

Dr Satheeshkumar Veeramani

Research Associate – Robotics

Cooper Group, The University of Liverpool

Liverpool, United Kingdom

+44 7776690724, Satheeshkumar_v@outlook.com

LINKS	Google Scholar , GitHub , LinkedIn , ResearchGate
PROFILE	<p>An aspiring researcher interested in exploring the potential of Robotics & AI. I am currently seeking lectureship positions in academia.</p> <p>Research Interests: <i>Robotics and AI in safety-critical self-driving labs, Manufacturing, and extreme environments. Embodied-AI for Robot task planning and execution, Multi-modal perception and Perception-Action Coupling of mobile robot manipulators, Multi-robot & Human-robot coordination/interaction.</i></p> <p>KUKA Robotics UK trained & certified developer.</p> <p>11 years of research and teaching experience in Intelligent Robotics and Mechatronics. I currently hold UK Settlement/ILR status.</p>
EMPLOYMENT HISTORY	
Feb. 2023 - Present	<p>Research Associate - Robotics, Cooper Group, Materials Innovation Factory, University of Liverpool, United Kingdom.</p> <p>Embodied-AI (EAI) driven Multi-modal perception, EAI driven Perception-Action coupling, Self-driving labs.</p>
Dec. 2021 – Jan 2023	<p>Research Associate - Robotics, Centre for IROHMS, Cardiff University, United Kingdom.</p> <p>To conduct research on Human-Robot Interaction & Multi-Robot coordination, Lab Manager Human Robot Interaction Laboratory, Assisting PhDs, and Robot procurement.</p>
Jan. 2018 – Nov. 2021	<p>Research Fellow – Robotics at Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram, India</p> <p>Reinforcement Learning based Control and Operation of Agents in a Multi-Agent Fixturing System with Swarm Control.</p> <p><i>Funded by:</i> PMAR robotics research lab, University of Genova, Italy</p> <p>Half-time teaching – Robotics and AI related courses.</p> <p><i>Funded by:</i> Ministry of Education, Govt. of India</p>
May 2016 – Dec. 2017	<p>Assistant Professor at Department of Mechatronics, Bannari amman Institute of Technology, India</p>
Jun. 2014 – May 2016	<p>Assistant Professor at Department of Mechatronics, Sri Krishna College of Engineering and Technology, India</p>
EDUCATION	
Jan. 2018 – Sept. 2021	<p>PhD, Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram, India</p> <p><i>Thesis title:</i> Constrained locomotion and coordinated multi-robot path planning of SwarmItFIX intelligent fixtures.</p> <p>Fellowship: HTRA, Ministry of Education, Govt. of India</p> <p><i>Responsibilities:</i> Half-time teaching - Design and analysis of mechanisms, Kinematics and dynamics, Mechatronics System Design</p>
Jul. 2012 – May 2014	<p>M.Tech. – Robotics, SRM Institute of Science & Technology (Deemed University), India</p> <p><i>Thesis title:</i> Design and development of alive human detection robot for search and rescue missions using image acquisition and processing</p>
Aug. 2008 – Apr. 2012	<p>B.E. – Mechatronics, Anna University, India</p>
OTHER QUALIFICATIONS	
Sep. 2024 – Jan. 2025	<p>AFHEA (Teaching Associate Fellowship of the Higher Education Academy) – The Academy, University of Liverpool, United Kingdom.</p>
September 2023	<p>LBR iiwa Commissioning and Programming, KUKA Robotics UK Limited, Birmingham, United Kingdom</p>

KEY RESEARCH PUBLICATIONS				
SCI indexed articles	Veeramani Satheeshkumar , Sreekumar Muthuswamy, Keerthi Sagar, and Matteo Zoppi, Artificial intelligence planners for multi-head agent path planning of SwarmItFIX agents. <i>Journal of Intelligent Manufacturing</i> (2020). (SCI, Q1, IF 6.49) https://doi.org/10.1007/s10845-019-01479-8			
	Veeramani S , Muthuswamy S, Hybrid type multi-robot path planning of a serial manipulator and SwarmItFIX robots in sheet metal milling process. <i>Complex and intelligent Systems</i> (2021) (SCI, Q1, IF 6.7) https://doi.org/10.1007/s40747-021-00499-3			
	Veeramani S , Muthuswamy S, Reinforcement learning based path planning of multiple agents of SwarmItFIX robot for fixturing operation in sheet metal milling process. <i>Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture</i> (2022) (SCI, Q1, IF 2.6) https://doi.org/10.1177%2F09544054221080031			
	F. Munguia-Galeano, S. Veeramani , J. D. Hernández, Q. Wen and Z. Ji, "Affordance-Based Human-Robot Interaction with Reinforcement Learning," in <i>IEEE Access</i> , (2023), (SCI, Q1, IF 3.9) https://doi.org/10.1109/ACCESS.2023.3262450			
Book chapters and Conference presentations	Veeramani S , Muthuswamy S, Sagar, K, and Zoppi, M, Multi-head agent Path Planning of SwarmItFIX Agents: A Markov Decision Process Approach, In: <i>Uhl T. (eds) Advances in Mechanism and Machine Science, Springer</i> , 2019. (Scopus) https://doi.org/10.1007/978-3-030-20131-9_221			
	Veeramani S and Muthuswamy S, Reinforcement Learning based Path Planning of the Mobile Agents with Constrained Locomotion for the Material Handling Applications, <i>IEEE 4th Conference on Information & Communication Technology (CICT)</i> , 2020. (Scopus) https://doi.org/10.1109/CICT51604.2020.9311923			
	Veeramani S , Muthuswamy S and Setchi R, Coordination and path planning of a heterogeneous multi-robot system for sheet metal drilling, <i>26th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems, Procedia Computer science</i> , 2022, Verona, Italy. (Scopus) https://doi.org/10.1016/j.procs.2022.09.292			
ACCEPTED PAPERS	Satheeshkumar Veeramani* , Hatem FakhruLdeen*, Cooper A et. al et al. , Multimodal Behaviour Trees for Robotic Task Automation in Life Science laboratories, <i>ICRA 2025 (* First author Equal Contribution)</i>			
	Zhengxue Zhou, Satheeshkumar Veeramani , Cooper A et. al et al. , GenCo: A Dual LVLM Generate-Correct Framework for Adaptive Peg-in-Hole Robotics, <i>ICRA 2025</i>			
	Munguia F, Lousi Longley, Veeramani S , Cooper A et. al. An Open-source Robotic Capping Machine Suitable for Confined Spaces, <i>TAROS 2025</i>			
PAPERS SUBMITTED / UNDER PROGRESS	Brass E, Veeramani S , Cooper A, et. al. <i>A mobile robot process chemist. Science / AAAS Paper</i>			
	Veeramani S , Zhou Z, FakhruLdeen H, Cooper A et. al. <i>Multimodal perception for Mobile Robot Chemists to handle workflow anomalies. (Paper correction on progress – Robotics and Automation Letters)</i>			
	Zhou Z, Veeramani S , Cooper A et. al LIRA: Localization, Inspection, and Reasoning Module for Autonomous Workflows in Self-Driving Labs. (Submitted to <i>nature portfolio Self-driving labs and automation software for chemistry and materials science</i>) https://doi.org/10.21203/rs.3.rs-6148048/v1			
	Kourosh Darvish et. al. MATTERIX: Towards a Digital Twin for Robotics-Assisted Chemistry Lab Automation. (Submitted to <i>nature computational intelligence</i>)			
	Munguia F, Veeramani S , Cooper A et. al. Chemist Eye: A VLM-Powered System for Robot Decision-Making Driven by Personal Protective Equipment Monitoring and Accident Detection in Self-Driving Labs (<i>Paper drafting on progress</i>)			
PATENTS & DESIGN APPLICATIONS	<i>Type:</i> Design Application <i>Title:</i> Design fabrication and development of an arenas for mobile robot competition. <i>Status:</i> Case Is Under Hearing			
HARDWARE SKILLS - ROBOTICS	Kuka KMR, YouBot, iiwa		ABBIRB120, 1410	ABB Yumi
	Franka Emica Panda, UR5		Care-O-bot4 (humanoid)	MCI Delta Robot
OTHER KEY EQUIPMENTS	Vicon motion tracking system	Tobii glasses, Touch haptic device	Tactile and FT sensors	RealSense depth camera
SOFTWARE SKILLS - ROBOTICS	ROS, & ROS2 Python, MATLAB, Robot Studio (RAPID) CoppeliaSim, Webots & IsaacSim GitHub, Conda & Robostack		Linux system (Ubuntu) Kuka Sunrise 1.16 (JAVA) SolidWorks, Fusion 360 & Inventor PLC Programming	
ROBOTICS COURSES & TRAINING				
Dec. 2022	Ros2 for Beginners , Udemy (Online)			

July 2021	Fundamentals of Cobotics, IIT Delhi (Online)				
Sep. 2020	Deep Learning with MATLAB, MathWorks (Online)				
Sep. 2020	Machine Learning with MATLAB, MathWorks (Online)				
Sep 2019	Fundamentals of Reinforcement learning, University of Alberta (Online)				
Jul. 2015	AUTONAVx: Autonomous Navigation for Flying Robots, Technische Universität München				
KEY INVITED LECTURES	<p>Handled a technical session on Hardware Integration and Simulation using ROS in the two-week Hybrid FDP on “AI & ROS for Robotics: Theory and Practice” organised by IIITDM. June 2024</p> <p>Handled a technical session on Tools for Hardware Integration and AI Implementation in Robotics in the ATAL two-week Hybrid FDP on” COLLABORATIVE ROBOTS AND DRONES” organised by Amrita Vishwa Vidyapeetham, Chennai. Dec. 2022</p> <p>Handled a technical session on Industrial Automation & PLC in the one-week online STC on “Integration of Robots, IoT Devices and Computer Vision in Smart Manufacturing: Fundamentals” organised by IIITDM Kancheepuram. Feb. 2022</p> <p>Handled practice sessions on Robotics Systems Toolbox (Trajectory planning), Coppelia sim in various workshops and STTPs during my PhD.</p>				
ROBOTICS EVENTS - ORGANIZED	<p>Facilitator, “Robot Chemist Demonstration at British Science Festival, Liverpool, UK. Sept. 2025</p> <p>Facilitator, “IROHMS – Future Leaders Academy”, a research colloquium on AI, Robotics and Human-Machine systems, Cardiff University, UK. June 2022</p> <p>Student organizer for the international conference on Robotics and Smart Manufacturing (RoSma 2018) held at IIITDM Kancheepuram</p> <p>Student coordinator for the PhD colloquium, international conference on Advances in Robotics (AIR 2019) held at IIT Madras</p> <p>Student organizer for the International Student Robot Competition (ISRC 2018) held at IIITDM Kancheepuram</p>				
SUPERVISION & ASSESSMENT	<p>During my postdoctoral tenure at Cardiff University in the department of Mechanical Engineering, I co-supervised PhDs and Masters’ students in the execution of their project/research. The work of PhD student has also been published as a journal article titled “<i>Affordance-Based Human-Robot Interaction with Reinforcement Learning</i>”.</p> <p>At present, in my capacity at University of Liverpool, I am actively contributing to their thesis work of two PhD students, on the topic of “<i>A mobile robot process chemist</i>”. I have also involved in supervising two masters’ students for their thesis and the work is now presented in ICRA 2025. Currently I’m supervising one masters (MSc Digital Chemistry: AI, ML & Robotics) student</p> <p>Additionally, I have a track record of mentoring undergraduate and master's students at IIITDM, guiding them through their final year projects and thesis. I also have the experience of mentoring students on academics and personal situations as an advisor.</p>				
REVIEWER EXPERIENCE	<ul style="list-style-type: none">• IEEE Transactions on Automation Science and Engineering• Journal of Intelligent service robots, Springer• Digital Discovery, Industrial Robot, IEEE Access• ICRA & IROS.• 26th International Conference on KES, Verona Italy.• International Conference on Advances in Robotics, 2023 held at IIT Ropar				
LANGUAGE SKILLS	<table><tr><td>Tamil</td><td>Native Speaker</td><td>English</td><td>Very good command</td></tr></table>	Tamil	Native Speaker	English	Very good command
Tamil	Native Speaker	English	Very good command		
HOBBIES	Reading fiction books, Jogging,				
INTERNSHIPS					
Jan. 2012 – Mar. 2012	Internship, Steel Authority of India Ltd. (Govt. of India) Title: Design and adaption of exit crop shear in slitting line.				
Apr. 2011 – May 2011	Summer internship, Integral Coach Factory. (Govt. of India) Investigated various manufacturing processes (Raw material to Job) involved in building various Indian train coaches				
REFERENCES	<p>Prof. Andy Cooper, Academic Director of the Materials Innovation Factory and Director of Leverhulme Research Centre for Functional Materials Design, The University of Liverpool, United Kingdom. aicgroup@liverpool.ac.uk</p> <p>Dr Gabriella Pizzuto, Assistant professor in Robotics and Chemistry Automation, Department of Computer Science, The University of Liverpool, United Kingdom. Gabriella.Pizzuto@liverpool.ac.uk</p>				