Cobots and Industrial Robots[1⋆]

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Abstract

International Symposium & Workshop on Cobots and Industrial Robots **(**CIR-2024) served as platform for companies, researchers, and professionals worldwide to exhibit their latest advancements, innovations, and products in the field of collaborative robots (cobots) and industrial robots. Attendees had the opportunity to explore state-of-the-art technologies, engage with industry experts, and gain valuable insights into the evolving landscape of automation and robotics across various sectors. In parallel, the SMARTINDUSTRY-2024 conference offered a rich program of keynote speeches, panel discussions, and presentations addressing critical topics in smart automation, robotics, and the future of industry, providing a comprehensive understanding of the trends and innovations shaping the future. The event delved into the implementation of smart manufacturing methods, discussing both the advantages and challenges faced by modern industries. Key topics included the challenges of large action models and fully autonomous generative AI, highlighting advancements and the potential of AI in autonomous systems. Space robotics, particularly moon exploration, were explored, showcasing the latest innovations in extraterrestrial automation. High-fidelity robotics simulations were discussed, emphasizing the importance of accurate modeling in robotic system development. Additionally, the use of robotics in characterizing radioactive contamination under post-accident conditions at Unit 4 of the Chornobyl NPP was highlighted. IT solutions in Ukraine and Europe showcased demining robot dogs (Unitree), demonstrating the application of robotics in humanitarian demining operations. An overview of robotics prototypes highlighted contributions to robotic product design and development. Presentations covered real-time simulation of arm and hand dynamics using artificial neural networks (ANN) and IoT, discussing pitfalls and lessons learned. The simulation and optimization of automated warehouses based on FlexSim provided insights into improving efficiency in warehousing. Further analysis addressed drones and AI in special operations, focusing on current trends and future directions. A unique perspective on surgical robots and their integration into personal spaces was also presented. The symposium concluded with a session on bridging the gap between human-in-the-loop control and machine learning for enhanced robot performance. This symposium provided an invaluable opportunity for professionals and enthusiasts to learn about the latest advancements, share knowledge, and network with industry leaders in the field of cobots and industrial robots., share knowledge, and network with industry leaders in the field of cobots and industrial robots

Keywords

Space robotics, simulation, AI, autonomous systems, smart automation

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