

**Centre for Artificial Intelligence and Robotics (CAIR)**

Date:31.10.2023

**Call for Ph.D. / M. Tech (by Research)/ Dual Degree Program (Feb.-Jun., 2024)**

IIT Mandi invites applications from bright and dedicated young candidates interested in joining the **Ph.D, M.Tech and Dual-Degree (M.Tech+Ph.D) program in Robotics** in the Centre for Artificial Intelligence and Robotics (CAIR). For this purpose, CAIR seeks applications in the following areas:

Broad Research Area	Specific Areas (but not limited to)	Branches
Drones	<ul style="list-style-type: none"><li>● Aerial manipulation</li><li>● Autonomous navigation and control in GPS denied environment.</li><li>● Drone analytics</li><li>● Nano Drones</li><li>● Drone application for Surveillance and Industrial Structure Inspection</li><li>● Swarm Drones</li><li>● Novel propulsion mechanism for Drones</li><li>● Airborne sensors such as Lidar, Multispectral Cameras</li><li>● Drone Electronics</li><li>● Energy management of Drones</li></ul>	Master's / Bachelor's or equivalent degree in: Mechanical Engineering /Electrical and Electronics Engineering/ Electrical and Communication Engineering / Computer Science /Engineering/Instrumentation and control/ Mechanical (Robotics)/ Automation Engineering/Automobile Engineering/ Industrial Engineering/Aeronautical/ Aerospace Engineering/ Biomedical Engineering and allied Engineering Branches.
Multi-Agent Systems	<ul style="list-style-type: none"><li>● Visual Servoing</li><li>● Visual Robot Programming</li><li>● Multi-agent Systems</li><li>● Swarm Robotics</li><li>● Formation control</li><li>● Collision Avoidance</li><li>● Autonomous navigation</li><li>● Human-Robot Collaboration</li></ul>	
Robotics	<ul style="list-style-type: none"><li>● Grasping and manipulation</li><li>● Collaborative manipulation</li><li>● Teleoperation</li><li>● Legged Robotics</li><li>● Marine Robotics</li></ul>	

AI & Robotics for Biomedical Applications	<ul style="list-style-type: none"> <li>● Generative AI tools for Enhanced sampling of biomolecules</li> <li>● Drug Target identification</li> <li>● In Silico protein-protein interactions</li> <li>● Machine learning for molecular/drug design</li> <li>● Nano robots for sensing and diagnosis</li> <li>● Image-guided surgery intervention</li> <li>● Robot-assisted surgery</li> </ul>	
Cyber-Physical Systems (CPS) and Connected and Autonomous Vehicles (CAVs)	<ul style="list-style-type: none"> <li>● Driverless Cars</li> <li>● Cloud-Facilitated Control of CAVs</li> <li>● Optimal control of CAVs</li> <li>● Intelligent control in CPS</li> <li>● Electric and Hybrid Electric Vehicles</li> </ul>	
Cyber Security	<ul style="list-style-type: none"> <li>● Cyber security of connected systems</li> <li>● AI/ML based threat detection and protection</li> <li>● AI/ML based analysis of cyber-Attack and Deepfake Detection</li> </ul>	
AIML for Robotics	<ul style="list-style-type: none"> <li>● Robot Learning</li> <li>● Robotic Inspection and AIML based anomaly detection.</li> <li>● Predictive maintenance of Industrial Structures based on data from Intelligent agents.</li> <li>● NLP (LLM) integration with Robotic Agents</li> <li>● Reinforcement Learning for Robotic Agents</li> <li>● Generative AI for training of Robotic agents</li> <li>● Deep Learning for Robotics</li> </ul>	

Link to the online application<sup>1,2</sup>:

<https://oas.iitmandi.ac.in/External/Admission/Login.aspx>

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>

### General Information

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

**M.Tech (by Research)/Dual Degree/Ph.D Ordinance and Regulations (O&R) IIT Mandi:**

[https://www.iitmandi.ac.in/pdf/ordinances/Ordinances\\_phd\\_mtech.pdf](https://www.iitmandi.ac.in/pdf/ordinances/Ordinances_phd_mtech.pdf)

**M. Tech (by research)/Dual Degree / Ph.D Scholarship rules:**

<https://iitmandi.ac.in/pdf/admissions/Information%20Brochure.pdf>

**For 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.

- Master’s degree in Sciences/ Engineering/ Technology with a good academic record
- Bachelor’s degree holder in Engineering/ Technology from any CFTI with a minimum CGPA of 7.5 on a 10.0-point scale.
- Bachelor’s degree holder in Engineering/ Technology from any Non-CFTI with at least a CGPA of 7.5 on a 10.0-point scale with a valid GATE score.

**For M.Tech and Dual Degree (M.Tech + Ph.D) (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.

- Candidates with a Bachelor’s Degree in Engineering/Technology or Master’s Degree in appropriate field. A valid GATE score is required for admission to the M. Tech (by research)and Dual degree program, and for availing HTRA scholarship.
- Candidate with a 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 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.
- The students who are working as interns at IIT Mandi, IIT Mandi iHub and HCI Foundation, IIT Mandi Catalyst, or E-WOK, may be offered Provisional Masters or Ph.D. admissions for the next Academic Year subject to fulfillment of following eligibility conditions.

**Note:** Industrial or Academic Institute Sponsored or Part-time M.Tech.(by research)/PhD candidates are not eligible for MHRD/HTRA scholarships.

Employed candidates seeking admission to **M. Tech (by research) / Ph.D./Dual Degree** must submit a “**No Objection Certificate**” from their current employer at the time of the interview.

For any problems regarding filling out online applications, please contact [oassupport@iitmandi.ac.in](mailto:oassupport@iitmandi.ac.in)

**Application Fee for M. Tech (by Research)/Ph.D. /Dual-Degree (M.Tech+Ph.D) admission:**

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

**Mode of Payment\*: SBI Collect Portal.**

### Important Dates:

Last date for filling Online Application	<del>29.10.2023</del> 11.11.2023
Interview (in-Person)	26.11.2023

For any query, kindly contact the CAIR office through Email: [cairoffice@iitmandi.ac.in](mailto:cairoffice@iitmandi.ac.in).

Note: IIT Mandi reserves the right to recruit/ not recruit for any of the advertised areas and apply appropriate criteria for shortlisting candidates.

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<sup>1</sup>Upload self-attested documents as a single zip file (Proof of identity (Aadhar card/voter card/PAN card/any other), Class 10 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.

<sup>2</sup>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 OAS portal.

\*Applicants should submit fee on SBI collect portal of the IIT Mandi; and submit generated transaction number to the OAS admission application portal. One application fee is valid for the single application. The application fee is non-refundable