Generative AI: Enhanced Functionalities and Application Deployment

COURSE OUTLINE

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Generative AI: Enhanced Functionalities and Application Deployment

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: Enhanced Functionalities and Application Deployment program dives deeper into the knowledge in Generative AI, aims to provide the participants knowledge to create a more complex chatbot to solve complicated tasks and business challenges using low-code Generative AI development tools and cloud services. 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 enhance the implementation of Generative AI tools at their workplace in a scalable manner which encourages sustainable digital adoption and transformation within an organization. The participants would be working on next level customization and optimization of their existing ai chat bot that provides a better solution to their organization's business objectives.

Pre-Requisite:

Completed GenAI-Prompt Engineering Essentials for Industry 4.0

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

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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:

- ✓ Identify AI Chatbot optimization methods to further improve Chatbot performance.
- ✓ Utilize Generative AI development tool to further customize and optimized AI Chatbot performance.
- ✓ Design deployment flow for the existing AI Chatbot.
- ✓ Set up Local LLM Model in cloud computing platform.
- ✓ Estimate the usage statistic of the AI Chatbot.

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 **9.00 AM – 5.00 PM** **(Lunch Break)** **1.00 PM – 2.00 PM**	**<u>Morning Session:</u>** **Introduction to Mathematic Operation in LLM** • Overview of Generative AI performance in mathematic operation • Introduction to Math node in low code development platform **Hands-on: LLM Math node** • Setup and Configuration • Flow construction • Exploring Parameters and Features • Case study + presentation **<u>Afternoon Session:</u>** **Introduction to usage statistic monitoring tool** • Features and Advantages usage statistic monitoring • Usage statistic tool set up and configuration **Hands-on Session: LLM Math Case Study with usage statistic monitored** • Case study + presentation

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Day 2 **9.00 AM – 5.00 PM** **(Lunch Break)** **1.00 PM – 2.00 PM**	**<u>Morning Session:</u>** **Pre-requisite to develop custom node** • Introduction to python basics • Python IDE installation • Python import function • Libraries / modules • Data types • Function • Pip install **Hands-on: Function in python** • Case study **<u>Afternoon Session:</u>** **Custom node in low-code development platform** • Introduction to low-code development platform back-end framework • Introduction to node customization in low code development platform **Hands-on: Node Customization** • Case study + presentation

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Day 3 **9.00 AM – 5.00 PM** **(Lunch Break)** **1.00 PM – 2.00 PM**	**Morning Session:** **Advance RAG method** • Hands on experience on different loader to the response yield from chat bot • Hands on experience on different retrievers on chat bot response quality **Hands-on: Advanced RAG with various retrieval method** • Case study + presentation **Afternoon Session:** **Local LLM – self hosting on cloud service platform** • Introduction to Local LLM varieties, benefits and limitations • Introduction to cloud service platform pros & cons • Cloud service platform setup and configuration • Host local LLM on cloud service platform • Connecting self-hosted LLM to low code development tools **Hands-on: Advanced RAG utilizing self-hosted LLM** • Case study + presentation

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Day 4 **9.00 AM – 5.00 PM** **(Lunch Break)** **1.00 PM – 2.00 PM**	**Morning Session:** **Flow Deployment** • Set up and configure API key in low code development platform tool • Construct deployment codes • Deploy the ready chat bot flow into web application **Hands-on: Web Application User Experience** • Case study + presentation **Afternoon Session:** **Integrating Generative AI into Real-world Business Operations** • Individual/Group Activity: Project Brainstorm on utilizing Generative AI into solving more complex business problem/ operations. • Proof of value projects discussion Preparation of Individual Generative AI Projects for Final Day Assessment **Hands-on: Project Proposal** • presentation
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

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