Grant by MANIT Bhopal. Currently, He is supervising 2 externally funded project of more than 10 million rupees, sponsored by HEFA, ministry of education, and MPCST, Govt. Of M.P. He has delivered more than 50 invited/expert talks on various platforms. He has also visited various foreign countries Japan, Singapore, Bangladesh, South Korea and Nepal to present his research work and for international research collabration. Currently he is supervising 5 Ph.D scholars.

Submission Deadline

June 20, 2026