Generative AI: Prompt Engineering Essentials for Industry 4.0

COURSE OUTLINE

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Generative AI: Prompt Engineering Essentials for Industry 4.0
Duration: 5 days

Overview:

In the dynamic landscape of Industry 4.0, Generative Artificial Intelligence (AI) emerges as a transformative force, offering unparalleled opportunities for innovation and operational enhancement. The adoption of Generative AI tools in the day-to-day operations would provide individuals with the knowledge, skills, and competencies to improve their creative ability and productivity in their day-to-day tasks.

The Generative AI: Prompt Engineering Essentials for Industry 4.0 program provides a comprehensive understanding of Generative AI, emphasizing the empowerment of participants to tailor solutions to their unique use cases using low-code Generative AI development tools. Through a blend of theoretical insights and hands-on experiences, participants will be adept at harnessing the adaptability of Generative AI to address specific business challenges.

This program would provide participants with the opportunity to implement Generative AI tools at their workplace in a scalable manner which encourages sustainable digital adoption and transformation within an organization. The participants would be exposed to potential use cases of Generative AI in different areas of work to generate new ideas which suits their organization's business objectives.

Target audience:

- Engineers and Technicians involved in the development and implementation of AI solutions.
- Technical Managers overseeing AI and digital transformation projects.
- Production Managers keen on integrating AI-driven solutions into their operations.
- Marketing Professionals looking to leverage AI for customer insights, content generation, and campaign optimization.
- Sales Executives interested in harnessing AI for lead generation, customer engagement, and sales forecasting.
- Academia and Researchers focused on the intersection of AI and industry applications.
- Business Strategists and Consultants aiming to integrate AI solutions for business growth and efficiency.
- Entrepreneurs and Start-up Founders keen on embedding AI capabilities into their products or services.

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Training Methodology:

Interactive Classroom Learning complemented by hands-on practical sessions, group activities, and case studies using Generative AI tools and platforms.

Learning Outcomes:

Upon completing this 5-day-course, participants should be able to:

- ✓ Explain the fundamentals of Generative AI and their potential applications in their organizations.
- ✓ Utilize Generative AI development tool to assist in developing use cases to assist in strategic decision making within their organizations.
- ✓ Design and develop Generative AI use cases for various business applications.
- ✓ Identify the ethical considerations and legality of implementing Generative AI.
- ✓ Identify opportunities for Generative AI in their organizational operations and business objectives to develop a tailored implementation plan for their organizations.

Learning Resources:

Hardware
- High-performance PC /Laptop with internet access   - Reference hardware: Amkor workstation PC: 64GB RAM (Laptop type RAM)   - Intel i7 8th-gen   - NVIDIA P600/P620 GPU – 4GB VRAM
Software
- Large Language Model (LLM) API Platform   - Generative AI Low Code Development Tool
Materials
- Course Materials and/or Handbook   - Prompt engineering template

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Session Plan:

Day 1	**Morning Session:**
9.00 AM – 5.00 PM	**Introduction to Generative AI & OpenAI API**
(Lunch Break)	• Overview of Evolution Generative AI • Significance of Generative AI in Today's Digital Landscape
1.00 PM – 2.00 PM	**Hands-on: OpenAI API** • Setup and Configuration • Running Basic Queries • Exploring Parameters and Features **AI and Strategic Decision Making** • Role of AI in Strategy • Leveraging GA/GPT for Competitive Advantage **Afternoon Session:** **Introduction to Low code Gen AI development tools** • Features and Advantages of Low Code Generative AI Tools • Interface Navigation and Overview **Hands-on Session: Low code Gen AI development tools Setup and Configuration** • Installation, Setup, and Configuration (Local and Web App) • Low code Gen AI development tools Node walkthrough • Designing Basic Workflow (Single Prompt)

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Day 2	Morning Session:
9.00 AM – 5.00 PM	**Prompt Design and Engineering**
(Lunch Break)	• Prompt Template
1.00 PM – 2.00 PM	• Memory nodes
	• Designing Basic Workflow (Single Prompt)
	• Designing Multi-prompt Workflow
	Afternoon Session:
	Hands-on: Crafting and Refining Prompts
	• Customer support chat bot
	• Multi-prompt Quotation Generator (Customer name, item, item price, qty)
	• Submission: ticker resolver, quotation generation
Day 3	**Morning Session:**
9.00 AM – 5.00 PM	**Introduction to RAG**
(Lunch Break)	• Limitation of LLM
1.00 PM – 2.00 PM	• Introduction to retriever
	• Retriever nodes
	• Vector database and its usage
	• Chroma node
	• Text Splitter
	Afternoon Session:
	Framework for Flow Design
	Hands-on Activity: PDF Loader, CSV Loader

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Day 4 9.00 AM – 5.00 PM (Lunch Break) 1.00 PM – 2.00 PM	**Morning Session:** **Framework for Flow Design** • Hands-on Activity: database connection, web-search **Afternoon Session:** **Ethical Implications of Generative AI** • Navigating Potential Biases, Risks, and Ethical Dilemmas • Group Discussion: Sharing Personal Experiences and Concerns **Integrating Generative AI into Real-world Business Operations** • Individual/Group Activity: Project Brainstorm on utilizing Generative AI into respective business problem • Proof of value projects discussion Preparation of Individual Generative AI Projects for Final Day Assessment
Day 5 9.00 AM – 5.00 PM (Lunch Break) 1.00 PM – 2.00 PM	**Morning Session:** • Individual Project Preparation for Final Presentation and Assessment **Afternoon Session:** **Final Presentation and Assessment** • Individual Project Presentations: Participants Share the Flow Templates They Designed to Address a Specific Business Challenge • Discussion and Project Evaluation • Formulating Generative AI Adoption and Implementation Strategies • Key Takeaways, Addressing Remaining Questions, and discussion on next steps towards adoption of Generative AI in an organization