Introduction/Background/Summary

In the era of *Future AI-Powered Visual Informatics,* Generative AI (GenAI) is transforming the landscape of how visual data is understood, manipulated, and utilized across disciplines. As images, videos, and complex visual signals become central to decision-making in sectors like healthcare, urban planning, and creative industries, it is crucial to understand the fundamentals and evolving trends of GenAI that enable such intelligent visual processing. From text-to-image generation to context-aware augmentation, GenAI models like Stable Diffusion and DALL·E are not just tools they are becoming creative collaborators and analytical engines.

This workshop provides a gateway to explore real-world use cases where generative models enhance image quality, synthesize training data, and create visual narratives. Participants will gain hands-on experience with powerful platforms such as RunwayML, GPT Vision, and Python-based Collab notebooks, enabling them to move beyond theory into applied visual data science. Most importantly, attendees will learn how to embed these capabilities into visual analytics pipelines, supporting scalable, data-driven research and innovation. As AI reshapes visual informatics, mastering GenAI is essential to building future-ready solutions that are not only intelligent but also interpretable, inclusive, and impactful.

Workshop on VisGen: Exploring Generative AI for Visu Data Science.

WORKSHOP ON VISGEN: EXPLORING GENERATIVE AI FOR VISUAL DATA SCIENCE

3 MAIN QUESTIONS THE COURSE WILL ANSWER

1. HOW IS GENERATIVE AI ADVANCING THE PROCESSING AND INTERPRETATION OF HIGH-DIMENSIONAL VISUAL DATA ACROSS DOMAINS?

2. KEY TECHNICAL CONSIDERATIONS WHEN DEPLOYING GENAI MODELS (E.G., STABLE DIFFUSION, BLIP) IN VISUAL ANALYTICS PIPELINES.

3. ADDRESS ETHICAL, BIAS, AND INCLUSIVITY CONCERNS IN AI-GENERATED VISUAL CONTENT WITHIN DATA-DRIVEN SYSTEMS.

Workshop on VisGen: Exploring Generative AI for Visual Data Science

Date: 10 November 2025
Time: 9 am -1 pm
Venue: University of Electronic and Technology of China, Dongguan City, China

Discipline and subdiscipline: Interactive Data Visualization
Structure: Theory: 30 %, Practical: 70 %

Speaker's Profile

J. Joshua Thomas is a Professor in Computer Science at UOW Malaysia. He obtained his PhD (Intelligent Systems Techniques) in 2015 from University Sains Malaysia, Penang and Master's degree in 1999 from Madurai Kamaraj University, India. He served as Head and deputy head of department computing between the year 2012 to 2017. From July to September 2005, he worked as a research assistant at the Artificial Intelligence Lab in University Sains Malaysia. From March 2008 to March 2010, he worked as a research associate at the same University. His work involves intelligent systems techniques in which he adopts computational algorithm implementation in inter-discipline field areas. He is an editorial board member for the Journal of Energy Optimization and Engineering (IJEOE), Book author, guest editor for Applied Sciences, Computations (MDPI), Mathematics Biosciences and Engineering (MBE), Computer Modeling in Engineering & Sciences (CMES). He has authored and edited 15 books (Wiley, Elsevier and IGI publishers). He has published more than 80 papers in leading international conference proceedings and peer reviewed journals. Regular Invited, Planetary, Keynote speaker and workshop presenter in IAIM2019, LCQAI2021, IAIM2022, IVIC2023, IVIC2025, and SCMIM2025, He obtained cutting edge technology professional certifications for current trends.

COURSE OBJECTIVES

1. FUNDAMENTALS AND LATEST TRENDS IN GENERATIVE AI (GENAI) FOR VISUAL DATA.

2. EXPLORE REAL-WORLD USE CASES IN VISUAL DATA SCIENCE GAINING HANDS-ON EXPERIENCE.

3. LEARN TO INTEGRATE GENAI INTO VISUAL ANALYTICS PIPELINES FOR RESEARCH OR INDUSTRY PROJECTS.

TARGET AUDIENCE

The course is suitable for all sectors of industries and services,

• **Professionals and researchers interested in the purchase and selection decision making.**

• **Academicians, Lecturers and Postgraduate Students in Universities, Colleges and Polytechnics from any discipline.**

• **Project leaders, business analysts and others who want to enhance their decision-making capability.**

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