BLACKBIRD FOR TRAINING

AI System Architecture and Large Language Model Applications

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Cairo (Egypt)



AI System Architecture and Large Language Model Applications

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Introduction

The AI System Architecture and Large Language Model Applications course focuses on building a practical understanding of how modern artificial intelligence systems are designed, structured, and connected with organizational needs. Successful AI adoption does not depend only on using AI tools. It requires a clear understanding of system architecture, data sources, integration layers, large language models, governance controls, and safe implementation practices.

This course covers the main components of AI systems, including data, infrastructure, models, application interfaces, and integration with enterprise systems. It also focuses on large language models and their practical applications in text analysis, intelligent assistants, knowledge-enhanced search, task automation, and decision support.

The course follows a clear sequence. It begins with AI system architecture, then moves into large language models and their applications. It then focuses on use case design, enterprise integration, governance, and implementation planning. The content is aligned with the provided topic: AI System Architecture and Large Language Model Applications.

Course Objectives

By the end of this course, participants will be able to:

- Understand the overall architecture of AI systems and their core components.
- Analyze the relationship between data, models, applications, and infrastructure in AI solutions.
- Identify the role of large language models in developing intelligent enterprise applications.
- Understand how large language models work in terms of inputs, outputs, context, and generation.
- Evaluate suitable AI use cases across different business environments.
- Design an initial AI solution concept that addresses a specific organizational need.
- Connect AI solutions with existing enterprise systems and business processes.
- Understand governance, privacy, security, and accuracy requirements when applying large language models.
- Strengthen applied knowledge that supports organizational AI adoption and implementation initiatives.
- Define success indicators for AI applications in terms of efficiency, quality, and business value.
- Analyze risks related to AI use and develop suitable controls for human review.
- Prepare a practical implementation plan for AI and large language model applications within an organization.



Course Outlines

Day 1: Introduction to AI System Architecture

- The concept of AI systems and their role in supporting enterprise digital transformation.
- Core components of AI systems, including data, models, user interfaces, and integration layers.
- The difference between using ready-made AI tools and building integrated enterprise AI solutions.
- The AI system lifecycle from idea generation to design, operation, and improvement.
- The role of data quality in improving output accuracy and reducing risks.
- Practical application on analyzing the architecture of an AI solution in a business environment.

Day 2: Large Language Models and Practical Applications

- The concept of large language models and their role in understanding and generating text.
- How large language models work through context, prompts, responses, and refinement.
- Using large language models for summarization, classification, writing, search, and customer service.
- Designing effective prompts to produce accurate and structured outputs.
- Evaluating model outputs in terms of accuracy, consistency, and relevance to business context.
- Practical application on building a use case scenario for a large language model in an enterprise task.

Day 3: Designing AI Solutions for Organizational Needs

- Identifying business problems suitable for AI implementation.
- Analyzing use cases according to value, complexity, risk, and implementation feasibility.
- Designing a workflow that connects the user, data, model, and human review process.
- Selecting the right type of AI solution, such as an intelligent assistant, text analysis tool, task automation solution, or decision-support system.
- Defining data requirements and integration needs with internal systems.
- Practical application on preparing an AI use case concept for an organization.

Day 4: Integration, Governance, and Security in AI Systems

- Connecting AI systems with enterprise systems, databases, and knowledge sources.
- Understanding the role of application interfaces and automated workflows in operating AI solutions.
- Managing privacy and data protection when using large language models.
- Setting controls for human review, output validation, and error reduction.
- Identifying risks related to bias, inaccurate outputs, and information leakage.
- Practical application of preparing an AI governance framework for organizational use.



Day 5: AI Adoption and Enterprise Implementation Initiatives

- Preparing an AI adoption plan based on organizational priorities and available resources.
- Defining the roles of management, technology, data, operations, and compliance teams.
- Building success indicators for AI implementation initiatives.
- Managing change and training users to work effectively with intelligent solutions.
- Assessing organizational readiness for wider large language model adoption.
- Integrated application on developing an AI and large language model adoption roadmap for an organization.

Why Attend this Course: Wins & Losses!

- Gain a deep understanding of AI system architecture and how its components work together.
- Strengthen applied knowledge of large language models and their enterprise applications.
- Improve the ability to evaluate AI opportunities within business environments.
- Support organizational AI adoption through a clear and structured approach.
- Understand the relationship between data, models, applications, and enterprise integration.
- Develop the ability to design practical AI use cases.
- Improve prompt design skills and the ability to evaluate large language model outputs.
- Connect AI solutions with productivity, quality, and decision improvement goals.
- Understand governance, privacy, and security requirements in AI implementation.
- Reduce the risks of unstructured AI adoption through clear review and validation controls.
- Prepare a practical roadmap for implementing AI within an organization.
- Build a shared language between management, technology, data, and operations teams around AI implementation.

Conclusion

The AI System Architecture and Large Language Model Applications course provides a practical framework for understanding how AI systems can be designed and implemented within organizations. It covers the key areas that connect system architecture, data sources, large language models, enterprise integration, governance, security, and practical use cases.

The program follows a clear structure. It begins with the overall architecture of AI systems, then moves into large language models and their practical applications. It then focuses on designing solutions aligned with organizational needs, followed by integration, governance, and security. The final day addresses AI adoption planning and enterprise implementation initiatives.

By the end of the course, participants will understand how to move beyond simply using AI tools toward designing clear, practical, and scalable AI initiatives. The course supports organizational AI adoption by combining technical understanding with business implementation, balancing innovation, efficiency, governance, and business value.

