



# The Generative Intelligence Lab @ FAU

<http://generativeintelligencelab.ai>

## TUTORIAL

## Generative Intelligence and Software Development Lifecycles

### Description

This **short tutorial** (1-2 hours) provides an overview of the concepts and applications of Generative Intelligence Systems, Agentic Frameworks, and Multi-Agent Systems in Software Development Lifecycles. Researchers, solution architects, and software developers are augmented by GenAI-powered tools to brainstorm on new ideas, elaborate on specific concepts, and develop MVP to support their business proposals. The central questions for our discussion include:

- ❖ What is Generative AI, and how is it different from traditional AI?
- ❖ What are the real-world benefits and limitations of using GenAI in SDLC?
- ❖ What does it mean for an AI to be agentic or autonomous?
- ❖ What are the broader implications around the rise of this technology for the industry, the workforce, and society as a whole?

The objective of this **tutorial** include:

- ❖ Provide attendees with an understanding about Generative Intelligence, Agentic AI, Multi-Agent Systems, and 'automated thinking'.
- ❖ Explore how GenAI-Multi-Agent Systems have the potential to redefine the essence of collaborative creative process, with the focus on automated research process but extensible to other areas of creative thinking.

### **Target audience:**

Researchers, students, and practitioners with strong technical background and some understanding about AI, Machine Learning, Deep Learning, and programming. The tutorial includes practical demonstrations during this session and exercises that attendants can implement during their own time after the session.

## **Topics**

- **Foundations of Generative AI:** Introduces GenAI concepts, its impact on industry, and applications across the software lifecycle.
- **Large Generative Model:** Explores how generative models work, including Transformer architecture and model interaction basics.
- **Prompt Engineering:** Covers techniques to craft effective prompts for optimizing outputs from generative models.
- **Generative AI Pipelines:** Explains how to design AI pipelines that combine models, APIs, and services into complete solutions.
- **Agentic AI Systems:** Introduces autonomous agents, decision-making models, and intelligent behavior in software systems.
- **Multi-Agent Systems Architectures:** Examines systems of interacting agents, focusing on collaboration, communication, and real-time AI cooperation.
- **Can GenAI automate the process of creating a Technology Startup?:** discussion about utilization of GenAI and Agentic AI for the full automation of SDLC.. How far can we get?

## **Exercises**

This tutorial is supported by demonstrations that are intercalated during the presentation. Attendants will be able to execute the exercises after the tutorial by following the instructions at:

<http://generativeintelligencelab.ai/exercises.html>

## 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>)