



Electronics & ICT Academy
Indian Institute of Technology Guwahati
An Initiative of Ministry of Electronics & Information Technology (MeitY)

Duration 6 Months

ADVANCED GENERATIVE AI CERTIFICATION COURSE

Embrace the thrilling future of creativity! Unleash limitless potential with Generative AI, where your imagination collides with groundbreaking innovation in extraordinary ways!





About IIT Guwahati

Indian Institute of Technology Guwahati, the sixth member of the **IIT fraternity**, was established in 1994. The academic programme of IIT Guwahati commenced in 1995. At present the Institute has eleven departments and three inter-disciplinary academic centres covering all the major engineering, science and humanities disciplines, offering BTech, BDes, MA, MDes, MTech, MSc and PhD programmes. Within a short period of time, **IIT Guwahati** has been able to build up world class infrastructure and a reputation for itself.

About E&ICT Academy IIT Guwahati

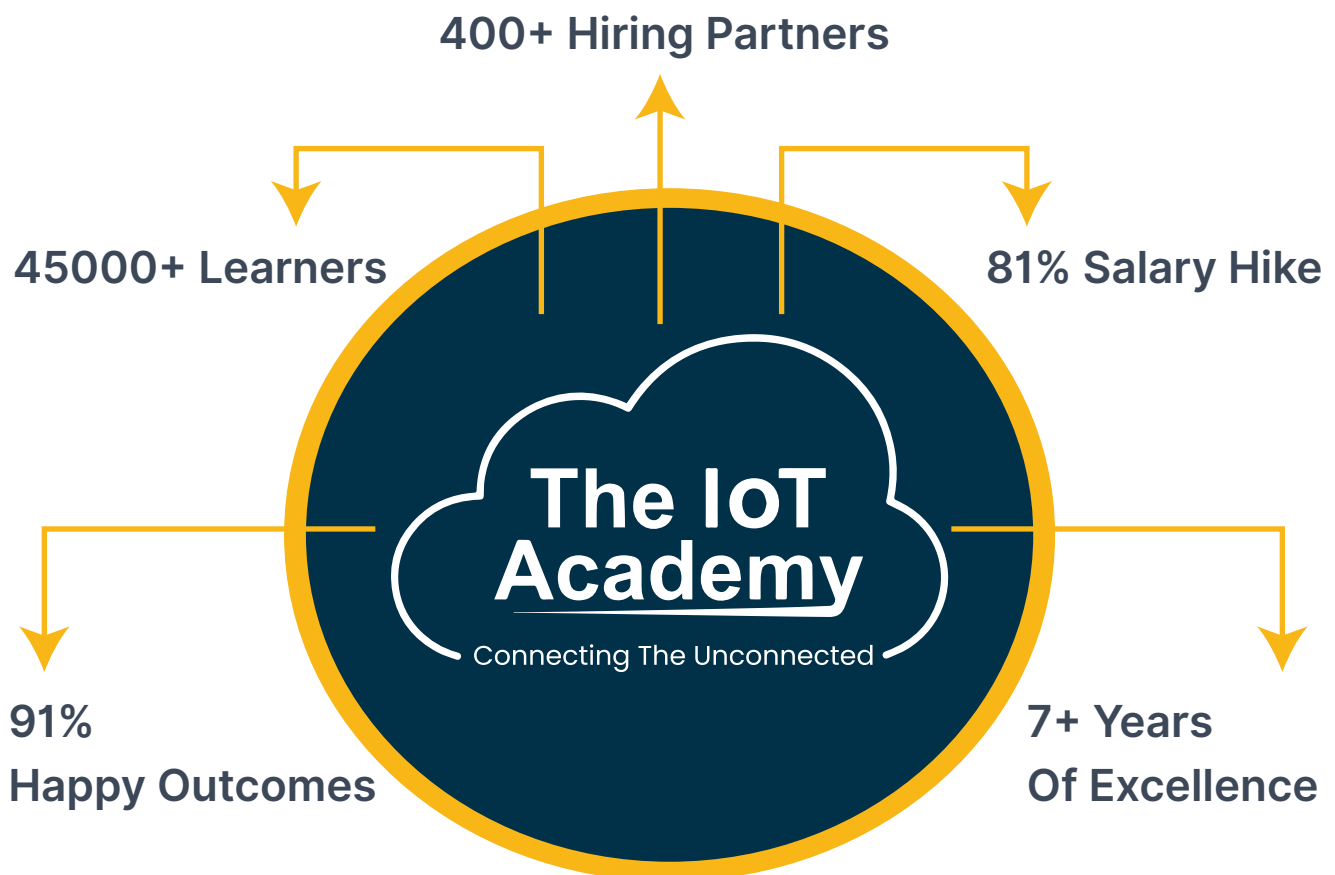
Electronics and ICT Academy aims to provide specialized training to the faculties of Engineering, Arts, Commerce, Science colleges and Polytechnics institutes by developing short term training programmes on fundamental and advanced topics in IT, Electronics & Communication, Product Design, Manufacturing. In addition, the Academy conducts specialized customized training programmes and research promotion workshops for corporate sector & educational institutions

About The IoT Academy

The IoT Academy, established in 2017 is a fast emerging company imparting quality programs for skills training, internship and guidance in cutting edge technologies like **Data Science, Machine Learning, Artificial Intelligence, Internet of Things, Embedded Systems & many more** and focused on helping people develop the skills they need to thrive in the rapidly growing digital economy.

The IoT Academy has collaborated with various premier institutes e.g. **EICT Academy, IIT-Guwahati, IIT-Roorkee and IIT-Kanpur** for **Advance Certification courses** to take provide outcome-centric solutions to help them achieve their professional goals.

“Empowering learners to discover, innovate, and create brighter futures through transformative education.”



About The Program

Dive into the dynamic world of Generative AI, the cutting-edge field shaping industries and revolutionizing innovation. This comprehensive course equips you with the skills to design, implement, and optimize generative AI models, while exploring their vast applications across domains such as art, healthcare, finance, and entertainment.

Key Highlights

Understanding Generative AI:



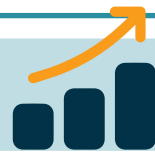
Learn the fundamentals of neural networks, GANs (Generative Adversarial Networks), VAEs (Variational Autoencoders), and transformer-based models like GPT.

Practical Applications:



Hands-on projects in text generation, image synthesis, music composition, and beyond.

Industry Trends:



Analyze real-world use cases of Generative AI in major companies like OpenAI, Google DeepMind, and Adobe.

Generative AI Course Fee

₹70,000 + 18% GST

(Scholarship also available)

Ethics and Policy:



Navigate the challenges of bias, intellectual property, and AI governance.

Why Choose Generative AI Now?

Market Growth:



The global generative AI market is projected to grow at a CAGR of over 30% between 2024 and 2030, expected to surpass \$100 billion by the end of the decade.

Job Demand:



Demand for AI and ML professionals is at an all-time high, with generative AI roles seeing a surge of over 80% in job postings over the past year.

Future Readiness:

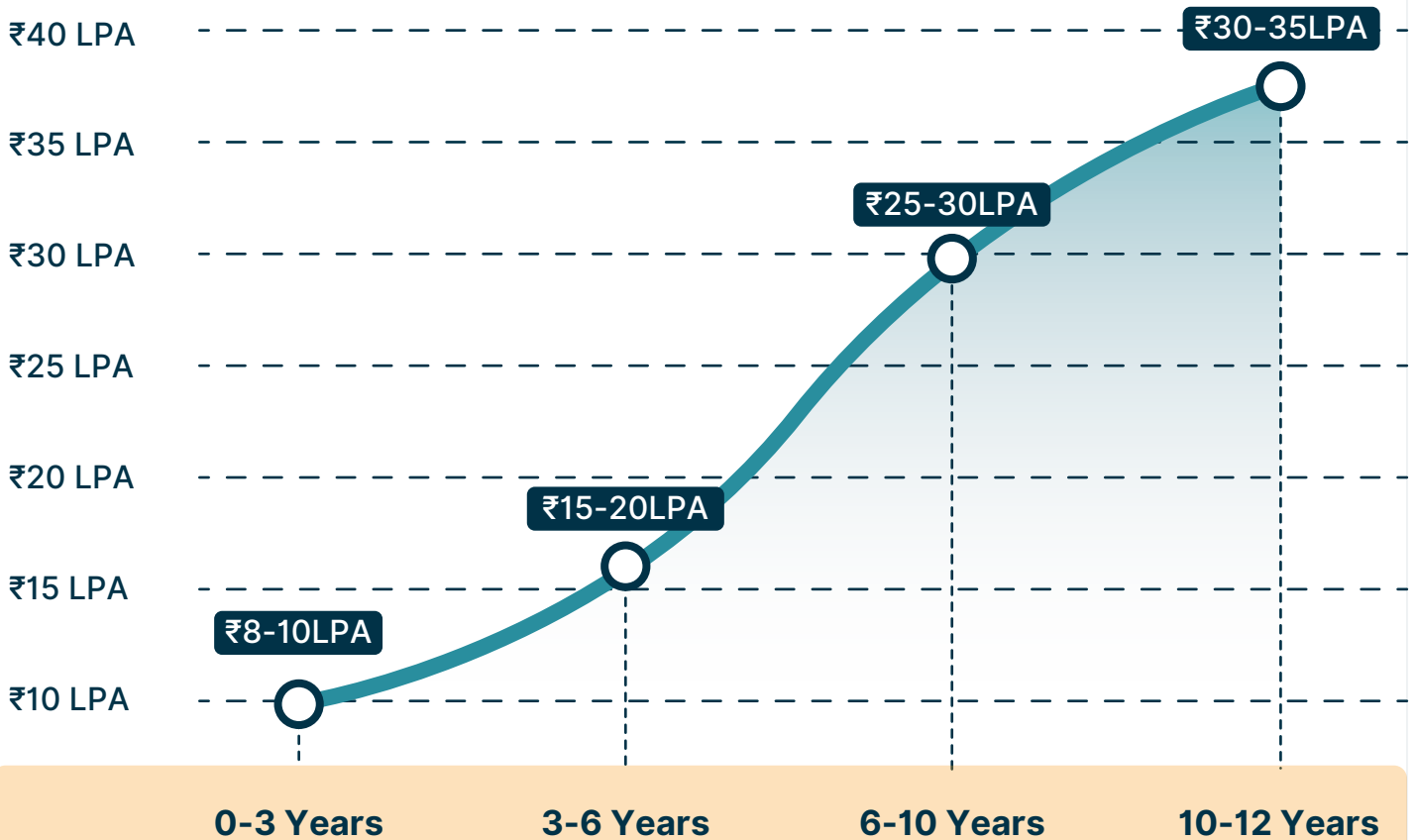


Generative AI skills are now essential for careers in data science, AI research, software development, creative industries, and more.

Whether you're an aspiring data scientist, a creative professional, or an entrepreneur, this course prepares you to harness the transformative power of generative AI and stay ahead in an evolving technological landscape.

Salary & Scope

Median Salary of Generative AI Professionals Across Years of Experience in India



Role/Category	Salary Range	Additional Notes
Large Companies (Senior Roles)	INR 1 crore+ annually	High-end salaries for experienced professionals.
Startups & Mid-size Firms	INR 30-40 lakh per annum	Varies based on experience
Indian IT Companies (Entry Level)	INR 3-4 lakh per annum	Entry-level for freshers; among the lowest in the industry.

Role/Category	Salary Range	Additional Notes
Generative AI Developers at Accenture	INR 8.5 lakh per annum	Compared to INR 5-6 lakh for regular software engineers.
Non-Tech Generative AI Consultants	INR 21-35 lakh per annum	Base salary starts at INR 21 lakh; higher salaries for experienced professionals.
AI Engineers at Google	Average: INR 10.7 crore	Starting salary: INR 12 LPA; can go up to INR 21.2 crore per annum.
GenAI Startups	INR 8-24 lakh per annum	Depending on experience and skill set.
ML Engineers at Startups	INR 30-40 lakh per annum	Good ML engineers typically earn above SWE-level salaries.
Mid-Career GCC Professionals	INR 15-35 lakh per annum	Requires 3-8 years of experience.
Median Salary (Gen. AI Professionals)	INR 15.6 lakh per annum	Skillset plays a crucial role
Median Salary (Gen. AI Developers)	INR 11.1 lakh per annum	Higher than median data analytics roles.
Median Salary (Gen. AI Engineers)	INR 12.5 lakh per annum	Higher than most engineer roles

Track Curriculum



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Introduction to Generative AI (3 hours)

- Overview of Artificial Intelligence
- Traditional AI vs. Generative AI
- Evolution of AI models (Rule-Based → ML → DL → Generative AI)
- Industry Use Cases



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Data Analytics with Python (40 hours)

Python Basics (9 hours)

- Variables, Data Types, Control Flow, Loops, Functions
- List, Dictionary, Tuple, Set Operations

Python NumPy & Pandas (9 hours)

- NumPy Arrays & Operations
- Pandas DataFrames, Data Cleaning, GroupBy & Aggregations

Exploratory Data Analysis (EDA) (6 hours)

- Descriptive Statistics, Missing Values, Outlier Detection
- Data Visualization for EDA

SQL for Data Analytics (6 hours)

- Basic Queries: SELECT, WHERE, GROUP BY, HAVING, JOINS
- Window Functions & Analytical Queries

Data Visualization with Python (4 hours)

- Matplotlib, Seaborn, Plotly Basics

Visual Storytelling using Power BI (6 hours)

- Creating Dashboards, Filtering & Interactions



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Mathematics & Statistics (10 hours)

Fundamentals of Linear Algebra (6 hours)

- Vectors, Matrices, Eigenvalues & Eigenvectors
- Dot Product, Matrix Operations, Applications in AI

Probability & Statistics (4 hours)

- Descriptive Statistics (Mean, Median, Mode, Variance, Standard Deviation)
- Probability Distributions: Normal, Bernoulli, Binomial
- Central Limit Theorem

Reinforcement Learning

Train agents using policy and value-based methods to understand environmental interactions.



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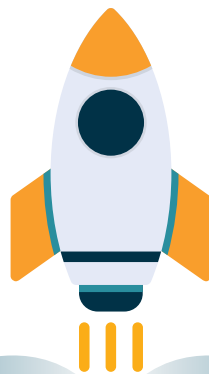
Machine Learning Fundamentals (10 hours)

Supervised Learning (6 hours)

- Regression: Linear & Logistic Regression
- Classification: Decision Trees, Random Forest, SVM
- Model Evaluation: Accuracy, Precision, Recall, ROC-AUC

Unsupervised Learning (4 hours)

- Clustering: K-Means, Hierarchical Clustering
- Dimensionality Reduction: PCA, t-SNE





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Deep Learning (25 hours)

Neural Networks (6 hours)

- Perceptron, Activation Functions, Backpropagation
- Multi-Layer Perceptrons (MLPs)

Convolutional Neural Networks (CNNs) (6 hours)

- Image Classification, CNN Architectures (VGG, ResNet)

Recurrent Neural Networks (RNNs) & LSTMs (6 hours)

- Sequential Data, Text Processing

Natural Language Processing (NLP) for GenAI (7 hours)

- Introduction to NLP, Libraries and tools for NLP
- Text Cleaning in sequential data
- Text Processing Methods – BOW, TF-IDF, N-Grams
- Word Embeddings – Word2Vec



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Foundations of Generative AI & Prompt Engineering (12 hours)

Introduction to Generative AI

- What is Generative AI? Evolution from Rule-Based AI to GenAI
- Differences: Generative AI vs. Traditional AI

- Industry Applications:

1. Content Creation (Chatbots, Story Writing, Blogging)
2. Code Generation (AI-Assisted Programming)
3. Image & Video Synthesis (DALL·E, MidJourney, DeepSeek Vision)

Prompt Engineering & Optimization

- Fundamentals of Prompt Engineering
 1. Zero-shot, Few-shot, Chain-of-Thought (CoT) Prompting
 2. Role-based Prompts, Multi-turn Conversations
- Advanced Prompting Techniques
 1. System vs. User Prompts, Style Transfer, Iterative Prompting



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Generative AI Architectures & Large Language Models (LLMs) - (16 hours)

Encoder-Decoder Architectures & Attention Mechanism

- Understanding Sequence-to-Sequence (Seq2Seq) Models
- Introduction to Attention Mechanisms
 1. Self-Attention & Cross-Attention
 2. Scaled Dot-Product Attention & Multi-Head Attention
- Transformers & Evolution
 1. Introduction to Transformers (Vaswani et al., 2017)
 2. Positional Encoding & Feed-Forward Networks

Foundation of Generative Models

- Types of Generative Models
 1. Variational Autoencoders (VAEs)
 2. Generative Adversarial Networks (GANs) – StyleGAN, CycleGAN
 3. Transformer-Based Models (GPT, BERT, T5)
- Understanding AI Hallucinations, Bias, and Model Safety
 1. Variational Autoencoders (VAEs)
 2. Generative Adversarial Networks (GANs) – StyleGAN, CycleGAN
 3. Transformer-Based Models (GPT, BERT, T5)

Large Language Models (LLMs) & Fine-Tuning

- Popular LLMs: GPT-4, DeepSeek, LLaMA, Mistral, Claude, Falcon
- Fine-Tuning vs. Pre-training of LLMs
 1. Transfer Learning for LLMs
 2. Customizing LLMs for Domain-Specific Use Cases

Project: AI-Powered FAQ Bot for Customer Support



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Retrieval-Augmented Generation (RAG) & Multimodal AI (12 hours)

Retrieval-Augmented Generation (RAG)

- Why RAG? Understanding LLM Limitations
- RAG Pipeline Components:
 1. Document Embeddings & Vector Databases (Pinecone, ChromaDB)
 2. Query Processing & Context Retrieval

Foundation of Generative Models

- Implementing RAG with Hugging Face & LangChain
- What is LlamaIndex?
- Using LlamaIndex for Efficient Document Retrieval

Multimodal AI – Text, Image, Video & Speech Processing

- Text-to-Image & Image-to-Image Generation
 1. How DALL·E, MidJourney, and Stable Diffusion Work
 2. Latent Diffusion Models (LDMs) & Hugging Face Implementations
- Speech-to-Text & AI Voice Processing
 1. Whisper, Wav2Vec, DeepSeek-STT, Real-Time Speech Transcription
- Advanced Multimodal Models
 1. OpenAI GPT-4V, Gemini
 2. Text-to-Image, Image Captioning

Project: AI-Powered RAG-Based Q&A System



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Agentic AI & Hugging Face ecosystem **(16 hours)**

Agentic AI & Autonomous AI Agents

- What is Agentic AI?
 1. Understanding Autonomous AI Systems
- AI Agent Frameworks:
 1. LangChain, AutoGPT, Hugging Face Agents
 2. Building AI Agents for Research, Trading, and Business Automation

Hugging Face Ecosystem

- Hugging Face Models, Spaces, and Transformers
- Fine-Tuning LLMs & Custom AI Deployments
- Enterprise Use Cases
 1. AI Chatbots, Code Generation, AI for Research

Real-Time Generative AI in Business Applications

- Generative AI in Healthcare
 1. AI-Powered Drug Discovery, Medical Imaging
- AI in Finance
 1. Synthetic Data for Risk Modeling & Fraud Detection
- Automating Business Processes with AI



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Future of AI & Capstone Project (6 hours)

Ethics, AI Governance & Future Trends

- Responsible AI & AI Governance
 1. EU AI Act, OpenAI's AI Policy
- The Future of Generative AI
 1. AI-Powered Autonomous Systems
 2. Trends in AGI (Artificial General Intelligence)

Final Capstone Project (Hands-on Implementation)

Participants will choose one of the following projects:

1. AI-Powered Chatbot – Using LLM & LangChain
2. RAG-Powered Search Engine – Q&A with Retrieval-Augmented Generation
3. AI for Content Generation – Blog/Article Generator
4. Text-to-Image AI – AI-Powered Image Generation
5. Autonomous AI Research Agent – AI that Summarizes Research Papers

Additional Projects

1. Basic Voice Assistant
2. Language Translation Model
3. Text-to-Image Generation
4. Interactive Chatbot for Healthcare
5. Generative Art Creation
6. AI-Powered Content Generation for Marketing
7. Smart Surveillance System Using Generative Models
8. AI-Powered Story Writing
9. Climate Impact Analysis

Learning Outcomes

Core Knowledge



Understanding Generative AI

- Gain a solid foundation in generative AI principles and its applications.
- Learn the differences between generative and discriminative models.

Applications of Generative AI

- Explore real-world applications, such as image synthesis, text generation, video creation, music composition, and style transfer.

Types of Generative Models

- Understand and implement key generative AI models like GANs, VAEs, Diffusion Models, and Transformer-based architectures (e.g., GPT).

Technical Skills



Model Development

- Learn to build, train, and fine-tune generative models using frameworks like TensorFlow or PyTorch.

Data Handling

- Understand data preprocessing, augmentation, and managing large datasets for training generative models.

Model Evaluation

- Master metrics and techniques to evaluate generative models' performance (e.g., FID, BLEU, or perplexity).

Problem-Solving and Creativity



Innovative Solutions

- Leverage generative AI to solve creative and complex problems in fields like gaming, marketing, and product design.

Ethical and Responsible AI

- Address ethical challenges such as bias, misuse, and implications of AI-generated content.

Practical Implementation



Deployment of Generative Models

- Learn techniques to deploy and scale generative AI solutions in real-world scenarios.

Hands-On Projects

- Gain experience through projects like creating chatbots, generating realistic images, or synthesizing audio.

Future Readiness



Stay Updated

- Be equipped to understand advancements in generative AI, including new model architectures and techniques.

Career Opportunities

- Open pathways to careers in AI research, machine learning engineering, creative technology, and innovation design.

Who can do this course?

Here's a list of who might benefit from or be eligible to take a **Generative AI course**:



Students and Academics

- Computer science or engineering students.
- Researchers in AI, machine learning, or related fields.
- Those pursuing postgraduate studies in AI or data science.

Tech Professionals

- Software developers looking to integrate AI tools.
- Data scientists and analysts.
- AI/ML engineers seeking to deepen their expertise.
- IT professionals exploring AI applications.

Business Professionals

- Entrepreneurs leveraging AI for startups.
- Product managers in tech-driven companies.
- Business analysts interested in AI-driven insights.

Creative Professionals

- Digital artists exploring AI-generated art or design.
- Writers and content creators interested in AI-driven tools.
- Game developers using AI for design and storytelling.

Industry-Specific Professionals

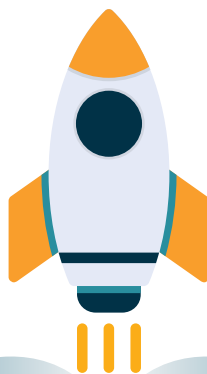
- Software developers looking to integrate AI tools.
- Data scientists and analysts.
- AI/ML engineers seeking to deepen their expertise.
- IT professionals exploring AI applications.

General Enthusiasts

- Anyone passionate about AI and its creative potential.
- Hobbyists who enjoy exploring cutting-edge technology.

Prerequisite Knowledge

- Familiarity with programming (Python is common).
- Basic understanding of machine learning concepts is often recommended.



Placement Statistics

Average Salary

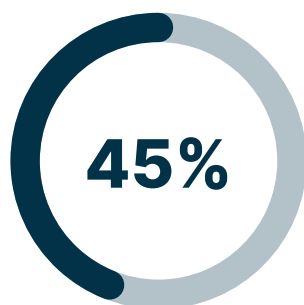
Average Hike

9LPA

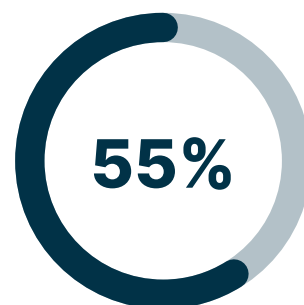
60%



Placement Ratio



Career Transition



Fresher Students

Corporates Who Hired form Us




400+ Partner Companies

Our Academic Partners




Certificate



IIT Guwahati

Certification ID: TIARG082100409



The IoT Academy
Connecting The Unconnected

Electronics & ICT Academy

Supported by Ministry of Electronics and Information Technology (Meity), Govt. of India
Indian Institute of Technology, Guwahati

CERTIFICATE OF COMPLETION

This is to certify that Mr./Ms.

Name

has successfully completed the


Advanced Generative AI Certification Course

organized by Electronics & ICT Academy Indian Insitute of Technology, Guwahati

This is an online certification programme conducted jointly by E&ICT Academy, IIT Guwahati and The IoT Academy towards upskilling.

XX-XX-XXXX

Date



Kaushlendra Singh Sisodia
Chief Mentor, The IoT Academy
Director, Uniconverge Technologies

What Our Learners Say About Us

Abhinav



An exceptional hands-on experience! The Applied Data Science course by The IoT Academy in collaboration with IITG provided me with good project exposure that truly prepared me for the industry. With expert guidance and a collaborative community.

Raghvendra Tiwari



The digital marketing course really impressed me! It taught me about search engine optimization (SEO), social media strategies, and how to analyze data giving me the tools I need to help any brand succeed online. This course is perfect for marketers at any level!

Deep Acharjee



I completed a 45-day industrial internship with IoT Academy in an online format. The entire team at the academy was exceptional. Additionally, the sales team provided all the necessary information and support to ensure the smooth operation of my internship throughout its duration. Sir Devesh, an outstanding faculty member, offered in-depth technical insights into embedded systems and IoT, addressing all of my queries. I am deeply grateful to the entire IoT Academy team for their assistance and guidance.

Ajitesh Rana



I recently had the pleasure of enrolling in IoT and Python courses at The IoT Academy, and I am genuinely impressed with the quality and depth of the content offered. From start to finish, the experience was nothing short of exceptional. The IoT Academy's IoT and Python courses exceeded my expectations on all fronts. If you're looking to gain a solid understanding of IoT concepts and harness the power of Python in IoT applications, I wholeheartedly recommend enrolling in their courses.

Vitoka H Sema



It's a very informative and practical place to learn. The I highly recommend others looking for a course in IoT and Embedded system and even other courses the faculties are very friendly and fun loving and their way of teaching is very practical. I learned a lot of new things.

Ankit Kumar



A wonderful learning experience with the lot academy, everything is good from curriculum to trainers so supportive.

What Our Learners Say About Us

Sana Tasneem



The IoT Academy provided a wonderful learning platform and experience for the students, taught by an amazing faculty. Every topic was covered thoroughly and made easy for students to understand.

RAVI KASAUDHAN



It's the best platform of learning The IoT Academy, You can easily learn online Internet of things Follow their official site & also you can follow on Instagram and LinkedIn

Mayank Bhandari



I think the experience with IoT Academy was amazing. I was provided with current problem of COVID-19 and was asked to visualize and predict the scenario, which i really loved to work upon, and meantime learned a lot during doing that. I even got certificate after successful completion of work. So at the end, i will just say i enjoyed it.

Anmol Pruthi



I was not sure about doing the Java course but when I joined the IoT Academy, I saw a great change in myself. I was getting more eager to learn everything from the trainer. The best atmosphere I have seen of learning is at The IoT Academy. If you want to get best out of you Join the IoT Academy.

Goldie Behl

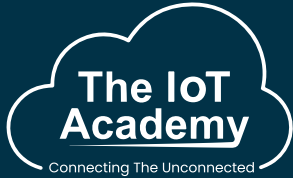


I had a great time doing this course and everyone involved in The IoT Academy has made it a great experience. I have been recommending you to everyone I know. Thank you for all the assistance and feedback, it has been delightful and very gratifying.

Harshita Mahanta



The training was really awesome, it helped me to gain new knowledge not only about IoT but also about the importance of programming. The experts, guides, mentors all were very supportive and provided much valuable advices. The contents that were provided included all the necessary things and really helped me to learn something new.



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Grasp the future of creativity:

Unleash boundless possibilities with Generative AI, where imagination meets innovation effortlessly.

Advanced **Generative AI Certification Course**

By E&ICT Academy IIT Guwahati

HEAD OFFICE C-56/11, Ground Floor, Sector-62 Noida, Uttar Pradesh

TRAINING CENTRE C- 56/12, 3rd Floor, Sector 62 Noida, Uttar Pradesh

