



Certified Agentic AI & Robotics Engineer (CAARE): Program Guide

Version: 1.0

Introduction

Artificial intelligence and robotics are reshaping every industry. Organizations require professionals who can design, build, and deploy autonomous software agents and physical robots that operate reliably, securely, and at scale. The Certified Agentic AI & Robotics Engineer (CAARE) program provides a comprehensive, multi-level curriculum designed to equip engineers with these skills.

The AI Revolution is Here: The Future Belongs to the Architects of Intelligence

The demand for elite AI talent has skyrocketed, creating unprecedented opportunities for skilled engineers. Companies are investing billions not just in technology, but in the human minds that can harness its power. The following real-world examples illustrate the immense value and potential of a career in Artificial Intelligence.

The New Reality of AI Talent & Innovation

- **The \$250 Million Offer:** Meta successfully recruited a 24-year-old Ph.D. dropout, Matt Deitke, with a staggering \$250 million package after an initial \$125 million offer was declined.
- **The \$1.5 Billion Rejection:** Andrew Tulloch, co-founder of Thinking Machines Lab, rejected a six-year, \$1.5 billion personal compensation package from Meta, shortly after the company's failed \$1 billion bid for his startup.
- **The \$250 Million Startup Acquisition:** The two-year-old Generative AI cybersecurity startup, Prompt Security, was acquired by SentinelOne for \$250 million in cash after having raised only \$23 million.
- **The \$3.1 Billion Valuation:** AI sales-automation platform Clay raised \$100 million in a funding round led by Alphabet's CapitalG, rocketing its valuation to \$3.1 billion—more than double its worth just three months prior.
- **The \$2.4 Billion Talent Acquisition:** Google licensed technology from Windsurf for \$2.4 billion, bringing its CEO and R&D team to Google DeepMind to advance its AI ambitions.
- **The \$500 Billion Valuation:** OpenAI is negotiating a share-sale round that would value the company at \$500 billion, surpassing SpaceX and demonstrating the immense financial race to secure and retain top AI talent.
- **The Rise of the 20-Something Founders:** A new wave of young entrepreneurs is flocking to San Francisco to launch AI startups, with figures like Alexandr Wang (Scale AI) becoming multi-billionaires and Chief AI Officers before the age of 30.

These figures surpass the earnings of most elite athletes and Fortune 500 CEOs. The message is clear: the race for AI dominance is more intense than ever, and the future belongs to those who can build and master intelligent systems.

Your Path to Becoming an AI Leader

Our **Certified Agentic AI & Robotics Engineering (CAARE) Program** is an intensive, hands-on journey designed to forge the next generation of AI pioneers. We focus on the next wave of AI—**Agentic AI and Robotics**—moving beyond foundational knowledge to build practical, real-world expertise.

This is not just a certification; it's an interactive career pathway with continuous feedback on your progress. The program is structured into four distinct levels, with exams conducted online via a fixed, proctored schedule.

Curriculum Overview

The certification consists of four levels, each with specific exams tailored to different expertise levels, exams are conducted online, on a fixed schedule, and are proctored:

Level 1: Agentic AI Foundations

Focuses on foundational knowledge in n8n, Python, Context Engineering, Markdown, and Agentic AI, and related concepts.

1. Exam L1:P1-N8N Low Code n8n Platform for AI Agent Development

Duration: 1 Hour | **Questions:** 30

- n8n's event-driven architecture and execution models
- Multi-modal AI agent design
- Vector database integration
- Conversational AI implementation
- Monitoring and observability
- AI agent integration patterns and best practices
- Enterprise-grade deployment strategies
- Security and credential management

2. Exam L1:P2-FMP Fundamentals of Modern AI Python

Duration: 2 Hours | **Questions:** 50

- Core Python programming concepts for AI applications
- Introduction to Python, data types, operators, variables, keywords, strings, and casting.
- Data structures, control flow, and functions
- Python's role in AI development, including data manipulation
- Vibe Coding

3. Exam L1:P3-OOP Object-Oriented Programming in Modern AI Python

Duration: 2 Hours | **Questions:** 50

- Object-Oriented Programming (OOP) Principles
- Multiple inheritance, Method Resolution Order (MRO)
- Composition vs. Aggregation
- Advanced Vibe Coding using Agents

4. Exam L1:P4-FAI Fundamentals of Agentic AI

Duration: 2 Hours | **Questions:** 60

- Introduction to Agentic AI and the OpenAI Agents SDK
- Basic Markdown syntax for documentation
- Basics of agentic AI, including the concept of agents and tools
- OpenAI Agents SDK Python-first design and core components

Level 2: Professional Agentic AI Development

Targets advanced proficiency in Python, Agentic AI, AI protocols, Agentic Web, and Building Effective Agents.

1. Exam L2:P1-PAI Professional Agentic AI Development

Duration: 2 Hours 30 Minutes | **Questions:** 60

- OpenAI Agents SDK architecture (Agents, Tools, Handoffs, Runner)
- Pydantic models for typed inputs/outputs
- Async programming and multi-agent workflows
- Prompt engineering (Chain-of-Thought, system message design)

2. Exam L2:P2-MCP Model Context Protocol (MCP)

Duration: 2 Hours | **Questions:** 100

- HTTP, REST, and JSON-RPC 2.0
- MCP Fundamental Primitives
- Advanced MCP Topics
- MCP Transports
- MCP and OpenAI Agents SDK Integration

3. Exam L2:P3-BEA Building Effective Agents

Duration: 3 Hours | **Questions:** 120

- Workflows and Agents
- LLM Augmentation
- Agentic Design Patterns
- Agentic Memory
- Neo4j AuraDB & Knowledge Graph
- Graphiti
- Augmentation Retrieval
- Agentic Payments and the Agentic Economy

4. Exam L2:P4-AGW Agentic Web

Duration: 2 Hours | **Questions:** 100

- Agentic Web Concepts
- Agent Attention Economy
- Agent-to-Agent (A2A) protocol

5. Exam L2:P5-AMP Advanced Modern AI Python

Duration: 2 Hours 30 Minutes | **Questions:** 50

- Advanced static typing using mypy and pyright, including type hints, generics, variance (covariance, invariance), and structural subtyping with the typing.

- Structural subtyping and protocols for flexible type checking
- Asynchronous programming with asyncio
- Object-oriented programming (multiple inheritance, MRO)
- Modern Python libraries (Pydantic v2, dataclasses)

Level 3: Professional Agent Native Cloud Development and Deployment

Covers advanced cloud-native technologies, including Docker, Kubernetes, and Dapr for deploying and managing agentic AI systems. (Under Development)

1. Docker for containerization of AI Agents, MCP Servers, and APIs using A2A Wrappers and FastAPI
2. Kubernetes for orchestration and managing containerized AI Agentic workloads at scale
3. Dapr for distributed application runtimes
4. Cloud deployment strategies for AI systems

Level 4: Professional Physical AI Development and Hardware Integration

Focuses on physical AI and robotics, integrating AI with hardware systems using cutting-edge NVIDIA technologies. (Under Development)

1. NVIDIA Isaac ROS for robotic operating systems
2. NVIDIA Isaac GR00T for general-purpose robotic intelligence
3. NVIDIA Isaac Sim for robotic simulation
4. Real-world applications of physical AI in robotics

Artificial Intelligence Course Catalog

These courses are designed to prepare students and professionals for the certification exams.

100-Level Courses

AI-101: Modern Python Programming & Low Code Agentic AI Development

AI-101 serves as a comprehensive gateway to Python programming for Artificial Intelligence and Low Code Agentic AI Development. This foundational course emphasizes modern Python programming skills with static typing—a cornerstone of robust, scalable AI projects. Students will learn to leverage AI tools for accelerated Python code development and gain hands-on experience building AI Agents using the n8n low-code platform. The curriculum spans foundational agentic concepts through advanced techniques including Model Context Protocol (MCP) and Retrieval-Augmented Generation (RAG). Upon completion, students will possess the essential skills needed to design and implement intelligent, automated systems.

200-Level Courses

AI-201: Fundamentals of Agentic AI

AI-201 introduces students to the core principles and practices of Agentic AI development. The course explores foundational theories underlying intelligent agent behaviour and provides extensive hands-on experience developing context-aware AI agents using the OpenAI Agents SDK. Through a balanced approach combining theoretical grounding with practical implementation projects, students will develop the expertise necessary to design and deploy functional multi-agent systems.

AI-210: MCP and Building Effective Agents

Building upon the foundation established in AI-201, this course introduces advanced Agentic AI concepts with particular focus on Model Context Protocol (MCP), Agentic Memory, and Agentic RAG. Students will study established agentic design patterns for building effective agents.

AI-220: Agentic Web

AI-220 focuses on Agentic Web theory and the practical implementation of Agent-to-Agent (A2A) Protocol systems. Students will explore how intelligent agents interact across web-based environments, share contextual information, and collaborate effectively on distributed computational tasks. The course examines core design principles for building web-native, cooperative AI systems and demonstrates how A2A protocols enable real-time communication between agents operating in diverse environments.

300-Level Courses

AI-301: Agent Native Cloud Development

This advanced course focuses on cloud-first development methodologies for Agentic AI systems. Students will explore scalable, distributed AI architectures utilizing industry-standard containerization and orchestration technologies including Docker and Kubernetes for deploying AI Agents and MCP Servers. Through comprehensive hands-on projects, students will design and deploy production-ready AI applications optimized for cloud environments.

AI-310: Planet-Scale Distributed AI Agents

The capstone course in distributed AI systems covers enterprise-grade distributed application runtime environments, focusing on Distributed Application Runtime (Dapr) implementation alongside managed database systems and messaging architectures. Students will design and implement planet-scale AI agent networks capable of operating across global distributed infrastructure.

400-Level Courses

AI-451: Physical and Humanoid Robotics AI

Artificial intelligence (AI) has experienced remarkable advancements in recent years. However, the future of AI extends beyond the digital space into the physical world, driven by robotics. This new frontier, known as “Physical AI,” involves AI systems that can function in the real world and comprehend physical laws. This marks a notable transition from AI models confined to digital environments. Humanoid robots are poised to excel in our human-centred world because they share our physical form and can be trained with abundant data from interacting in human environments.

This course provides an in-depth exploration of humanoid robotics, focusing on the integration of ROS 2 (Robot Operating System), Gazebo Robot Simulator, and NVIDIA Isaac™ AI robot development platform. Students will learn to design, simulate, and deploy advanced humanoid robots capable of natural interactions. The curriculum covers essential topics such as ROS 2 for robotic control, simulations with Gazebo and Unity, and using OpenAI’s GPT models for conversational AI. Through practical projects and real-world applications, students will develop the skills needed to drive innovation in humanoid robotics.

Appendix:

The Reality of the AI-powered Era: The Future Belongs to Those Who Master AI

Companies are willing to spend fortunes for elite AI minds.

One exceptional individual can create billions in value. Read these stories to understand the potential of AI-powered careers.

1. <https://nypost.com/2025/08/01/business/meta-pays-250m-to-lure-24-year-old-ai-whiz-kid-we-have-reached-the-climax-of-revenge-of-the-nerds/>
 - ↳ Matt Deitke, a PhD dropout
 - ↳ Initial offer: \$125M (declined as too low)
 - ↳ Zuckerberg counters: \$250M
 - ↳ \$100M in the first year alone
2. <https://gulfnews.com/technology/who-is-andrew-tulloch-meet-the-man-who-rejected-marck-zuckerbergs-15b-job-offer-1.500223824>
 - ↳ Andrew Tulloch, co-founder of Thinking Machines Lab
 - ↳ Meta dangled a six-year, **\$1.5 B** pay package
 - ↳ Tulloch flat-out **rejected** Zuckerberg's offer
 - ↳ Came right after Meta's failed **\$1 B** bid for his startup
3. <https://www.calcalistech.com/ctechnews/article/im5ma59bu>
 - ↳ **Prompt Security**, a two-year-old GenAI-cyber startup
 - ↳ Snapped up by SentinelOne for **\$250 M** cash deal
 - ↳ Had raised only **\$23 M** before the buyout
 - ↳ Founded by 8200-unit vets Itamar Golan & Lior Drihem
4. <https://www.reuters.com/technology/clay-valued-31-billion-latest-fundraise-ai-continues-run-hot-2025-08-05/>
 - ↳ **Clay**, an AI sales-automation platform [Reuters](#)
 - ↳ Raises **\$100 M** led by Alphabet's CapitalG [Reuters](#)
 - ↳ Valuation rockets to **\$3.1 B** (up from \$1.5 B three months ago) [Reuters](#)
 - ↳ Customer roster already includes Google & Reddit [Reuters](#)
5. <https://www.reuters.com/business/google-hires-windsurf-ceo-researchers-advance-ai-ambitions-2025-07-11/>
 - ↳ Google pays a **\$2.4 B** license fee to Windsurf
 - ↳ CEO Varun Mohan & R&D team join Google DeepMind
 - ↳ Move follows OpenAI's abortive **\$3 B** takeover talks
 - ↳ Most of Windsurf's 250 staff stay; investors keep stakes
6. <https://www.theguardian.com/technology/2025/aug/06/openai-chatgpt-talks-share-sale-price-more-than-musk-spacex>
 - ↳ OpenAI negotiating an internal **share-sale** round
 - ↳ Would value the firm at **\$500 B**, topping SpaceX

- ↳ Jump of ~**67 %** from its prior \$300 B mark
- ↳ Seen as lever to retain talent amid Meta's **\$100 M** bonuses

7. <https://www.nytimes.com/2025/08/04/technology/ai-young-ceos-san-francisco.html>
 - ↳ Wave of 20-something AI founders is flocking to San Francisco, saying they can't "afford to wait" before launching A.I. start-ups
 - ↳ Headliners include Scott Wu (Cognition AI), Michael Truell (Cursor), Roy Lee (Cluely) and Alexandr Wang (Scale AI)
 - ↳ Wu's Cognition is so intense it offers nine-month buyouts to staff unwilling to adopt an 80-hour-week "extreme performance culture"
 - ↳ Truell's Cursor has hit \$300 M ARR in <3 years, Lee's Cluely just raised \$15 M led by a16z, and 28-year-old Wang is already Meta's chief AI officer and multi-billionaire