भारतीय सूचना प्रौद्योगिकी संस्थान, नागपुर
Indian Institute of Information Technology, Nagpur
An Institution of National Importance by an Act of Parliament

Five Months Online Certification Programme on
Generative AI (GenAI)

Our Patrons

Shri. Ravi Sharma, Chaiman, BoG, IIIT Nagpur
Dr. Prem Lal Patel, Director, IIIT Nagpur
Shri. K. N. Dakhale, Registrar, IIIT Nagpur

First batch: Starting from 10th Jan 2025
Registration Fees: Rs. 42,000/- Plus GST
Institute Website: https://iiitn.ac.in/

Registration Link: https://forms.gle/8at1J9VmM5H3GYhf6

About the Institute

Indian Institute of Information Technology, Nagpur (IIITN) is established under the Public-Private Partnership Scheme by the Ministry of Education (erstwhile Ministry of Human Resource Development), Government of India, and is supported by the Department of Higher Education, Government of Maharashtra, and Tata Consultancy Services, Mumbai as Industry Partner. IIIT Nagpur is recognized as an Institution of National Importance by an Act of Parliament in 2017. IIIT Nagpur started functioning during the year 2016-17, and shifted to its permanent campus sprawling 100 Acres of land near Butibori, Nagpur.

About the Department

The Department of Computer Science and Engineering at IIIT Nagpur offers B.Tech. programme in Computer Science and Engineering, Artificial Intelligence & Machine Learning, Data Science and Analytics and Human Computer Interaction & Gaming Technology. The department provides opportunities for full-time and part-time Ph.D. programs encompassing research in core and emerging fields. The department is equipped with all the state-of-the-art laboratories with the latest technologies and platforms along with best-in-class computing facilities. The department is dedicated to innovation and research in interdisciplinary areas. The department continuously puts valuable efforts into providing the latest state-of-the-art curriculum which can be applied to solve real-time problems in industries and society.

About the Programme

Embark on an enriching six-month online certification program in Generative AI, launching on January 10, 2025. Tailored for IT professionals, CS graduates, researchers, and educators passionate about GenAI, this program offers a unique blend of industry-centric curriculum and academic rigor, delivered through 80 hours of live interactive sessions by eminent speakers from academia and industry.

This comprehensive program is designed to equip participants with a solid foundation in mathematical principles, ML/DL essential for mastering generative AI. The curriculum spans a wide array of topics, including neural networks, convolutional and sequence models, GAN, transformers, and LLMs. Participants will delve into cutting-edge areas such as diffusion models, vision-language models, retrieval-augmented generation, and instruction fine-tuning, alongside prompt engineering and RLHF. The program emphasizes practical application through tools, platforms, and programming languages tailored for AI innovation.

With a focus on practical learning, participants will engage in live tutorials, hands-on sessions, and rigorous assignments. The program culminates with a capstone project, complementing 10 assignments and 5 industry-relevant projects. Certification from IIIT Nagpur, coupled with career guidance, interview preparation, and networking opportunities, ensures participants are equipped to excel in the AI domain.

This certification is an ideal pathway for professionals, researchers, and enthusiasts seeking to advance their careers in GenAI and drive impactful innovation. Join us to unlock the transformative potential of GenAI and shape the future of intelligent systems.

Contact Details:
Dr. Amol Bhopale (Email id: abhopale@iiitn.ac.in, Mob. 9730236396
Dr. Nileshchandra Pikle (Email id: npikle@iiitn.ac.in, Mob. 7276834418)

Key Contents

1. Mathematical Foundation: Linear Algebra, Probability, Multivariate Calculus, and Optimizations
2. Machine Learning Foundation: Exploratory Data Analysis, Supervised, Unsupervised, Semi & Self Supervised Learning, Evaluation Metrics
3. Deep Learning Techniques and Models: Neural Networks, Gradient Descent and Optimizations, CNN, Sequence Models, Introduction of Restricted Boltzmann Machine, Deep Belief Networks, etc.
4. Tools, Programming Language, and Platforms
5. Autoencoders, Generative Adversarial Networks, and Variants
6. Attention & Transformers: Detailed Architecture, Intuition, Embedding and Positional Encoding
7. NLP: Backgrounds, Terminologies, and Tasks
8. GenAI for Text: Large Language Models, Using Transformers, Pretraining & Finetuning, Tokenizers, Deployment of LLMs, Post Training Optimizations.
9. Necessity of Parallel Processing, Data, Model, and Tensor Parallelism, Scaling Laws
10. Prompting Techniques & Prompt Engineering, PEFT, Few-, & Zero-Shot Learning, Instruction Fine Tuning, RLHF
11. LLM Platforms & Use Cases: GenAI Applications such as ChatGPT, MS DALL-E etc. Azure Open AI models (GPT 3.0 & 4.0 model, image creation services etc.) Google Vertex AI & Azure ML platform. Contextual use cases – Q&A, Text Analysis, SQL Builder, Meeting MoM, Grammar correction, Code generator.
12. Improving LLM Capabilities: Retrieval Augmented Generation (RAG), Vector Databases, and LlamaIndex
13. Computer Vision: Backgrounds, Terminologies, and Tasks
14. GenAI for Vision: U-Nets, Diffusion Models, Denoising Diffusion Probabilistic Models, Stable Diffusion, Classifier Free Diffusion, CLIP
15. GenAI for Vision and Language: Vision Language Model (VLM), GenAI Techniques for VLMs.
16. Ethical Considerations and Responsible AI: Fairness and Biases in LLM

Key Features

1. Industry Centric GenAI Curriculum
2. 80 Hours of Live Interactive Sessions from Eminent Speakers from Academia and Industry
3. Learning an Excellent Mix of Theory and Practical through Live Classes, Tutorials, Doubt Sessions, and Hands-on Implementations
4. Solid Coverage of Mathematical Foundation
5. Extensive Coverage of ML and DL Background
6. Rigorous Hands-on Practice of Tools, Programming Languages, and Platforms
7. 10 Assignments, 05 Projects, and a Capstone Project
8. Certification from IIIT Nagpur
9. Networking, Career Guidance, Interview Preparation and Placement Assistance
10. ***Certifications from Nvidia worth Rs. 25,000 approximately at no additional cost***

Programme Committee

1. Coordinator: Dr. Tausif Diwan, Associate Dean, IIIT Nagpur
2. Co-coordinator: Dr. Amol Bhopale, Assistant Professor, IIIT Nagpur
3. Co-coordinator: Dr. Nileshchandra Pikle, Assistant Professor, IIIT Nagpur

Programme Instructors

1. Dr. Tausif Diwan, Associate Dean, IIIT Nagpur
2. Dr. Aparajita Ojha, Professor, Dept. of CSE, IIITDM Jabalpur
3. Mithun Kumar S R, ML Engineering Manager, Google, India
4. Zahir Sheikh, Enterprise Architect (AI & Data), HCLTech, London, UK
5. Vivek Dani, Sr. ML Engineer, Google, India
6. Dr. Pooja Jain, Assistant Professor, Dept. of CSE, IIIT Nagpur
7. Dr. Nishat Ansari, HoD, Dept. of CSE, IIIT Nagpur
8. Dr. Jagdish Chakole, Assistant Professor, Dept. of CSE, IIIT Nagpur
9. Dr. Nileshchandra Pikle, Assistant Professor, Dept. of CSE, IIIT Nagpur
10. Dr. Amol Bhopale, Assistant Professor, Dept. of CSE, IIIT Nagpur
11. Dr. Neha Kasture, Assistant Professor, Dept. of CSE, IIIT Nagpur

Class Schedule

1. Saturday 09:00 AM to 11:00 AM (IST)
2. Sunday 09:00 AM to 11:00 AM (IST)

Target Audience

Anyone having a passion for learning & deep diving in GenAI

1. Working IT Professionals
2. Computer Science/Artificial Intelligence Graduates
3. Researchers having passion for GenAI
4. Faculty Members wishing to learn & teach GenAI

On Successful Completion

Certificate of Completion: Overall score at least 50% & minimum attendance 50%
Certificate of Excellence: Overall score at least 80% & minimum attendance 70%