MEMORANDUM OF UNDERSTANDING (MOU)

BETWEEN

Indian Institute of Technology Ropar

Rupnagar, Punjab

AND

HRIT UNIVERSITY
Established under the provision of the
Uttar Pradesh Private Universities Act 2019

HRIT University, Ghaziabad, Uttar Pradesh

This Memorandum of Understanding (MoU) is entered into on 10th Day of March, 2025_by and between:

The **IIT Ropar Technology and Innovation Foundation** for the Agriculture & Water Technology Development iHub (AWaDH), established by the Department of Science & Technology in the framework of the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS) at the Indian Institute of Technology Ropar, which is established by the Ministry of Education, Government of India, under the Institutes of Technology (Amendment) Act, 2011, having its office at Rupnagar - 140001, Punjab, an Institute of National Importance (hereinafter referred to as "iHub-AWaDH"),

And

HRIT University, a leading higher education institution committed to academic excellence and innovation in technology and applied sciences. HRIT University provides state-of-the-art facilities and fosters an environment that nurtures talent and research. With a strong focus on industry collaborations, skill development, and entrepreneurship, HRIT University aims to equip students and faculty with cutting-edge knowledge and practical expertise. The university emphasizes experiential learning, interdisciplinary education, and value-driven leadership development to address real-world challenges.

1. INTRODUCTION

This Memorandum of Understanding (MoU) is entered into on 10th Day of March, 2025 between IIT Ropar Technology and Innovation Foundation - Agriculture and Water Technology Development Hub (AWaDH), established by the Department of Science & Technology under the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS), and HRIT University. The purpose of this MoU is to establish a strategic collaboration to foster skill development, research excellence, and entrepreneurial growth in Artificial Intelligence (AI), Cyber-Physical Systems (CPS), and technology innovation.

This partnership aims to leverage the expertise of IIT Ropar in deep-tech research and HRIT University's strong academic network to drive innovation and real-world impact. By engaging faculty, students, and industry stakeholders, both institutions intend to create a dynamic ecosystem for knowledge-sharing and technological advancements.

2. OBJECTIVES

2.1. Implementing an AI Course Tailored to Academic and Industry Requirements

- Objective: To bridge the gap between academic knowledge and industry skills by designing a comprehensive AI curriculum.

- Details:
    - The course will be developed in collaboration with industry experts to include practical applications of AI in various sectors such as agriculture, healthcare, and manufacturing.
    - It will cover essential topics like Machine Learning, Deep Learning, Natural Language Processing, and AI ethics.
    - The curriculum will include hands-on projects, internships, and industry certifications to enhance employability.
    - Workshops and seminars will be conducted to provide exposure to real-world AI challenges and solutions.

2.2. Establishing a CPS Lab at HRIT University for Research and Innovation

- Objective: To create a dedicated Cyber-Physical Systems (CPS) Lab to foster research, development, and innovation in emerging technologies.
- Details:
    - The CPS Lab will focus on integrating physical processes with computational models using IoT, AI, and automation technologies.
    - It will be equipped with advanced sensors, cloud computing resources, and simulation tools.
    - The lab will support interdisciplinary research in areas such as smart agriculture, industrial automation, smart cities, and healthcare systems.
    - Students and researchers will work on real-world projects, enabling them to innovate and solve complex societal challenges.

2.3. Promoting a Startup Ecosystem through the AWaDH Sprint Initiative

- Objective: To nurture entrepreneurship and accelerate startup growth by providing mentorship, resources, and funding support.
- Details:
    - The AWaDH Sprint Initiative aims to create an ecosystem where budding entrepreneurs can develop, validate, and scale their ideas.
    - It includes startup bootcamps, hackathons, and innovation challenges to encourage ideation and prototyping.
    - Selected startups will receive incubation support, seed funding, and guidance from industry mentors and investors.
    - The initiative will also facilitate collaborations with MSMEs, corporates, and government agencies to enhance market access and commercialization.

2.4. Supporting Technology Projects in CPS through Research and Innovation Grants

- Objective: To provide financial support for innovative technology projects in Cyber-Physical Systems (CPS) through targeted research grants.
- Details:
    - Grants will be awarded to projects focusing on cutting-edge CPS applications such as smart manufacturing, precision agriculture, autonomous systems, and industrial IoT.
    - The selection criteria will prioritize projects with high societal impact, commercialization potential, and scalability.
    - Recipients will receive funding for prototype development, testing, and deployment.
    - Collaboration with industry partners and research institutes will be encouraged to enhance technology validation and adoption.

2.5. Facilitating Student and Faculty Exchange Programs for Skill Development

- Objective: To enhance knowledge sharing, skill development, and research collaboration through structured exchange programs.
- Details:
    - Exchange programs will be organized for students and faculty between HRIT University, IIT Ropar, and industry partners.
    - Students will participate in internships, research projects, and industrial training programs to gain practical exposure.
    - Faculty members will collaborate on joint research initiatives, curriculum development, and knowledge-sharing workshops.
    - These programs aim to create a culture of continuous learning and innovation while enhancing employability and academic excellence.

3. AREAS OF COLLABORATION

The collaboration will focus on the following key components:

3.1 Implementation of Joint HRIT & IIT Ropar 'Minor in Artificial Intelligence' Program

- **Structure:** The AI Minor is structured as a **45-credit course** to be completed over the entire duration of the participant's primary degree program at **HRIT University** (The

course is spread over the entire undergraduate or postgraduate duration e.g., 6 semesters for a 3-year program or 8 semesters for a 4-year program).

- It is designed to integrate seamlessly with the main curriculum, ensuring no academic overload.
- The credits are distributed across foundational, intermediate, and advanced modules, including:
    a. **Fundamentals of AI and Machine Learning** (10 credits)
    b. **Data Science and Big Data Analytics** (10 credits)
    c. **Deep Learning and Neural Networks** (10 credits)
    d. **Natural Language Processing and Computer Vision** (10 credits)
    e. **Capstone Project and Industry Internship** (5 credits)

- **Delivery Mode:** A blended learning model combining online interactive modules with on-campus induction and final examination.
    - HRIT University students will participate in an **annual one-week training program at IIT Ropar**, staying at the IIT Ropar hostel with food expenses borne by the students. Upon successful completion of the course, they will receive IIT Ropar alumni status and an official IIT Ropar email ID, enhancing their professional identity and networking opportunities.
    - Additionally, IIT Ropar faculty members will conduct sessions and training at HRIT University to ensure continuous learning and engagement. The program will feature dual branding, with students' marksheets and official certifications bearing the logos of both IIT Ropar and HRIT University, adding significant value to their academic credentials.
    - **On completion of each 3 to 4 credits, faculty from IIT Ropar will visit HRIT University for physical interaction with the students to monitor and assess their learning status.**

- **Outcome:** The AI Minor aims to provide students and faculty with cutting-edge AI skills, enhancing employability and research capabilities.
- **Batch size: To initiate the program, a minimum enrollment of 60 students is required**

3.2 Establishment of AWaDH CPS Lab – Inclusivity and Empowerment Hub

- **Total Budget:** INR 25 Lakhs.
- **Funding:** 100% by IIT Ropar TIF AWaDH.
- **Infrastructure Responsibility:** HRIT University will provide lab space, utilities, and necessary infrastructure.
- **Inclusion of SC/ST Students:** Special provisions will be made to encourage SC/ST student participation in research and training programs.

3.3 AWaDH Sprint Initiative – CPS Research and Startup Ecosystem

- **Fund Allocation: INR 25 Lakhs** — allocated for **CPS research project resources** and **startup support**.
  - **CPS Research Projects (upto 2 projects):** Funding for consumables, human resources, and advanced CPS research infrastructure.
  - **Startup Support Initiatives (upto 5 startups):** Seed funding, lab resources, and mentoring for startups working in CPS-driven domains.
- **Focus Areas:** CPS-driven AgriTech, WaterTech, Smart Infrastructure, and AI-based innovations.
- **Outcome:**
  - **Enhanced Startup Ecosystem:** A vibrant startup community with scalable solutions in CPS-driven sectors.
  - **Advanced Research Outputs:** Breakthrough CPS research contributing to publications, patents, and technology commercialization.
  - **Industry Collaborations:** Strategic partnerships for market access, technology validation, and commercialization of research outputs.

4. BRANDING AND PUBLICITY

HRIT University is authorized to use the **IIT Ropar logo** on its website and promotional materials to enhance public awareness and brand visibility.

5. CONFIDENTIALITY

Both parties agree to maintain confidentiality regarding proprietary information shared during the collaboration, except where disclosure is required by law or regulatory authorities.

6. TERM & TERMINATION

- This MoU shall remain valid for **five (05) years**, subject to renewal by mutual consent.
- Either party may terminate this MoU with **60 days' written notice**.
- Termination shall not affect obligations under ongoing research agreements.

7. INTELLECTUAL PROPERTY RIGHTS (IPR)

- Any intellectual property (IP) developed jointly will be co-owned based on contributions.
- Patent filing expenses will be shared proportionally between the parties.
- Publications resulting from joint research will acknowledge both institutions accordingly.

8. DISPUTE RESOLUTION

Any disputes arising from this MoU shall be resolved amicably through discussions. If unresolved, the matter will be referred to an arbitration panel, and Punjab courts shall have jurisdiction over legal proceedings.

9. SIGNED IN DUPLICATE

This MoU is executed in duplicate, with each copy holding equal legal validity. Both parties, acting through their duly authorized representatives, have signed this MoU as of the date first written above.

Signatory Authority on behalf of IIT, Ropar **Dr. Rajeev Ahuja** **Director,** Indian Institute of Technology, (IIT) Ropar	Signatory Authority on behalf of, HRIT University, Ghaziabad **Dr. Anil Aggrawal** **Chancellor,** HRIT University, Ghaziabad
Dr. Pushpendra Pal Singh **Dean R&D,** Indian Institute of Technology, (IIT) Ropar	**Dr. Devendra Kumar Sharma** **Vice Chancellor,** HRIT University, Ghaziabad

ANNEXURE – 1

REVENUE SHARING :

- **Course Fee :** The course fee will be decided latter per participant for the complete course of 45 Credits including necessary taxes (if applicable).
- The fees will be transferred in three installments annualyy by HRIT University to IIT Ropar.
- **Funding :** To establish AWaDH 100% funding (total funding amount INR 2500000.00 (Twenty lakhs) will be provided by IIT Ropar TIF AWaDH.
- **Infrastructure Responsibility :** HRIT Universty will provide lab space, utilities and necessary infrastructure.
- **Inclusion of SC/ST Students :** Special provision will be made to encourage SC/ST students participation in research and training programs.