



The Generative Intelligence Lab

<http://generativeintelligencelab.ai>

TUTORIAL

Generative Intelligence in Academic Projects

Description

This **short tutorial (1–2 hours)** introduces the core concepts, capabilities, and practical applications of Generative Intelligence in scientific research, with a special focus on multi-disciplinary projects. The session is designed for a non-technical audience and aims to promote an understanding of Generative AI as an enabler for new forms of interaction, collaboration, and creativity in research. The central questions for our discussion include:

- ❖ What is Generative Intelligence, and how does it differ from traditional AI approaches?
- ❖ How can GenAI support scientific research across disciplines, particularly for non-technical users?
- ❖ How can Generative AI assist in analyzing and interpreting unstructured data such as text, images, or video?
- ❖ In what ways can GenAI enhance interaction and collaboration among researchers and with data?
- ❖ What are the opportunities and challenges of integrating GenAI into scientific research environments?
- ❖ How can scientists begin exploring and applying GenAI tools effectively in their own work?

Objective:

- ❖ Provide a non-technical audience with a foundational understanding of Generative Intelligence, its capabilities, and relevance in scientific research.
- ❖ Demonstrate how Generative Intelligence can redefine the collaborative creative process, with a focus on automating parts of the research workflow while also being extensible to other domains of creative and strategic thinking.

Target audience:

- ❖ This tutorial is intended for faculty, researchers, and students from **non-technical backgrounds** who are interested in exploring the role of Generative Intelligence in scientific research. No prior experience with AI or programming is required.

Topics

Understanding Generative Intelligence

- What Generative AI is and why it matters in research
- Basic concepts behind large generative models
- What are generative Intelligence Systems
- How these models understand and generate language
- How to interact with them through simple inputs and task

How to Think About GenAI in Research Applications

- What Generative AI *can* and *cannot* do in research settings
- Using GenAI to analyze unstructured datasets
- Creating interactive interfaces such as research chatbots or assistants
- Supporting idea generation, summarization, exploration, and rapid prototyping
- Integrating GenAI into research workflows without needing technical skills

How to Interact with Generative Intelligence

- Basic view of Prompt Engineering
- Learn how to write clear and simple instructions to get useful, relevant results
- Explore easy techniques to improve your questions or tasks for better outcomes
- Common mistakes people make when using GenAI and how to avoid them

How Agentic AI works

- Why the 'hype' around Agentic AI
- Introduction to agentic AI systems and how they differ from simple tools
- Examples of AI agents that support research planning, analysis, or engagement
- How AI assistants can learn goals, manage tasks, and adapt

Collective Intelligence

- Understanding the power of collaborative interfaces
- Communication, coordination, and creativity in human–AI teams
- Use cases for co-creative AI in scientific exploration and innovation

About the Instructor

Dr. Fernando Koch is a Research Professor at Florida Atlantic University, where he leads the Generative Intelligence Lab. He is a global leader in Artificial Intelligence and Generative AI with over 30 years of experience spanning academic research, enterprise innovation, and solution architecture. Dr. Koch holds a Ph.D. in Computer Science from Utrecht University and has held leadership roles at IBM Research, Samsung Research, and Openwave, as well as academic appointments at the University of Melbourne and Korea University. His work bridges academia and industry, with a proven track record of driving and scaling AI initiatives across Fortune 100 companies, startups, and research institutions. Dr. Koch is a technical advisor to entrepreneurs and innovation leaders, known for building high-performing development teams and delivering AI solutions in complex enterprise environments. He has co-edited 6 books, authored over 90 scientific publications, and filed more than 100 patent applications (<http://www.fernandokoch.me>)