
Onboarding & Training Syllabus: AI Solutions Architect

Role Title: AI Solutions Architect – Designing, Deploying, and Scaling AI-Powered Systems

Target Audience:

This program is designed for professionals with backgrounds in software development, data engineering, cloud architecture, or AI/ML who are transitioning into the AI Solutions Architect role. It is also suitable for experienced architects seeking to specialize in AI-driven systems.

Role Level:

Advanced professional role, combining architecture, AI/ML knowledge, and business alignment.

Duration:

12 Weeks (Blended learning – mix of instructor-led, self-paced, and hands-on project work)

Program Overview

The AI Solutions Architect plays a crucial role in bridging business needs with AI capabilities. This program provides a structured roadmap to develop the technical, strategic, and leadership skills required to design, integrate, and manage AI-powered solutions in production environments. Participants will gain expertise in AI system design, model deployment, scalability, governance, and stakeholder communication.

Learning Objectives

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

- Assess business problems and identify opportunities for AI-driven solutions.
- Design AI solution architectures that integrate data pipelines, ML models, APIs, and cloud infrastructure.
- Select appropriate AI/ML models, tools, and platforms based on requirements and constraints.
- Implement scalable, secure, and maintainable AI deployments.
- Address AI governance, compliance, and ethical considerations.
- Communicate technical solutions effectively to both technical and non-technical stakeholders.

- Lead cross-functional AI implementation teams from concept to production.
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Training Roadmap: Step-by-Step Learning Path

Part 1: Foundations & Business Alignment (Weeks 1–4)

Focus: Core AI concepts, architecture principles, and aligning solutions to business objectives.

Week 1: Role & Foundations

- Introduction to the AI Solutions Architect role.
- Overview of AI/ML lifecycle: data, model, deployment, monitoring.
- Business use cases and ROI calculation for AI projects.

Week 2: AI Systems & Architecture Fundamentals

- Architectural patterns for AI solutions.
- Data ingestion, preprocessing, and feature engineering pipelines.
- Integration points between AI systems and enterprise applications.

Week 3: Requirements Gathering & Solution Design

- Stakeholder analysis and business requirement documentation.
- Translating requirements into high-level AI architecture diagrams.
- Identifying constraints (budget, latency, compliance).

Week 4: Tools & Platforms

- Cloud AI platforms: AWS Sagemaker, Azure AI, Google Vertex AI.
 - Open-source frameworks: TensorFlow, PyTorch, Hugging Face.
 - Choosing the right tools for the right project.
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Part 2: Technical Design & Implementation (Weeks 5–8)

Focus: Building, deploying, and integrating AI systems.

Week 5: Data Architecture & Governance

- Designing data lakes and warehouses for AI workloads.
- Data quality, governance, and compliance (GDPR, HIPAA, etc.).

Week 6: Model Selection & Deployment

- Choosing between pre-trained, fine-tuned, and custom models.
- Batch vs. real-time inference strategies.
- Deployment pipelines (CI/CD for AI).

Week 7: Scaling & Optimization

- Load balancing, auto-scaling, and cost optimization in AI systems.
- Edge AI and low-latency deployment strategies.

Week 8: Integration & APIs

- Building APIs to serve AI models.
- Integrating AI services with microservices architectures.
- Security and authentication for AI endpoints.

Part 3: Advanced Architecture, Leadership & Final Project (Weeks 9–12)

Focus: Advanced strategies, ethics, and real-world solution delivery.

Week 9: AI Governance & Responsible AI

- Bias detection and mitigation.
- Ethical frameworks for AI deployment.
- Auditing and explainability requirements.

Week 10: Cost Management & Optimization

- Cloud cost estimation and forecasting for AI solutions.
- Trade-offs between accuracy, latency, and infrastructure costs.

Week 11: Cross-Functional Leadership

- Leading data scientists, engineers, and product managers.
- Communication strategies for technical and executive audiences.

Week 12: Capstone Project

- Design and present a complete AI solution architecture for a real-world use case.
 - Architecture diagrams, cost models, deployment strategy, and governance plan.
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Assessment & Deliverables

- Weekly Exercises & Case Studies: **25%**
 - Mid-Program Architecture Design Assignment (Week 8): **30%**
 - Final Capstone Project: **35%**
 - Participation & Peer Reviews: **10%**
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