

Certified Generative AI (GenEng) Developer and Engineer

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Generative AI is poised to completely transform our lives and work landscape. McKinsey & Company estimates that generative AI could add \$2.6 trillion to \$4.4 trillion in economic benefits annually across various industries. This will be achieved through increased automation, improved decision-making, and personalized experiences. It is transformative for tech and jobs. It's critical, must-know knowledge across industries and businesses and if you don't keep up, you become obsolete in tech cycles that are moving fast. As new Gen AI-powered technologies keep coming and demand for skills are changing rapidly, workforce and professional training is exploding and is having difficulty in keeping up.

Our one-year GenEng certification program teaches you to get ready for this new revolutionary era. It consists of four quarters of three months each. It is a hybrid program consisting of onsite and online classes. It teaches you to develop smart applications using just GenAI, but also cutting-edge Web, and Cloud technologies. OpenAI Chat GPT 4, Google Gemini APIs, and Langchain for GenAI. TypeScript, React, Next.js, and Tailwind for the front end. Python, Numpy, Pandas, FastAPI, Pedantic, SQLAlchemy, and Postgres SQL databases for backend and API development. Containers (Docker), Google Cloud Run, Azure Container Apps, and Kubernetes for development, testing, and cloud deployment. The focus of the program is not on GenAI model development but on applied Cloud GenAI Engineering (GenEng) and application development.

This program is an earn-as-you-learn program. The diligent and hardworking participants will be able to start earning after the second quarter in freelancing, template development, traditional jobs and remote work, and other front-end markets. After the second quarter, the participants will be enhancing their skills with GenAI, API, Cloud, and DevOps technologies.

Quarter 1: TypeScript and Python Programming

In the first quarter, we will learn the two most used programming languages in GenAI Application Development, TypeScript for User interfaces, and Python for Application Programming Interfaces (APIs). We will cover both functional and object-oriented paradigms. TypeScript programming will be taught onsite and Python programming online.

Quarter 2: Front-end Development using Next.js

In this quarter we will learn to build and deploy state-of-the-art web user interfaces using TypeScript 5, React 18, Next.js 14, and Tailwind CSS 3. We will use beautifully designed and customizable Shadcn UI React components which are built with

Headless Radix UI and Tailwind CSS to speed up our development life cycle. Using Headless CMSs will also be covered. We will also learn to use Vercel AI SDK, an open-source library for building AI-powered user interfaces. The quarter will end with you learning to deploy these UI apps on Vercel Cloud and CDN.

Quarter 3: GenAI API, Database, Cloud Development, and DevOps

An API-as-a-Product is a type of Software-as-a-Service that monetizes niche functionality, typically served over HTTP. OpenAI APIs are themselves this kind of service. An application programming interface economy, or API economy, refers to the business structure where APIs are the distribution channel for products and services. In this quarter we will learn to develop APIs not just as a backend for our frontend but also as a product itself. In this model, the API is at the core of the business's value.

We will be using Python-based FastAPI as our core library and Pedantic, SQLAlchemy, and Postgres SQL databases for API development. OpenAI Chat GPT 4, Google Gemini APIs, and Langchain will be used to build these API-as-a-Product. Docker Containers will be our fundamental building block for development, testing, and deployment. For local development, we will be using Docker Compose, for testing Pytest and Testcontainers, and for deployment Google Cloud Run, Azure Container Service, and Kubernetes. We will be using Terraform as our Infrastructure as Code (IaC) tool.

Advanced Fourth Quarter Specializations

Students will have the option of selecting one of the following specializations in their fourth quarter:

- 1. Web3, Blockchain, and GenAI Integration Specialization**
- 2. Metaverse, 3D, and GenAI Integration Specialization**
- 3. Healthcare and Medical GenAI Specialization**
- 4. GenAI for Accounting, Finance, and Banking Specialization**
- 5. GenAI for Engineers Specialization**
- 6. GenAI for Sales and Marketing Specialization**
- 7. GenAI for Automation and Internet of Things (IoT) Specialization**
- 8. GenAI for Cyber Security**