



# Proposal: Six-Day Immersive Program on Generative AI & Autonomous Agents

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**Prepared for:** Computer Science & Engineering Students

**Prepared by:** HERE AND NOW AI

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## 1. About HERE AND NOW AI

HERE AND NOW AI is a pioneering Artificial Intelligence Research Institute committed to advancing AI and making its transformative power accessible to all. With a foundation in data science since 2011 and a strategic pivot to AI product development in 2018, we specialize in building enterprise-grade AI solutions and autonomous agent platforms. Our mission is to empower the next generation of builders, thinkers, and innovators by bridging the gap between academic knowledge and industry application.

Our slogan, “*Designed with passion for innovation,*” underscores our dedication to fostering cutting-edge skills and a forward-thinking mindset.

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## 2. Program Overview

This **Six-Day Immersive Program on Generative AI & Autonomous Agents** is an advanced, hands-on curriculum designed for computer science students. The program goes beyond basic chatbots to provide a deep dive into the architectures that power sophisticated AI systems. Participants will learn to build everything from Retrieval-Augmented Generation (RAG) systems to complex, multi-agent workflows using industry-leading frameworks like LangChain, LangGraph, and the Google Agent Development Kit (ADK).

- **Title:** The Generative AI & Agentic Architectures Bootcamp
  - **Objective:** To equip students with the advanced skills needed to design, build, and deploy complex AI agents and multi-agent systems for real-world applications.
  - **Target Audience:** Computer Science and Engineering students with a foundational understanding of programming.
  - **Duration:** 6 Days (5 hours per day, 30 hours total).
  - **Prerequisites:** Solid understanding of Python and basic programming principles. Prior exposure to AI concepts is beneficial but not mandatory.
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## 3. Key Learning Outcomes

Upon completing this immersive program, students will be able to:

- **Master Advanced RAG:** Implement sophisticated RAG pipelines, including text vectorization and web-based data retrieval.
- **Build with LangChain:** Utilize the LangChain framework to create powerful, tool-using AI agents.
- **Architect Multi-Agent Systems:** Design and implement collaborative agentic workflows using LangGraph, enabling agents to work together to solve complex problems.
- **Develop with Google’s ADK:** Gain hands-on experience with Google’s latest Agent Development Kit to build next-generation AI agents.



- **Understand Agentic Design Patterns:** Explore advanced concepts like ReAct (Reason and Act), self-correction, and tool augmentation in agent development.
  - **Deploy a Capstone Project:** Synthesize learnings into a final project that showcases their ability to build a production-grade AI application.
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## 4. Program Agenda

### Day 1: From Chatbot to Conversational AI (5 Hours)

- **Module 1: The GenAI Landscape:** Introduction to LLMs, prompt engineering, and the architecture of modern AI applications.
- **Module 2: Building a Foundational Chatbot: Hands-On:** Develop a multi-modal chatbot using the Google Gemini API and a Gradio interface.
- **Module 3: Engineering Conversational Memory: Hands-On:** Implement stateful memory to create more natural and context-aware conversations.

### Day 2: Mastering Retrieval-Augmented Generation (RAG) (5 Hours)

- **Module 4: The Power of RAG:** Understanding how RAG connects LLMs to external knowledge sources.
- **Module 5: Text Vectorization & Embeddings:** Deep dive into how text is converted into numerical representations for semantic search.
- **Module 6: Building a RAG Bot: Hands-On:** Create a RAG bot that can query and synthesize information from private text documents and live websites.

### Day 3: Building Intelligent Agents with LangChain (5 Hours)

- **Module 7: Introduction to LangChain:** Exploring the core components: Chains, Agents, and Tools.
- **Module 8: Your First LangChain Agent: Hands-On:** Build an agent that can use external tools (e.g., web search, calculator) to answer complex questions.
- **Module 9: Advanced Tool Use:** Learn how to create and integrate custom tools into your LangChain agents.

### Day 4: Architecting Multi-Agent Workflows with LangGraph (5 Hours)

- **Module 10: The Future is Collaborative AI:** Introduction to multi-agent systems and their applications.
- **Module 11: Introduction to LangGraph:** Learn how to define agentic workflows as graphs for more controllable and stateful interactions.
- **Module 12: Building a Multi-Agent Team: Hands-On:** Create a simple two-agent system (e.g., a “Researcher” agent and a “Writer” agent) that collaborate on a task.

### Day 5: The Google Agent Development Kit (ADK) (5 Hours)

- **Module 13: The Google Approach to Agents:** Introduction to the principles and architecture of Google’s ADK.
- **Module 14: Building with the ADK: Hands-On:** Develop a powerful AI agent using the components and methodologies of the Google ADK.
- **Module 15: Comparing Frameworks:** Understand the trade-offs and unique strengths of LangChain vs. Google ADK.



## Day 6: Advanced Agentic Patterns & Capstone Project (5 Hours)

- **Module 16: Advanced Agent Architectures:** Exploring concepts like reflection, planning, and self-correction in agents.
  - **Module 17: Capstone Project Workshop:** Students will work on a capstone project, applying the concepts learned throughout the week to build a sophisticated AI application of their choice.
  - **Module 18: Project Presentations & Future Roadmap:** Students present their projects. Discussion on emerging trends and career paths in AI.
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## 5. What We Provide

- **Joint Certification:** A certificate of completion co-branded by HERE AND NOW AI and the partner college, recognizing advanced proficiency in AI development.
- **Complete Project Codebase:** Full access to the source code for all projects and modules.
- **Career & Portfolio Resources:** Guidance on building a professional GitHub portfolio, advanced resume templates, and a library of agent prompts.
- **Expert Instruction:** Training delivered by industry professionals and AI researchers from HERE AND NOW AI.

We are thrilled at the prospect of empowering your students with the skills to not just use AI, but to build the future of it.

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