Centre for Artificial Intelligence and Robotics

Call for M. Tech (by Research) / Ph.D. / Dual Degree Program (January 2027)

IIT Mandi invites applications from bright and dedicated young scholars interested in joining the full-time or part-time **M. Tech (by Research)/Ph.D./Dual Degree** program in the **Centre for Artificial Intelligence and Robotics (CAIR)**. For this purpose, CAIR seeks applications for the Master of Technology (M. Tech) by Research, Doctor of Philosophy (Ph.D.), and Dual Degree (M.Tech + Ph.D.) programs in the following areas of artificial intelligence and robotics:

Specializations under CAIR	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. • Drone-Based Video Surveillance
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 • Vision and Learning-Based Control of Mobile Robots
Underwater robotics	• Aero-amphibious Drone for underwater and aerial surveillance: Underwater computer vision and structure monitoring • Adaptive Control of a torpedo-shaped Autonomous Underwater Vehicle (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

	• Robotic device development for healthcare procedures • Advanced learning-based control for surgical and diagnostic robots (VLAs, VLMs, WAMs) • Teleoperation of a robot for diagnostic and surgical procedures • 3D reconstruction of anatomy from 2D ultrasound scanning • Simulation Platforms for Training, Validation, and Evaluation in Medical Robotics • Surgical robotics for soft-tissue surgery
Multi-Robot Systems and Digital Twins	• Learning-Based Multi-Goal Multi-Robot Navigation • Multi-Drone Navigation with Automatic Scene Change Detection • DMP-Based Cooperative Path Planning for a Swarm of Drones • Multi-Robot SLAM • Pothole Detection, Localization, and Repair Using UAV– AGV Coordination • Digital Shadow Framework for an Autonomous Firefighting Drones • 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 the Physical World (Walking, Running, Jumping)
Security of CyberPhysical Systems (Drones, Mobiles Robots, Underwater Robots)	• Verifiable, Resilient, and Intelligent Transport with Adaptive Security for Autonomous Systems (UAVs, ROV and UGVs) • Quantum Communication and security of cyber physical systems • Network Security of Connected Robots (Drones, ROVs, 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 and Physical AI	• Computer Vision; Generative AI, LLMs, VLM, & VLA; Multimodal Learning; DeepFake Detection; Agentic AI; Quantum Machine Learning, Edge AI, Speech Processing, Multi Agent Systems

Link to the online application: https://iitmandiadm.samarth.edu.in/admission/index.php

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://cair.iitmandi.ac.in/faculty.php

General Information

Information on eligibility, minimum qualifications, and scholarship rules is briefly provided in the following pages of this document. The same can be found at the following links

1. PhD Ordinance and Regulations (O&R) IIT Mandi: https://cloud.iitmandi.ac.in/f/50ca4b16e4e34913b6f8/
2. M. Tech (by research)/ Dual Degree scholarship Rules: https://iitmandi.ac.in/pdf/admissions/Information%20Brochure.pdf
3. Qualification for Admission to get the HTRA Fellowship https://cloud.iitmandi.ac.in/f/6d07c3e7b89d43f19958/

With Half-Time Research Assistantship (HTRA) / Scholarship

For PhD applicants *(Full/Part-Time)*: Students under this category are entitled to the Half-Time Research Assistantship (HTRA) / Scholarship from the Institute / MoE if they qualify for any one of the following criteria:

- Master's degree in Engineering/ Technology with a good academic record.
- Bachelor's degree holder in Engineering/ Technology from any CFTIs with a minimum CGPA of 7.5 for General/7.0 for OBC (NCL)/6.5 for SC/ST/PD on a 10.0-point scale.
- Bachelor's degree holder in Engineering/ Technology from any Non-CFTIs with a good academic record and a valid GATE score. Other relevant National Level examinations are waived off for the HTRA Scholarship.
- BS-MS/equivalent from IITs, IISERs, IISc, IIMs, or any of the top 100 institutes according to NIRF ranking (overall category) at the time of application for the year during which admission is sought, with a minimum CGPA of 7.5 for General/7.0 for OBC (NCL)/6.5 for SC/ST/PD on a 10.0-point scale.
- B.Tech/B.E./equivalent degree from Himachal Pradesh Govt. Institutions/Universities, with CGPA/CPI with a minimum CGPA of 7.5 for General/7.0 for OBC (NCL)/6.5 for SC/ST/PD on a 10.0-point scale.

For M.Tech (R) and Dual Degree applicants (*Full/Part-Time*): Students under this category are entitled to the Scholarship/ Assistantship from the Institute / MoE if they qualify for any one of the following criteria:

- Bachelor's degree holder in Engineering/ Technology from any CFTIs with a minimum CGPA of 7.5 for General/7.0 for OBC (NCL)/6.5 for SC/ST/PD on a 10.0-point scale.

- Bachelor's degree holder in Engineering/ Technology from any Non-CFTIs with a good academic record and a valid GATE score. Other relevant National Level examinations are waived off for the HTRA Scholarship.
- BS-MS/equivalent from IITs, IISERs, IISc, IIMs, or any of the top 100 institutes according to NIRF ranking (overall category) at the time of application for the year during which admission is sought, with a minimum CGPA of 7.5 for General/7.0 for OBC (NCL)/6.5 for SC/ST/PD on a 10.0-point scale.
- B.Tech/B.E./equivalent degree from Himachal Pradesh Govt. Institutions/Universities, with CGPA/CPI with a minimum CGPA of 7.5 for General/7.0 for OBC (NCL)/6.5 for SC/ST/PD on a 10.0-point scale.

With Project Sponsored Scholarship:

One project-sponsored PhD (Full-time only) position is available under the ICMR-funded project titled "**Robotics and AI-assisted system for early Hemorrhage Assessment and intervention in Trauma Care**." Students interested in applying for this position should select the following options in the PhD application:

- Application Mode: Regular
- Application Category: Project Sponsored
- Area of Preference: Healthcare Robotics

Candidates selected under the Project Sponsored category will receive a scholarship/assistantship from the funded project, subject to fulfilling at least one of the following eligibility criteria:

- Engineering / IT / Computer Science: First Class 4-year Graduate Degree (B.Tech./B.E. or equivalent).
- Other relevant disciplines: First or Second Class Postgraduate Degree, including an integrated postgraduate degree.

The selected candidate will pursue their full-time PhD while working on the research objectives of the project.

Notes:

- The shortlisted candidate can 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.
- For each specialization and program, candidates should submit a separate application with the application fee.
- Upload all self-attested documents as a single ZIP file, including: proof of identity (Aadhaar Card/Voter ID/PAN Card/any other valid ID), Class 10 certificate (as proof of date of birth),

mark sheets of UG and PG degrees (including rank certificate, if applicable), qualifying certificate of GATE/CSIR/UGC or any other equivalent examination, and caste certificate (if applicable).

- 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.
- Applicants interested in research areas not listed above may select the appropriate Broad Research Area on the Samarth portal and choose "Others" under the specific area section, providing relevant details.
- 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 (by research)/PhD must submit a "No Objection Certificate" from their current employer at the time of interview.
- Eligibility for the project-based funding positions will be as per the institute/respective funding agency's norms.
- The decision of the competent authority in all matters relating to the eligibility of the candidate, the written test/Interview and admission would be final and binding on all the candidates. In the event of any dispute or ambiguity during the admission process, the decision of the Institute shall be final.
- For any other queries regarding M. Tech (by research)/Ph.D./, or Dual Degree programs at CAIR, please contact the CAIR office by email at cairoffice@iitmandi.ac.in or by phone at 01905-267791.
- For technical problems regarding filling out online applications, please contact it_helpdesk@iitmandi.ac.in.

Application Fee for M. Tech (by research)/Ph.D./Dual Degree Admission:

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

Mode of Payment: Online within the application form.

Important dates:

Start of online application:	05 Oct 2026
Deadline for online application:	30 Oct 2026 **(till 5:00 PM)**
Announcement of shortlisted candidates (tentatively):	03 Nov 2026
Interview (tentatively):	10 Nov 2026

Addendum

Subject:- Revised Eligibility Criteria for Ph.D and Dual-Degree. Admission.(January 2027)

In accordance with the prescribed CGPA relaxation norms, the revised minimum CGPA requirements for admission to the Ph.D and Dual-Degree programme shall be as follows:

- **UR/GEN (EWS): 7.50 CGPA**
- **OBC (NCL): 7.25 CGPA**
- **SC/ST/PwD: 7.00 CGPA**

Link: PhD Ordinance and Regulations (O&R) IIT Mandi:

https://cloud.iitmandi.ac.in/f/50ca4b16e4e34913b6f8/

The above criteria shall be applicable to candidates seeking admission to the Ph.D and Dual-Degree programme, subject to the applicable rules and regulations of the IIT norms.

All other eligibility conditions for Ph.D and Dual-Degree admission shall remain unchanged unless otherwise specified.