Dr. RADHE SHYAM SHARMA

Assistant Professor
Centre for Artificial Intelligence and Robotics (CAIR)
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ACADEMIC DETAILS

- **PhD** (Electrical Engineering)
  Institute: Indian Institute of Technology (IIT) Kanpur, India, 2020
  CPI: 9 out of 10

- **M.Tech.** (Modelling & Simulation)
  Institute: Defence Institute of Advanced Technology (DIAT) Pune, India, 2013
  Percentage: 75.25

- **B.E.** (Biomedical Engineering)
  Institute: Samrat Ashok Technological Institute (SATI) Vidisha, India, 2007
  Percentage: 74.25

RESEARCH INTERESTS

- Visual Servoing

- Robot Learning

- Autonomous Navigation

- Multi-Robot Systems

PUBLICATIONS & PATENTS

- **Radhe Shyam Sharma**, Arindam Mondal, Laxmidhar Behera, "Tracking Control of Mobile Robots in Formation in the Presence of Disturbances," *IEEE Transactions on Industrial Informatics*, vol. 17, no. 1, pp. 110–123, 2021. PDF Video of the Experiments

- **Radhe Shyam Sharma**, Ranjith Ravindranathan Nair, Pooja Agrawal, Laxmidhar Behera, K. S. Venkatesh, "Robust Hybrid Visual Servoing using Reinforcement Learning and Finite Time Adaptive FOSMC," *IEEE Systems Journal*, vol. 13, no. 3, pp. 3467–3478, 2018. PDF Video of the Experiments

- **Radhe Shyam Sharma**, Santosh Shukla, Laxmidhar Behera, Venkatesh K S, "Position Based Visual Servoing of a Mobile Robot With an Automatic Extrinsic Calibration Scheme," *Robotica*, vol. 38, no. 5, pp. 831–844, 2020. PDF Video of the Experiments

- **Radhe Shyam Sharma**, Santosh Shukla, Hamad Karki, Amit Shukla, Laxmidhar Behera, Venkatesh K S, "DMP Based Trajectory Tracking for a Nonholonomic Mobile Robot With Automatic Goal Adaptation and Obstacle Avoidance," *IEEE International Conference on Robotics and Automation* (`ICRA`), pp. 8613-8619, 2019. PDF Video of the Experiments

- Atulya Shivam Shree, **Radhe Shyam Sharma**, Laxmidhar Behera, K. S. Venkatesh, "Position Based Visual Control of The Hovering Quadcopter," International Conference on Intelligent Human Computer Interaction, pages 15–26. Springer, 2016. PDF Video of the Experiments

- Yogesh Dasgaonkar, **Radhe Shyam Sharma**, "Through the Rubble: Discovering the Invisible," Accepted, IEEE International Conference on Control, Automation, Robotics and Vision (ICARCV) 2024.

- Yogesh Dasgaonkar, **Radhe Shyam Sharma**, Raj Nayan Samant "A Modular Training Approach for Multi-Robot Cooperative Search in Dynamic Environments," Accepted, IEEE Indian Control Conference (ICC), 2024.

- Yogesh Dasgaonkar, **Radhe Shyam Sharma**, "System for Real Time Human Detection and Counting in a Closed Room Environment and a Method Thereof," IN Patent No. 549539, September 3, 2024.

- Yogesh Dasgaonkar, **Radhe Shyam Sharma**, "AI Based Low-Power, Portable, Radiation Safe, CSI Signal Concentrator and 3D Imaging Device for Autonomous Detection and Segmentation of Internal Impurities," Under Review.

AWARDS AND FELLOWSHIPS

- DAAD Postdoc-NeT-AI 4/2021 Fellow

- Travel grant by DAAD to visit several German Research Institutions

- Teaching Excellence Award 2023

- Visiting research scholar at Khalifa University, Abu Dhabi, UAE, Oct - Nov 2018

- Received Institute fellowship for doctoral studies from Indian institute of Technology (IIT) Kanpur, India, Jan 2015 - Dec 2019

- Received GATE scholarship for Master of Technology course from MHRD, Govt of India, Aug 2011- May 2013

PROJECTS/POCs

- Capacity Building for Human Resource Development in Unmanned Aircraft System (Drone and related Technology)
  Ministry of Electronics and Information Technology (MeitY), India

- Towards Industry 5.0 - Design & Development of Drone Intelligence System to Accelerate Human-Robot Collaborative Learning for Heterogeneous Environment, *MeitY*, India

- A Condition Monitoring System With Multi-Agent Mechanism for External Non-contact Smart Inspection of Buried Oil and Gas Pipelines
  The Petroleum Institute (PI), Khalifa University, Abu Dhabi, UAE

- Study on Personal Drone Benefits for Driver Assistance
  Renault Nissan Technology and Business Center India (RNTBCI), Chennai, India

- Robotics and Automation in Agriculture
  Ministry of Electronics and Information Technology, India

INDUSTRIAL, RESEARCH AND TEACHING EXPERIENCE

- Assistant Professor
  Centre for Artificial Intelligence and Robotics
  IIT Mandi
  From 26-07-2022 to Till Date

- Autonomy Senior Engineer
  Integrated Components and Solutions Division
  Caterpillar
  From 05-07-2021 to 25-07-2022

- Project Post-Doctoral Fellow
  IIT Kanpur, India
  From 16-04-2021 to 30-06-2021

- Project Scientist
  IIT Kanpur, India
  From 16-06-2020 to 15-04-2021

- Research Associate
  IIT Kanpur, India
  From 01-01-2020 to 31-05-2020

- Faculty
  NIT Raipur, India
  From 15-07-2013 to 31-05-2014

- Lecturer
  SGSITS Indore, India
  From 15-07-2008 to 11-08-2011

- Lecturer
  SATI Vidisha, India
  From 11-09-2007 to 14-07-2008

COURSE TAUGHT

- AR504 - Robot Programming Modeling and Simulation, IIT Mandi

- AR514 - Vision and Learning Based Control, IIT Mandi

- IC102P - Foundation of Design Practicum, IIT Mandi

- EE 301P - Control Systems Lab, IIT Mandi

- DP503P - Basic Mechanical and Electrical Workshop, IIT Mandi

- Tutor for Introduction to Electronics (ESc201A), 2018-19-II Semester, & 2019-20-I Semester, IIT Kanpur

- Tutor for Introduction to Electronics (ESc201A), 2019-20-II Semester, IIT Kanpur

TALKS DELIVERED

- Invited talk during FDP on Robot Programming with ROS at SRM Institute of Science and Technology, Katankulathur, Tamil Nadu, July 19, 2024.

- Invited talk during STTP (Short Term Training Program) on AI & ROS for Robotics at IIITDM Kancheepuram, Chennai, June 11, 2024.

- Invited talk in a short-term course on "Recent Trends in Computer Vision, Artificial Intelligence & Robotics, at NIT Delhi, March 24, 2023.

- Invited talk on "Smart Control Strategies for Autonomous Navigation of Mobile Robots" at TU Darmstadt, Germany, November 28, 2022.

- Invited talk in a workshop on "Integration of Digital Technologies in Disaster Preparedness", at Kerala University of Digital Sciences, Innovation and Technology, Trivandrum, Kerala, May 20 2022.

- Invited talk in TEQIP -III Sponsored One Day Workshop on Mathematics for Machine Learning, Coimbatore Institute of Technology, Coimbatore, March 20, 2021

- Two Invited Talks on Robot Operating System and its uses in robotics simulations in the training program on "Future Skill training on Robotics and Automation", SGSITS Indore, Sept 14 2020, and Sept 17, 2020

- Two Invited Talks in the AICTE Sponsored Two Week Faculty Development Programme on "Robotics and Autonomous Systems" PSG College of Technology, Coimbatore, Nov 23, 2020, and Dec 14, 2020

PROFESSIONAL ASSOCIATIONS

- Associate Editor, ICSR-24 (International Conference on Social Robotics, 2024)

- Reviewer, IEEE Robotics and Automation Letters

- Reviewer, IEEE Transactions on Mechatronics

- Reviewer, IEEE Systems Journal

- Reviewer, IEEE Transactions on Instrumentation and Measurement

- Reviewer for IEEE RO-MAN (Robot and Human Interactive Communication)

- Reviewer, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

- Student member of IEEE

- Member of IEEE Robotics and Automation Society

- Visiting research scholar in the Department of Mechanical Engineering at Khalifa University, Abu Dhabi, UAE

- Speaker, GIAN (Global Initiative of Academic Networks) course on Selected Topics in Internet of Things, Jan 2018

POSITIONS OF RESPONSIBILITY

- Co-Chief Investigator, Capacity building for human resource development in UAS

- Chair, Centre Perception & Placement Committee

- CCM Chair

- Robotics Coordinator

- Co-advisor, Science and Technology Council

- Warden

BOOTCAMPs/Workshop/TRAINING PROGRAMS ORGANIZED

- Conducted a workshop on Robot Programming With ROS at Centra University Jammu, August 29, 2024.

- Course Coordinator for Bootcamp on Drone Technology funded by the Ministry of Electronics and Information Technology (MeitY), July 26 - July 31, 2023.

- Course Coordinator for Faculty Development Program (FDP) funded by Directorate of Technical Education, Vocational and Industrial Training (DTE) Sundernager, Himachal Pradesh, August 28 - September 2, 2023.

- Course Coordinator for a Short-term course (STC) on Robotics, funded by Directorate of Technical Education, Vocational and Industrial Training (DTE) Sundernager, Himachal Pradesh, September 11 - September 16, 2023.

- Course Coordinator for a Short-term course (STC) on Robotics, funded by Himachal Pradesh Kaushal Vikas Nigam(HPKVN), October 30 - November 29, 2023.

- Course Coordinator for Bootcamp on Drone Technology funded by the Ministry of Electronics and Information Technology (MeitY), December 26 - December 30, 2023.

- Course Coordinator for Bootcamp on Drone Technology funded by the Ministry of Electronics and Information Technology (MeitY), June 7 - June 12, 2024.

PARTICIPATIONS IN CONSORTIUM/Workshop/CONCLAVE/TRAINING PROGRAMS

- Workshop on Academic Leadership and Excellence, *Palampur, July 28 - July 29, 2024*

- Drone Conclave, *Agricultural University, Palampur, July 4 - July 5, 2023*

- DRDO - Academia Conclave, *IIT Jodhpur, May 25 - May 26, 2023*

- Meity Consortium - National Programme on Perception and Cognitive Engineering, *Ministry of Defence, DRDO Bhavan, New Delhi, May 25 - May 26, 2023*

- Faculty Updation Program: - "Introduction to Navigation, Guidance and Control of Unmanned Systems", *IIT Bombay, March 13 - March 18, 2023*

- Training Program: - "Do Drone", *IISc Bengaluru, Nov 2022*

- Connected Vehicle 2022, Conference and Exhibition at *Bengaluru, May 2022*

- National workshop on "SVM in pattern recognition & its applications in biological sciences" at *NIT Raipur, Jan 2014*

- Faculty training/orientation program at *SGSITS Indore Dec 2008*

- Major training on "Imaging systems" at *AFMC* (`Armed Forces Medical College`) *Pune, Jun-Jul 2006*

- Minor training on "Biomedical Equipments" at *MH* (`Military Hospital`) *Gwalior, Jun-Jul 2005*

TECHNICAL SKILLS

- Languages: MatLab, and Python

- Operating Systems: Linux, ROS (`Robot Operating System`)

- Others: PyBullet, LaTeX

- Hands-on experience with `unmanned ground` and `aerial vehicles` – Pioneer P3-DX, Guardian mobile platform, Segway RMP, Nayan, and AscTec Hummingbird.
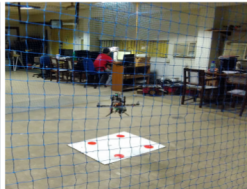

(a) Pioneer P3-DX   (b) Guardian robot   (c) Segway RMP   (d) Nayan   (e) AscTec Hummingbird

TREKKING AND CAMPING EXPERIENCE

- Gaumukh Tapovan Trek

- Dodital Trek

- NSS CAMP

INTEREST AND HOBBIES

- Adventure trekking

- Robotics

- Horse riding