Collaboration with

TEKCOGENT SOLUTIONS PRIVATE LIMITED NVIDIA / AI / HPC Solutions partner, Chennai

NVIDIA DLI Two Days workshop on

Generative AI with Diffusion Models

Organized by

School of Computer Science Engineering & Information Systems, VIT, Vellore

VIT – A place to learn; A chance to grow

ABOUT VIT

Vellore Institute of Technology was established under Section 3 of the University Grants Commission (UGC) Act, 1956, and was founded in 1984 as Vellore Engineering College. The Union Ministry of Human Resources Development conferred University status on Vellore Engineering College in 2001. The University is headed by its founder and Chancellor, Dr. G. Viswanathan, a former Parliamentarian and Minister,Tamil Nadu Government.The institution persistently seeks and adopts innovative methods to improve the quality of higher education consistently. The campus has a cosmopolitan atmosphere with students from all corners of the globe. Experienced and learned teachers are strongly encouraged to nurture the students. The diversity of faculty members and their unrelenting focus on teaching and research enable to realise the high requirements of modern-day teaching-learning process. VIT has established and sustains a strong support structure for the successful progression of students. VIT is committed towards its vision of “Transforming life through excellence in education and research” and adopts professional approach in its governance.

Ranking & Accreditation

- VIT has emerged as one of the best institutes in India and is aspiring to become a global leader. Quality in teaching-learning, research and innovation make VIT unique.
- Ranked among the top 701-800 Universities of the world and one among the top 5-6 Institutions in India (Shanghai ARWU Ranking 2023).
- The 10^{th} best University, the 13^{th} best Research institution and the 11^{th} best Engineering Institution in India (NIRF Ranking, Govt. of India 2024)
- The Engineering and Technology subject areas of VIT are the 212^{th} best in the World and the 9^{th} best in India as per QS World University Rankings by Subject 2024.
- NAAC Accreditation with A++ grade in the 4^{th} cycle
- Ranked within the top 163 Universities in Asia (QS Asia University Rankings 2024)

ABOUT SCORE

The School of Computer Science Engineering and Information Systems (SCORE) emphasizes the fields of Information Technology, Software Engineering and Domain Specific Applications to facilitate the evolution of skills in students to help them to attain a higher degree of knowledge, global competency, and excellence, for the betterment of the society. According to the subject positioning by QS, Computer Science and Information systems secured 136th rank in the globe. This school offers Bachelor of Technology, Master of Technology, Bachelor of Science(Computer Science), Bachelor of Computer Applications, Master of Computer Applications and Doctorate of Philosophy programmes. Major areas of research include Artificial Intelligence,Big Data,Cloud Computing,Data Mining,Image Processing,Information and Cyber Security, Intelligence Systems,IoT,Machine Learning and Software Engineering.The school's focus is on holistic learning to help the students to make significant contributions to the industry and to serve society at large. The school has committed faculty members, apart from many visiting professors, and working professionals from the industry and R&D organizations. The faculty members are highly motivated to do ground-breaking research and excel in teaching and learning processes.

Students are provided opportunities to apply the acquired knowledge in solving real-world problems and gaining research experience. The placement record of the school is always remarkable. The school has strong linkages with leading IT and research organizations with industry-supported laboratories. A selection of professors of the school are among the Top 2% Scientists in the world according to the study conducted by the Stanford University, USA in 2024.

ABOUT THE WORKSHOP

This workshop offers a deep dive into the transformative potential of diffusion models in the field of generative AI. Hosted by experts from NVIDIA's Deep Learning Institute (DLI), participants will explore the foundational concepts, architecture, and applications of diffusion models.

Key highlights include:

- Understanding how diffusion models generate high-quality images and data.
- Hands-on sessions to build and fine-tune diffusion models for various applications.
- Learning advanced techniques for improving model performance and scalability.

By the end of the two-day workshop, attendees will gain practical knowledge and hands-on experience in implementing generative AI solutions using diffusion models, equipping them with skills to tackle real-world challenges in AI innovation. This workshop is ideal for AI enthusiasts, researchers, and professionals looking to expand their expertise in state-of-the-art generative AI technologies.

Prerequisites

From Participants

- Each should have a Laptop/ Desktop with good configuration
- A basic understanding of Deep learning Concepts
- Familiarity with Deep Learning framework such as TensorFlow, PyTorch or Keras. This course uses PyTorch.

SPEAKERS

Mr. Purusothaman P, Trainer

Mr. Ragul A S, AI Engineer

Tekcogent Solutions Private Limited-NVIDIA/AI/HPC Solutions Partner, Chennai

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Head-Department of Smart Computing

Dr. Vijayan E,
Head- Department of Computer Applications

Dr.Prabhavathy P,
Head- Department of Information Technology

Dr.Neelu Khare,
Head- Department of Software and System Engineering

Target Audiences

Faculty Members(Maximum 30 - First Come First Served)

No Registration Fee

TOPICS TO BE COVERED:

Topic	Sub-Sections
From U-Net to Diffusion	• Build a U-Net architecture. • Train a model to remove noise from an image.
Diffusion Models	• Define the forward diffusion function. • Update the U-Net architecture to accommodate a timestep. • Define a reverse diffusion function.
Optimizations	• Implement Group Normalization. • Implement GELU. • Implement Rearrange Pooling. • Implement Sinusoidal Position Embeddings
Classifier-Free Diffusion Guidance	• Add categorical embeddings to a U-Net. • Train a model with a Bernoulli mask.
CLIP	• Learn how to use CLIP Encodings. • Use CLIP to create a text-to-image neural network

CONTACT:

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Registration Link: **https://events.vit.ac.in**

Date :: 31st Jan & 1st Feb 2025

Time: 10am to 5pm
Venue: SJT 806(Lab)

Last date for Registration: 27.01.2025