Date: 03.11.2025

Call for Admissions in Ph.D, Dual Degree & M.Tech (Research) at Centre for AI & Robotics, IIT Mandi

Centre for Artificial Intelligence & Robotics, IIT Mandi is inviting applications for admission in the Ph.D., Dual Degree & M.Tech (Research) program in a variety of Robotics-related disciplines and Interdisciplinary areas under Regular/Part-time mode.

Available research areas:

Broad Research Area	Specific Areas (but not limited to)
Drone robotics	● Prescribed-Time Adaptive Control of Quadrotor Biplane VTOL Aircraft: Modeling, Control Design, and Hardware Realization ● Resilient Control of UAV Swarms with Nonlinear Control, and Gimbal-Stabilized Payloads ● Resilient Micro/Nano Drone Swarms through Integrated VLSI Sensing and Nonlinear Control ● Drone navigation in GPS denied environment: Deep Learning Computer Vision based Perception, Communication and Navigation ● Drone Development for High Payload capacity at High Altitude ● Search and Rescue with Intelligent O-RAN Networking and Multi-Agent Autonomy (UAVs & UGVs) ● Swarm Drones: Communication, Collaboration and Formation ● Drone based Aerial Manipulation of Industrial Structures ● Drone and Robotics-Policy Frameworks, Ethics and Governance of Autonomous Systems, Innovation, Industry, and Technology Policy in Drones and Robotics, Socioeconomic and Security Implications. ● Pothole Detection, Localization, and Repair Using UAV–AGV Coordination ● DMP-Based Cooperative Path Planning for a Swarm of Drones

Mobile robotics	• Co-Design of Adaptive Regenerative MIMO Antenna and Control Systems for Energy-Harvesting Mobile Robots • Prescribed-Time Adaptive Zero-Overshoot Anti-Sway Control of 7-DOF Double-Pendulum Overhead Cranes • Multi-agent (UAVs & UGVs) Collaboration in Mission Critical Tasks such as Disaster, Defence and Industrial Warehouse
Underwater robotics	• Aero-amphibious Drone for underwater and aerial surveillance: Underwater computer vision and structure monitoring • Adaptive Control of a torpedo-shaped Autonomous Underwater Vehicles (AUV) with 2 horizontal and 1 vertical thruster controlling surge, yaw, and heave.
Healthcare robotics	• Image-guided diagnosis and interventions • AI-based medical imaging (Ultrasound, CT, MRI) analysis • Learning-based control for surgical and diagnostic robots • Adaptive control for physical human-robot interaction • Teleoperation of slave robot with transparency, efficiency and security • Adaptive-Controlled Miniaturized Multipurpose Surgical Robotic System with AI and Secure Portable Operating Console
Digital Twin	• Drone-Assisted Real-Time Crop and Habitat Monitoring in Mountainous Regions • Digital Twin for Estimation of Reactivity in Nuclear Reactors
Robot perception	• Quantum-Inspired Perceptual Decision Dynamics for Robust Micro-Drones
Social robotics	• Socially-interactive robotics for diagnostic imaging • Adaptive Socio-Embodied Robotic Ultrasound Control for Trustworthy AI-Guided Medical Imaging
Humanoid Robotics	• Humanoid Robotics: Modelling, Simulation, Control and Hardware realization of Humanoid Robot • Reinforcement learning based Humanoid Robot's interaction with Physical World (Walking, Running, Jumping)
Deep Learning for Robotics (Physical AI)	• Deep Learning based Unified Perception of Robots of Physical World • Vision-Language-Action model (VLM & VLA) for Manipulators, Mobiles Robots, Drones, and Underwater Robots • Deep Learning based Drone Intelligence for Higher Autonomy and

	Reliability • Resilient Deep Learning Architectures for Fault-Tolerant Robotics
Security of Cyber-Physical Systems (Drones, Mobiles Robots, Underwater Robots)	• Verifiable, Resilient, and Intelligent Transport with Adaptive Security for Autonomous Systems (UAVs and UGVs) • Quantum Communication and security of cyber physical systems • Network Security of Connected Robots (Drones, Mobile Robots) with Blockchain and Advance Cryptography • Angle of Arrival Prediction and Tracking for Energy-Depleted UAVs through Intelligent Reflecting Surface-Aided Integrated Sensing and Communication Networks
Vision & Language Computing	• Generative AI • Computer Vision • VLMs & LLMs • Deep Fake Detection • Multimodal AI Agents • Underwater Imaging • Natural Language Processing • Quantum AI/ML • Augmented Reality (AR) & Virtual Reality (VR)

Eligible Branches:

- Master's / Bachelor's degree in one of the following engineering disciplines: Mechanical / Electrical and Electronics/ Electrical and Communication/ Computer Science / Instrumentation and control / Robotics / Automation / Automobile / Industrial / Aeronautical / Aerospace / Mathematics and Computing
- Bachelor of Science (BS) Degree in Data Science and Applications (only a 4-year BS degree Program is acceptable)

Note to prospective students:

- The degree awarded will be in Robotics: PhD in Robotics or M.Tech (Research) in Robotics or Dual Degree in Robotics.

Minimum Eligibility Criteria for Appearing in Admission Process:

The candidate must fulfill any one of the criteria mentioned below:

For PhD applicants (Full-Time Research Scholars):

Students under this category are entitled to the Scholarship/ Assistantship from Institute / MoE if they qualify for any one of the following criteria.

- Master's degree in Sciences/ Engineering/ Technology with a good academic record
- Bachelor's degree holder in Engineering/ Technology from any CFTIs with a minimum CGPA of 7.5 on a 10.0-point scale. **(UR-7.5 CGPA, OBC-NCL-7.0 CGPA, SC/ST- 6.5**

CGPA)

- Bachelor's degree holder in Engineering/ Technology from any Non CFTIs with at least CGPA of 7.5 on a 10.0-point scale with valid GATE score. **(UR-7.5 CGPA, OBC-NCL-7.0 CGPA, SC/ST- 6.5 CGPA)**

For Masters applicants (Full-Time Research Scholars):

Students under this category are entitled for the Scholarship/ Assistantship from Institute / MoE if they qualify any one of the following criteria.

- Candidates with a Bachelor's Degree in Engineering/Technology or Master's Degree in appropriate Sciences. A valid GATE score is required for admission to the M. Tech (by research) program, and for availing HTRA scholarship.
  1. Upload self-attested documents as a single zip file (Proof of identity (Aadhar card/voter card/PAN card/any other), Class 10th certificate as proof of date of birth, Mark sheets of UG and PG degrees (rank certificate, if any), Qualifying certificate of the GATE/CSIR/UGC/other examination, Caste Certificate.)
  2. To apply for other specific areas not listed above, kindly fill "Others" in the specific area section after selecting the Broad Research Area on the Samarth portal.
- Candidate with B.Tech/BE degree from Centrally Funded Technical Institutes (CFTIs), with a minimum CGPA of 7.5 on a 10.0 point scale (or equivalent). (National Level examinations are waived off for HTRA Scholarship)

Exemptions from mandatory requirements of Valid GATE or National Level examination:

- B.Tech/B.E./B.S. (or equivalent) degree from CFTI (Centrally Funded Technical Institute)/ any of the top 100 institutes according to NIRF ranking (overall category) at the time of application, with CGPA/CPI at least 7.5 (on a scale of 10) or equivalent
- BS-MS/M.Sc/equivalent from IITs, IISERs, IISc, IIMs or any of the top 100 institutes according to NIRF ranking (overall category) at the time of application with a CGPA/CPI of at least 7.5 (on a scale of 10) or equivalent.
- NIRF Ranking (within the top 100) should be in the overall category granted for the year during which admission is sought.
- Any Himachal Pradesh Govt. Institutions/Universities, with CGPA/CPI at least 7.5 (on a scale of 10) or equivalent.

For Dual Degree (M.Tech (R) + Ph.D. applicants (Full-Time Research Scholars):

Students under this category are entitled to the Scholarship/ Assistantship from Institute / MoE if they qualify for any one of the following criteria.

- The candidate must possess BS/BE/B.Tech or M.Sc. or equivalent Degree with a valid GATE Score. **(UR-7.5 CGPA, OBC-NCL-7.0 CGPA, SC/ST- 6.5 CGPA)**
- GATE Score is waived off for candidates having BS/BE/B.Tech degree from CFTI with CGPA >= 8. **(UR-7.5 CGPA, OBC-NCL-7.0 CGPA, SC/ST- 6.5 CGPA)**

Link to the online application:

https://iitmandiadm.samarth.edu.in/admission/index.php/

Application Fee:

Category	Amount in ₹
General/EWS/OBC/OBC(NCL)/Transgender/Foreign Nationals	200
Women/SC/ST/PD	100

Mode of Payment: Online within application form

Important Dates:

Start of online application	07 Nov 2025
Last date for filling the Online Application	28 Nov 2025 (till 5 PM)
Tentative date of Written test/Interview	1st – 2nd week of Dec 2025 (To be announced on the website/email)

Notes:

- The shortlisted candidate will be called for a written test/interview.
- Candidates who have applied in previous rounds will apply through a new email-id.
- Reservation policies as per prevailing GoI rules will be followed. IIT Mandi reserves the right to admit/not-admit for any of the advertised areas, wherever the eligibility for admission for those applying on the basis of B.Tech/B.S. degrees is 7.5 CGPA, to relax the criteria for OBC (NCL): 7.0 CGPA & SC/ST/PwD: 6.5 CGPA.
- For each specialization and program, candidates should submit a separate application with the application fee.
- The decision of the competent authority in all matters relating to the eligibility of the candidate, written test/Interview and admission would be final and binding on all the candidates. In case of any dispute/ambiguity that may occur in the process of admission the decision of the Institute shall be final
- All the details furnished in the online application will be treated as final and no changes shall be entertained. Non submission of valid/required documents and/or incomplete application shall be summarily rejected.
- Industrial or Academic Institute Sponsored /Part-time/Self-sponsored M. Tech (Research)/Ph.D. candidates are not eligible for MHRD/HTRA scholarships.
- Employed candidates seeking admission to M. Tech (Research)/PhD must submit a "No Objection Certificate" from their current employer at the time of interview.
- IIT Mandi reserves the right to recruit/not recruit for any of the advertised areas and apply appropriate criteria for shortlisting candidates.
- It is kindly advised to get in touch with faculty members directly for further information regarding the different research areas and positions available with them listed at https://research.iitmandi.ac.in/cair/faculty.php
- For any problems regarding filling out online applications, please contact it_helpdesk@iitmandi.ac.in
- For any queries related to the admission process you may contact cairoffice@iitmandi.ac.in, Ph: 01905-267791

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