



masai®

Certification in Artificial Intelligence and Machine Learning

From Vishlesan i-Hub, IIT Patna

About IIT Patna, Vishlesan i-Hub

National Innovation Hub: Vishlesan i-Hub at IIT Patna is part of a national mission, advancing AI in speech, video, and text analytics for sectors like health, education and security.

Premier Technical Institute: IIT Patna is one of India's top engineering institutes, known for its cutting-edge research and strong academic foundation.

Strong Industry & Research Ecosystem: With active collaborations, incubators and innovation hubs, IIT Patna bridges academia and industry to drive real-world impact.

Program Overview

The foundations in Artificial Intelligence and Machine Learning Program is designed to accommodate learners from diverse academic and professional backgrounds. Through structured coursework and hands-on projects, students will build a solid understanding of Artificial Intelligence (AI) and Machine Learning (ML) techniques, starting from foundational mathematics and basic programming, progressing through core machine learning models and culminating in cutting-edge AI applications. By the end of the program, participants will be able to confidently implement AI/ML solutions, interpret results, and address real-world problems across various domains.



Why Choose This Course?

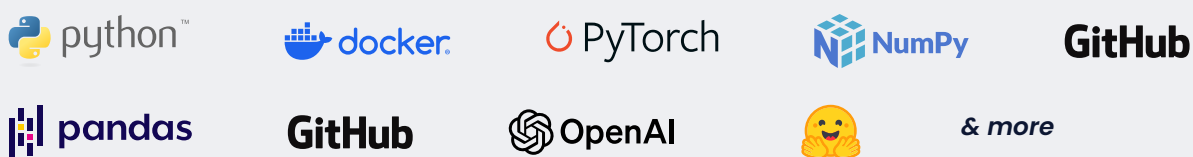
- **Prestigious Certification***: Receive a certificate of completion with Vishlesan i-Hub, IIT Patna, significantly enhancing your profile's value.
- **Real-World Capstone Project**: Work on capstone projects designed to solve practical business challenges.
- **Expert Faculty & Industry Insights**: Learn from IIT faculty & industry experts bringing real-world insights to your learning journey.
- **Placement Opportunities**: Receive resume reviews, career coaching, and placement support to land your dream role. (Eligibility: 7+ CGPA and 65% attendance)

**Eligibility: Minimum 65% overall attendance & 30% marks in cumulative evaluations score*

What Will You Learn?

Begin your AI/ML journey with a beginner-friendly, industry-aligned curriculum from Vishlesan i-Hub, IIT Patna. Covering everything from Python basics to advanced topics like deep learning and generative AI, the program builds real-world skills through hands-on projects and expert-led learning.

Toolkit



Course Summary

Courses 3	Duration 36 Weeks (12 + 12 + 12)	Evaluations (Per Course) 2 Quizzes 3 Trimesters
Break Duration 4 Weeks (2 + 2)	Weekly Commitment 8-10 Hours	

Course Syllabus

Module 1: Foundations of AI and Data Science

- Python programming essentials and professional environment setup.
- Version control with Git and software engineering best practices.
- Data analysis, cleaning, and wrangling with NumPy and Pandas.
- Math for AI: Linear algebra, calculus, probability, and statistics.
- End-to-end machine learning pipelines using Scikit-learn.
- Practical AI ethics, fairness, and data privacy.

Module 2: Core Machine Learning & Engineering

- Advanced regression and classification techniques.
- Tree-based algorithms: Random Forests and Gradient Boosting.
- Unsupervised learning, clustering, and anomaly detection.
- Neural network foundations and the PyTorch framework.
- Model interpretability (understanding why models make decisions).
- Model deployment using Docker and MLOps principles.

Module 3: Advanced AI: Deep Learning, NLP, and Emerging Trends

- Computer Vision: Image recognition and object detection (YOLO).
- Natural Language Processing: Transformers, BERT, and GPT architectures.
- Large Language Models (LLMs): Fine-tuning (LoRA) and prompt engineering.
- Modern AI systems: RAG, Vector Databases, and AI Agents.
- Generative AI: Exploring GANs and Diffusion models.
- Production patterns: Scaling, monitoring, and agent safety.

Projects

Product-Image Classifier (CNN)

Flipkart's catalog team wants to auto-categorise product images into Apparel, Electronics, and Home. You train a small CNN on a public Indian e-commerce image dataset using free Colab GPU, push validation accuracy past 85%, and produce a confusion-matrix breakdown that names exactly which category pairs the model still fumbles — and why.

Computer Vision • TensorFlow / PyTorch • CNN Architecture • Colab GPU • Confusion-Matrix Analysis

Decision Output

Trained classifier with documented confusion patterns the catalog team can route to manual review.

Customer-Churn Predictor & API

Build a churn-prediction model for a D2C customer dataset. Engineer RFM features (recency, frequency, monetary), train a gradient-boosting classifier, deploy as a FastAPI endpoint, and write the model card — including the ethical considerations around retention targeting that any real product team will probe in your interview.

XGBoost • RFM Feature Engineering • FastAPI Deployment • Model Card • Ethical Framing

Decision Output

A deployable churn predictor with a documented model card you can defend to a hiring panel.

Please Note: "Due to the evolving nature of the industry expectations and partner institute feedback, some syllabus aspects may change. Any updates will be communicated during the Inauguration Session(s) or at the start of the relevant module".

The project deliverables or case studies for your batch may differ, as per the decision of the Institute or Course Faculty

Meet our Instructor Team



Dr. Surya Prakash

Professor, Department of Computer Science & Engineering, IIT Indore

12+ years | Biometrics | Deep Learning | Facial Recognition

Former Head of CSE at IIT Indore; researches biometric recognition systems using deep learning for security and authentication applications.



Nikhil Sanghi

Data Scientist, Synthesis Labs

Machine Learning | LLM Systems | Cloud AI

Builds LLM-powered systems and NLP platforms; Google Professional ML Engineer and TensorFlow Developer certified.



Amit Singh

**Technical Trainer, Confidential Careers
ex - Senior Software Engineer, Ericsson**

Corporate Training | Instructional Design | Learning Systems

Corporate trainer delivering onsite and virtual programs using practical, industry-focused learning methodologies and instructional technologies.

Note: Instructors teaching your batch may change based on specific module expertise, or circumstances such as personal emergencies, unavailability, etc.

Admission Process



Submit Application

Complete application form to showcase your motivation and goals



Complete Selection & Enrolment Session

Only shortlisted candidates go through the counselling process



Start Learning

Learn from India's top educators and stand out from the crowd

Fee structure

Application Fee

Non-refundable

₹100

Registration Fee

₹4,000

Program Fee

₹53,085

Total Fee

₹57,085 + GST

Upfront Payment

₹63,360*

EMI via NBFC Partners

₹8,096/month × 9

**Inclusive of GST*

Note: All payments are non-refundable. This policy ensures the sustained quality and provision of our services



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