

SMC eNewsletter's Student Corner Column (June 2024 Issue)

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In this issue of the Student Corner Column, we interview Rakesh Chandra Joshi, co-author of the paper "AI-SenseVision: A Low-Cost Artificial-Intelligence-Based Robust and Real-Time Assistance for Visually Impaired People" published in the IEEE Transactions of Human-Machine Systems (Vol. 54, No. 3, June 2024).

1. Please tell us a bit about your background and your research area.

I am currently a research scholar focusing on developing assistive technologies. My research area includes the integration of artificial intelligence, computer vision, and sensor-based technologies to create innovative solutions that enhance the quality of life for individuals. I have a strong background in AI-driven systems, having worked on various projects that involve deep learning, object detection, and real-time data processing.

2. How did you become interested in your field?

My interest in assistive technology stemmed from a desire to make a tangible difference in people's lives. After my postgraduate studies, I was involved in a project that aimed to develop affordable tools for people with disabilities. This experience sparked my passion for using technology to solve real-world problems and led me to specialize in creating AI-based solutions for the visually impaired.

3. What motivated you to join the IEEE SMC Society?

Joining the IEEE SMC Society was motivated by my aspiration to be part of a vibrant community of researchers and professionals dedicated to advancing the field of systems, man, and cybernetics. The society's commitment to fostering innovation and collaboration aligns with my own research goals, and I was eager to contribute to and learn from a network of like-minded individuals who are at the forefront of technological advancements.

4. What motivated you to publish in the IEEE Transactions on Human-Machine Systems?

Publishing in the IEEE Transactions on Human-Machine Systems was driven by the journal's reputation for high-impact research and its focus on the intersection of humans and technology. I believed that my work on AI-SenseVision, which combines deep learning and sensor technologies to assist visually impaired individuals, would be a valuable addition to the journal's portfolio. The rigorous peer-review process and the broad readership of the journal also ensured that my research would reach and benefit a wide audience.

5. What is the main innovation in your paper and its importance to IEEE Transactions on HMS?

The main innovation in our paper is the development of AI-SenseVision, a novel, low-cost, portable assistive device that leverages deep learning and sensor fusion to provide real-time auditory feedback to visually impaired users. The device's ability to accurately detect and identify objects and obstacles in various environments, combined with its user-friendly design, sets it apart from existing solutions. This innovation is significant for the IEEE Transactions on Human-Machine Systems as it exemplifies the practical application of AI and machine learning in enhancing human-machine interaction, particularly for individuals with disabilities. By addressing the needs of visually impaired people, our research contributes to the broader goal of creating inclusive and accessible technologies.

6. Where would you see yourself in 5-years' time career wise?

In five years, I envision myself continuing to advance in the field of AI-based assistive technologies, working as a lead researcher or a faculty member at a prestigious institution. I aim to expand my research to develop more sophisticated AI-driven solutions that cater to a wider range of disabilities. Additionally, I aspire to mentor young researchers and contribute to the academic community through teaching and collaborative projects. My goal is to bridge the gap between cutting-edge research and practical applications, ensuring that technological advancements reach those who need them the most.

Biography:



Rakesh Chandra Joshi is currently pursuing his doctoral degree in Computer Science and Engineering at the Centre for Advanced Studies, Dr. A. P. J. Abdul Kalam Technical University, Lucknow, India. He has recently joined as an Assistant Professor at Amity University, Noida, India. He completed his Master's in Electronics and Communication Engineering from G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, India, in 2018. He has been working in the domain of Artificial Intelligence for several years, addressing various challenges and exploring novel solutions. He is proficient in managing GPU servers and Docker container-level operations for AI projects. He specializes in developing AI-based hardware for edge computing, including Raspberry Pi and NVIDIA Jetson Nano. He has published multiple SCI-indexed papers and holds two Indian Patents in AI. He has made significant contributions to medical imaging, ecological informatics, assistive devices, and other AI-based interdisciplinary applications. He is qualified in GATE and UGC-NET examinations and has received prestigious fellowships such as GATE (Govt. of India), DST-JRF, and DDQIP doctoral fellowship.