



COT 6930 - Generative Intelligence
and Software Development Lifecycle

Instructions

Dr. Fernando Koch
kochf@fau.edu
<http://www.fernandokoch.me>



Agenda

- Begin at the Beginning
- Use GenAI the Right way
- Create Good Content
- Make Good Questions
- Identify Real Problems
- Collective Exercises



Begin at the Beginning

... progress toward the end, and trust in obviousness.

Obviousness is often a greatt friend.



Problem Identification

- Understand stakeholder needs
- Define the core problem
- Align with organizational objectives

Solution Ideation

- Collaborate to generate diverse ideas
- Evaluate feasibility and impact
- Develop a conceptual framework

Requirement Analysis

- Clarify detailed requirements
- Prioritize requirements
- Define acceptance criteria

System Design

- Translate requirements into system architecture.
- Incorporate technologies
- Ensure alignment between design and objectives

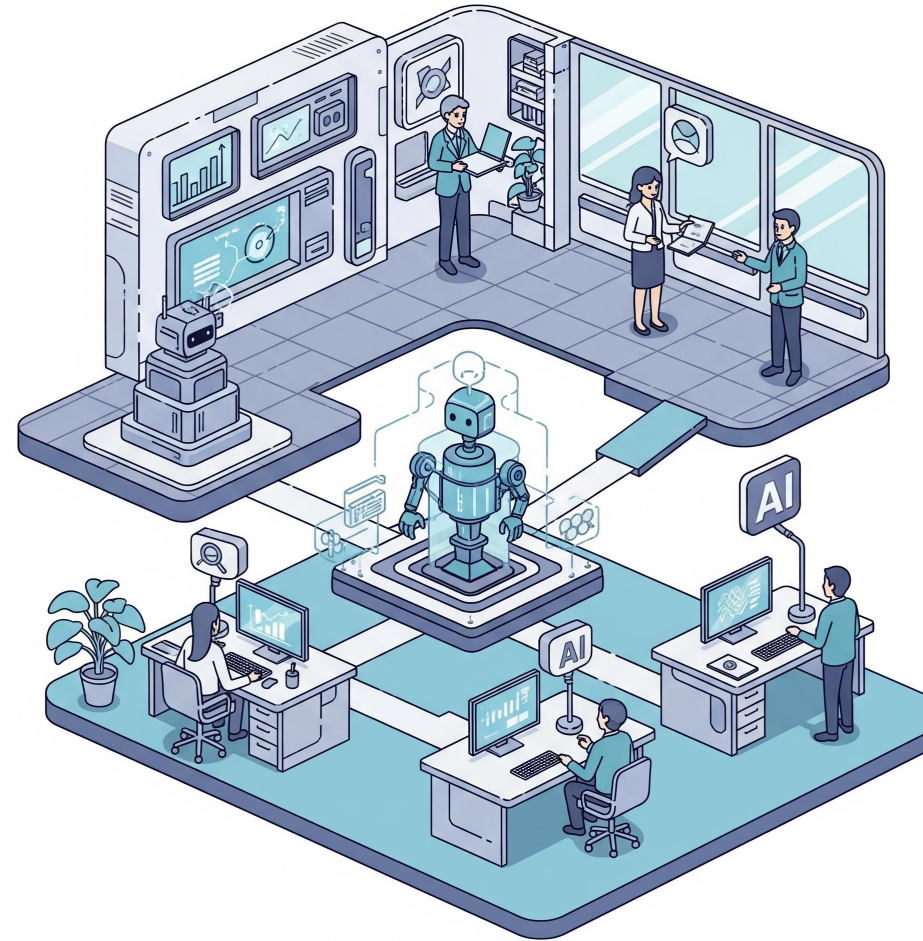
Solution Development

- Adopt best practices for coding and architecture
- Build modular and scalable components
- Focus on seamless integration and testing

AI-Driven Organization

From +AI to AI+

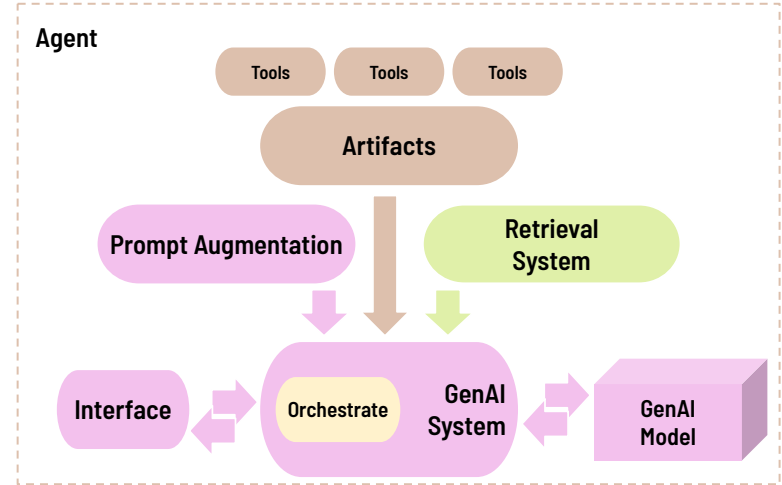
- Beyond tool-use
- AI as the operative substrate.
- Dynamic workflows vs. static hierarchies.
- Human oversight and governance roles.



Argument: People/Business are not prepared to think AI-first.

Organizations where AI agents autonomously manage tasks, decisions, and workflows.

- Agents as first-class participants in business processes.
- Modular tasks replace modular silos.
- Continuous optimization and adaptation.





Restaurant Scenario: How should a restaurant be using GenAI?

Proposal:

Tablets for restaurants with Conversational AI where clients can place orders and talk to genAI about menu, diet, food, others.

Is this a good idea?

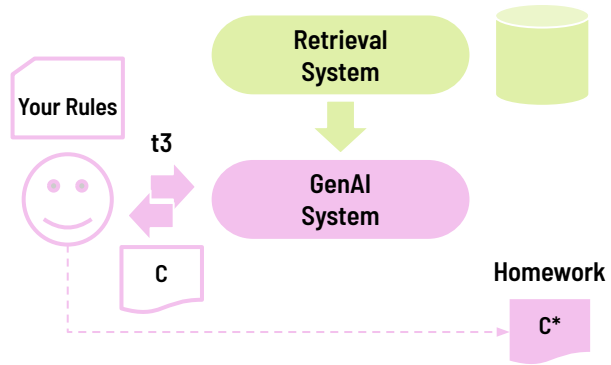


Use GenAI the Right Way

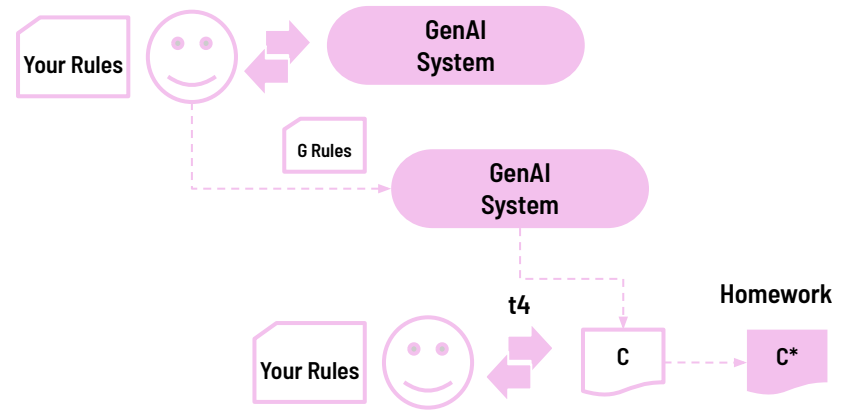
A tool for Good Questions, not Quick Answers..

Content Creation in the Age of Generative AI

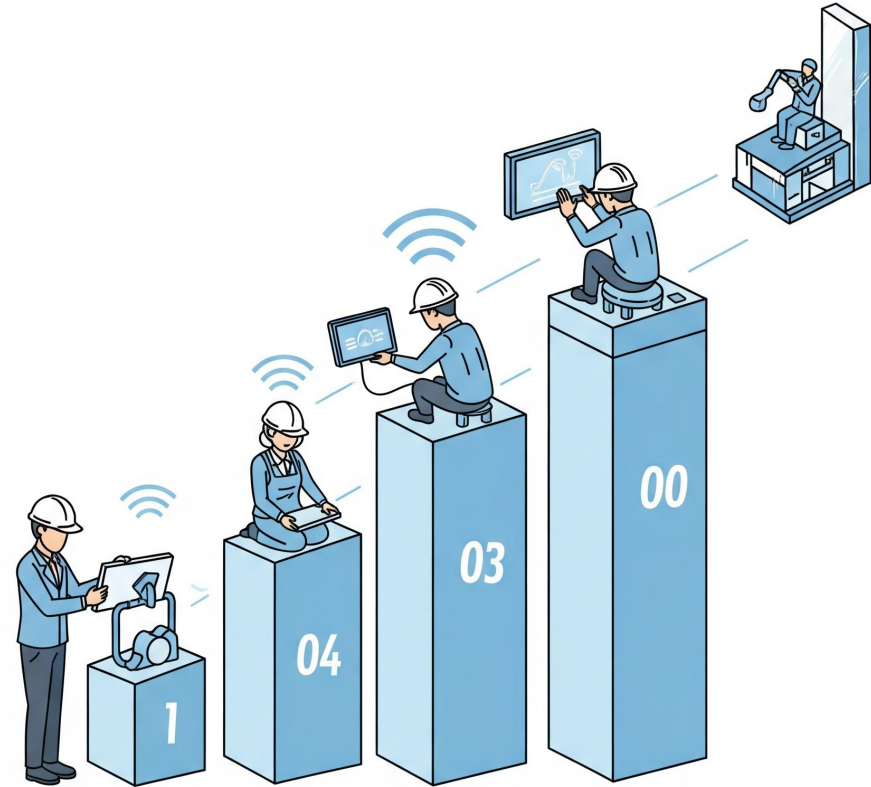
The GenAI-generated Creation



The GenAI-assisted Creation



About Levels of Automation





Level-0: GenAI as a QA Tool

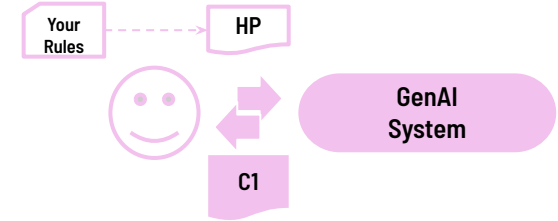
Process:

"Provide me an overview about [problem/topic]"

Your response is as good as your ability to prompt.

- Understanding of the Problem/Question
- Knowledge for contextualization
- Capacity for conceptualization
- Writing Skills

Level-0





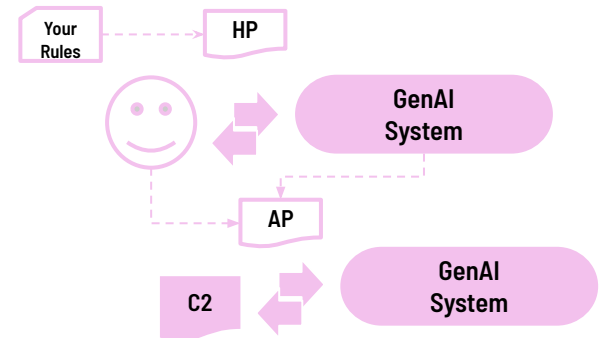
Level-1: GenAI creates the Question for GenAI

"Create a prompt to be used as instructions to a GPT to clear, intuitive response about [problem]".

Automated prompts' tend to yield better results than good human prompts?

- Metacognition.
- Prompt Engineering.
- Better contextualization.

Level-1



HP - Human Prompt

AP - Automated Prompt



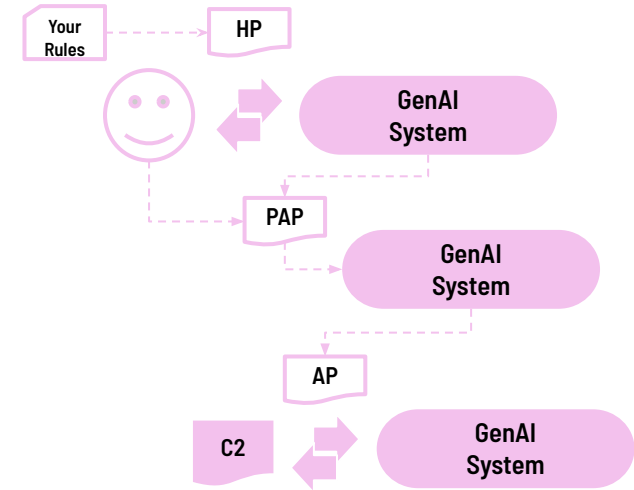
Level-2: GenAI help to establish the 'rules' to create the Prompt requesting for a Prompt

"Provide the strategy to explore [ideas|concepts] around [problem|topic] in preparation to write prompts to create instructions for a GPT that will provide [answers] for that [problem|topic]"

You are adding:

- Metacognition.
- Rule-driven Prompt engineering.
- Way Better contextualization.
- Critical Thinking.

Level-2



HP - Human Prompt

AP - Automated Prompt

PAP - Prompt for an Automated Prompt



It is all about making Good questions!

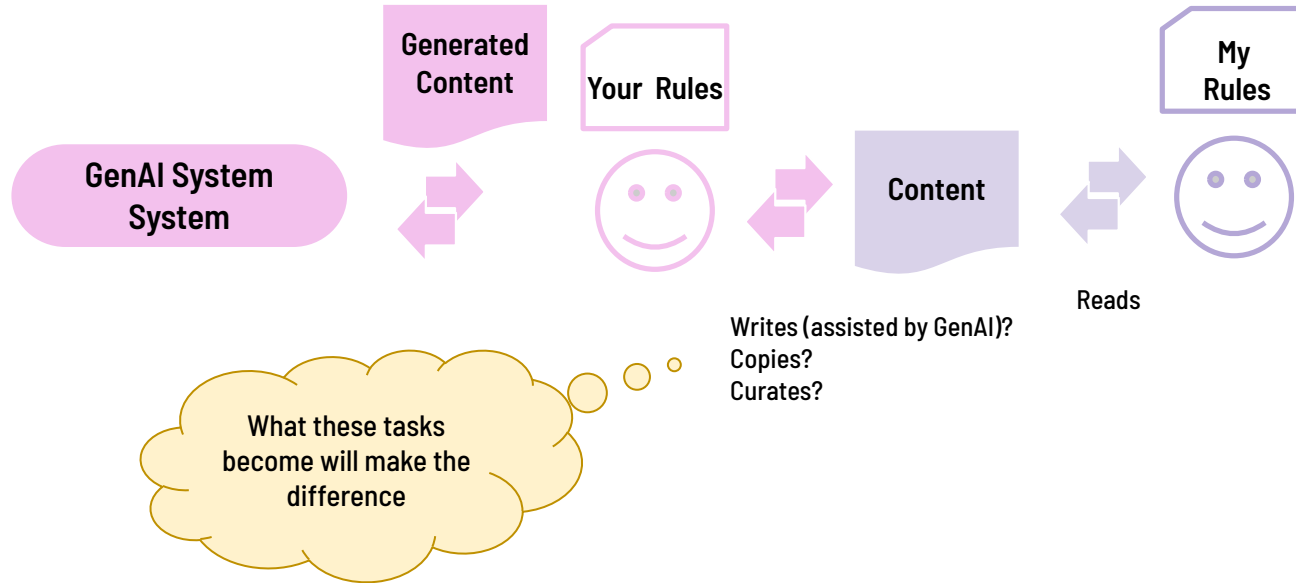
A good question isolates the unknown without collapsing it into certainty.

About Voices



Communication in the age of Generative AI

The GenAI-Assisted' Communication Process



GenAI and Communication Tasks

GenAI is now part of how students:

- Understand difficult concepts
- Write academic content
- Ask and answer questions
- Teach each other in creative ways



Where can GenAI support Communication? (1/4)

Drafting Clarity:

- GenAI helps students organize thoughts and structure clear, coherent messages.

"Help me write a clear email to my professor asking for a one-day extension on my lab report. I want to explain that I've been sick but also show that I've made progress."

Subject: Request for One-Day Extension on Lab Report

Dear Professor [Last Name],

I hope you're doing well. I'm writing to kindly request a one-day extension on the lab report due [original due date]. I've been feeling under the weather over the past few days, which has slowed my progress, but I've made good headway and just need a little more time to finish it up properly.

I understand the importance of deadlines and have been doing my best to stay on track. I'd really appreciate the extra day to ensure I submit work that meets the standards of the course.

Thank you for your understanding, and please let me know if you need any additional information.

Best regards,

[Your Full Name]

[Course Name or Section, if applicable]

The impact of LLM in people's language

"We first saw that there are these specific words – like **commendable, innovative, meticulous, pivotal, intricate, realm, and showcasing** – whose frequency in reviews sharply spiked, coinciding with the release of ChatGPT."

<https://hai.stanford.edu/news/how-much-research-being-written-large-language-models>

NEWS

How Much Research Is Being Written by Large Language Models?

DATE

MAY 13, 2024

TOPICS

EDUCATION, SKILLS

NATURAL LANGUAGE PROCESSING

MACHINE LEARNING

New studies show a marked spike in LLM usage in academia, especially in computer science. What does this mean for researchers and reviewers?

In March of this year, a [tweet](#) about an academic paper went viral for all the wrong reasons. The introduction section of the paper, published in [Elsevier's *Surfaces and Interfaces*](#), began with this line: *Certainly, here is a possible introduction for your topic.*

Look familiar?

About Instructions

Provide 'Writing guidance'

"Avoid phrasing and grammar structures typical of LLM-generated texts.

Avoid rhetorical contrasts and contrastive phrasing o

Avoid informal, conversational, or promotional styles.

Avoid formulaic transitions and templates.

Limit generic connective phrases and redundancies.

Reduce passive constructions and generic hedging.

Minimize over-explanation and remedial context.

Suppress excessive emphasis and "soft" modifiers.

Minimize meta narrative about the text itself.

Eschew closing encouragements or open-ended prompts"

Subject: Extension Request – Lab Report

Professor [Last Name],

I have been ill for the past few days and could not complete the lab report by the original deadline of [original due date]. The work is in progress, but I need one additional day to finish it.

Thank you for considering this request.

[Your Name]

[Course Name/Section]

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Identify Real Problems

A tool for Good Questions, not Quick Answers..

Challenge

Our course will have ONE exercise that you should continue to develop across the course. This will be a preliminary proposal for a 'Startup Idea' around:

- AI-Driven Organization
- Bot-based Interactions
- Solve problem on a [Topic] that you like
- Apply Multi-Agent Based Architectures
- Measurable results

How would you structure this project?





Exercise: GenAI for Project Proposal

Write a Project Proposal for a "Challenge project" (provided above)

Prompt around this idea:

"I need to design a project proposal for my Challenge Project on [topic]. This will be a seed idea for a Startup Pitch proposal where I will be working on the Technical Projects designing and developing the projects. I need to generate a draft outline that describes an intriguing questions (that drives my startup business), my arguments why this problem needs to be addresses, objectives, strategies, experiments to present our solution, expected outcomes in terms of results and products, and deliverables."

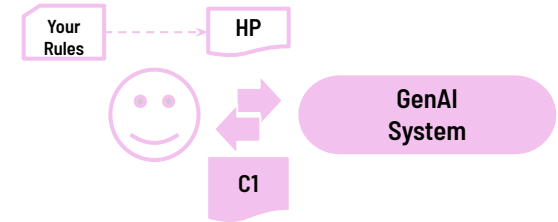


Quick Experiment, Step One

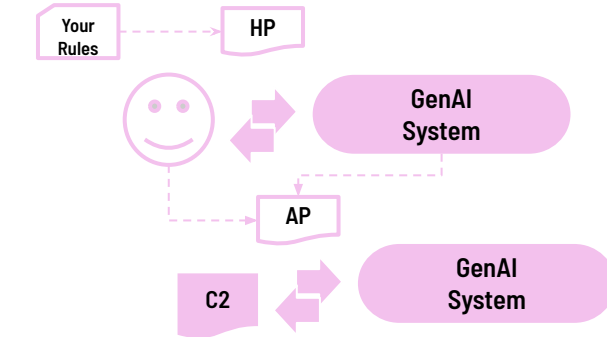
Write your own prompt to ask GenAI about the 'challenge':

- Formulate the Prompt using your Words
- Select one 'Business problem' that you like; if you have not idea, pick an 'area' and ask GenAI for few ideas.
- Try Level-0: how difficult is to explain the GenAI what do you need?
- Try Level-1: How good / clear is the response?

Level-0



Level-1





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Task 1: Problem Identification (1/2)

Scenario where you are tasked to write a project proposal (see above).

- What is the Problem you want to address?
- What is the Intriguing Questions (e.g. a question about why this problem should have been addressed before but it was not?)
- What are the Arguments?

Access the TEMPLATE for Project Plan

https://docs.google.com/document/d/1KBIKj2xdkgQWxTYUMjLtMRyyH2TT0gEhFvxmnkj_rm0/edit?usp=sharing

- NEED TO USE YOUR @FAU ACCOUNT
- 'MAKE A COPY" to work on your document



Task 1: Problem Identification (2/2)

Define the Intriguing Question and the Problem and Why it Needs Addressing.

- *Help me draft a concise 'Intriguing Question' for a project on [topic]. It should frame the startup/business challenge clearly and show why it matters."*
- *"List 3–4 key problems within [topic], each with a negative consequence. Rewrite them into a problem statement suitable for a proposal."*
- *"Critique this problem statement for clarity and impact. Suggest improvements to make it compelling for a project proposal."*

Results: Complete the Intriguing Question & Problem on your Document



Task 2: Strategy Refinement

Ask GenAI to Translate the problem into measurable Objectives and outline the Strategies to achieve them.

Prompts:

- *“Based on this problem statement, propose 3 clear, measurable objectives for my project. Each should be specific, solution-oriented, and feasible.”*
- *“Suggest a set of strategies (research, design, user engagement, partnerships) that align with these objectives. Explain why each is useful.”*
- *“Refine these objectives and strategies to be concise and suitable for a technical proposal.”*

Results: Complete the sections in your Project Proposal



Task 3: Experiment Design

Use GenAI to create concrete Experiments to Present the Solution and articulate the Expected Outcomes..

Prompts:

- *"Design 2–3 small experiments to validate my solution for [topic]. Each should be practical, testable, and linked to user or performance feedback."*
- *"Draft an 'Expected Outcomes' section showing both measurable results (metrics) and tangible products (prototype, documentation)."*
- *"Rewrite this experiment plan to make it clear, concise, and proposal-ready."*

Result: Complete that Section in your document.



End of the Session

Add your (preliminary) projects to our 'Collective Exercise Document'

<https://docs.google.com/document/d/1WOvVhREcKxhzSR9kecGFEUtABm490GXWZnL7jttN2mg/edit?usp=sharing>

- **NEED TO USE YOUR @FAU ACCOUNT**



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