

AI Software Engineering

7 months

Online

Part-time

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What is AI Software Engineering?

The AI Software Engineering Program by TripleTen is a 7-month program designed for people from diverse backgrounds. No prior tech experience required—just the ambition to become a highly paid professional in this field.

The program equips you with skills to land a tech job, starting with web fundamentals: HTML, CSS, and JavaScript. You'll learn professional workflows, including tools like Git and GitHub, Figma, and JSON APIs. After mastering fundamentals, you'll dive into the MERN stack, building secure backends with ExpressJS and MongoDB, and accessible frontends with React. You'll also containerize applications with Docker and deploy them on AWS, utilizing modern developer tools such as ESLint, Jest, TypeScript, and CI/CD via GitHub Actions, as well as GitHub Copilot.

By the end of the program, you'll have four strong portfolio projects showcasing your expertise. In addition to technical skills, you'll develop essential soft skills, including time management, teamwork, problem-solving, working with documentation, and building an online presence for your job search.

Course Structure

Your journey will be divided into sprints—two-week-long work-intensive periods grouped into thematic modules.

Each sprint will have a particular learning objective, reinforced through quizzes and tasks. Most tech companies work in this format, so you will come prepared. At the end of the sprint, you will take the skills you've learned and combine them with your existing skills to work on a project that will be assessed by industry experts.

We provide some rough time estimates to help you plan and manage your schedule, and we recommend spending around 20 hours per week studying. However, we understand that everyone has different commitments and people learn at different speeds—so, we provide you with the possibility to extend your deadlines by 12 weeks in total.

Module 1: Building Websites with HTML, CSS, and JS

Building Websites with HTML, CSS, and JS covers the foundational technologies for building modern web interfaces. HTML provides structure, CSS controls appearance, and JavaScript adds interactivity—together forming the core skillset every web developer needs. In this module, we introduce all three technologies and teach the essential workflows of professional web development, including version control with Git and GitHub, translating Figma designs into responsive layouts, and fetching data from remote APIs to create dynamic, interactive web applications.

Sprint 1. Structuring and Styling Web Pages with HTML and CSS

1. Structuring a Webpage with HTML
2. Changing a Webpage's Appearance with CSS
3. Making a Website More Accessible with HTML Semantics
4. Understanding Document Flow and the Box Model
5. Building Responsive Layouts with Flexbox
6. CSS Selectors and the BEM Methodology

Sprint 2. Building Your First Web Application

1. AI for Software Engineers

2. Tooling for Software Engineers

Project 1 Part 1. Flashcard App

Sprint 3. JavaScript and the DOM

1. JavaScript Foundations

2. Controlling Program Flow with Conditionals
and Loops

3. Working with Lists of Data: Arrays

4. Organizing Related Data: Objects

5. Manipulating a Webpage via the DOM
using JavaScript

6. Creating Elements and Adding Them to the DOM

Sprint 4. Adding Interactivity to Your First Web Application

1. JavaScript IDE Tooling and Debugging

2. Local Development and GitHub Copilot

Project 1 Part 2. Flashcard App Interactivity

Sprint 5. Creating Responsive Layouts from Figma Specifications

1. Navigating the File System with the Command Line

2. Version Control and Collaboration with Git and GitHub

Project 1 Part 3. Setting up the Repository

3. Getting Design Specifications from Figma

4. Responsive Layouts

5. Creating More Flexible Layouts with Flexbox and Grid

6. Pulling Elements Out of the Document Flow
with CSS Positioning

**Project 1 Part 4. Implementing the Open Deck View
with AI Assistance**

Project 1 Part 5. Implementing the Responsive Layout

Sprint 6. Form Submissions and Fetch Data from Remote APIs

1. JavaScript Syntax Variations

2. Forms, Inputs, and Buttons

Project 1 Part 6. The New Deck View

3. Handling Form Events

Project 1 Part 7. New Deck Form Submission

4. DOM Events: Beyond Click and Submit

5. Form Validation and Error Handling

Project 1 Part 8. Validation and Error Handling

6. Asynchronous Code and Fetch Requests

7. Documenting with JSDoc

Project 1 Part 9. API Requests

Module 2: MERN Stack Software Engineering

MERN Stack Software Engineering introduces full-stack web development using MongoDB, Express, React, and Node.js—one of the most popular and in-demand technology stacks in modern web development. Students learn to build complete web applications from the ground up, starting with JSON API and database design, then connecting them to React frontends with secure authentication and authorization. In this module, we cover the entire development lifecycle from local development through containerization with Docker and deployment to AWS, preparing students to build and deploy production-ready applications.

Sprint 7. Backend Development with Node and Express JS

1. Beyond Fetch Requests: Asynchronous JavaScript

2. APIs, HTTP, REST, and Postman

3. Node.js, NPM, and ESLint

4. Building an HTTP Server with Express

5. Backend Error Handling

6. Unit Testing with Jest

Project 2 Part 1. Building a Server

Sprint 8. Persisting Data with an ExpressJS and MongoDB backend

1. Git Branches and Merging

2. Persisting Data with MongoDB

3. AI Code Completion and Coding Agents

4. Implementing RAG with MongoDB

5. What is Authentication and Authorization?

6. Backend Authentication and Authorization
with Express and MongoDB

7. Server-Side Security

**Project 2 Part 2. Building an Express Server
with MongoDB Interactions**

Sprint 9. Building a React Interface

1. Object Destructuring and Methods

2. Generating a React Project Template with Vite

3. Functional Components and JSX

4. Managing State and Side Effects with Hooks

Sprint 9. Building a React Interface

5. Essential Algorithms and Data Structures for React Interfaces

6. Conditional Rendering

Project 2 Part 3. Building a React Interface

JS Classes and the Dependency Injection Pattern

Sprint 10. Authorization and Authentication in a MERN Stack Application

1. Creating Multiple Routes with React Router

2. Patterns for Managing Data in React

3. Working with Forms in React

4. Ensuring Accessibility with A11y

5. Frontend Authentication and Authorization with React

6. Securing Web Applications

**Project 2 Part 4. Data Management,
Authorization, and Authentication**

Sprint 11. Containerizing and Deploying to AWS

1. Improvement Performance with Caching

2. Creating an EC2 VM on AWS and Registering a Subdomain

3. Middleware for Production-Ready Applications

4. Containerizing a MERN Stack Application with Docker, Docker Compose, and Caddy

5. Deploying a Container to an EC2 Instance

6. Continuous Deployment

Project 2 Part 5. Containerizing and Deploying to AWS

Module 3: AI-Assisted Software Engineering

AI-Assisted Software Engineering focuses on leveraging modern AI tools to accelerate development while building production-quality applications with TypeScript. AI coding assistants, such as GitHub Copilot and coding agents, are transforming the way developers work, enabling faster prototyping, more robust testing, and improved code quality. In this module, we teach students to collaborate effectively with AI tools within an existing TypeScript application, culminating in a professional portfolio website that showcases their full skill set to potential employers.

**Sprint 12.
Extending
a Brownfield
TypeScript
Application with
AI Assistance**

1. Advanced TypeScript for Reading, Refactoring, and Safer AI Output

2. Advanced MERN Stack TypeScript

3. Reading and Extending Data Models with TypeScript

Project 3 Part 1. Data Architecture & TypeScript Design

Project 3 Part 2. React Setup & Secure External API Integration

Sprint 12.
Extending
a Brownfield
TypeScript
Application with
AI Assistance

Project 3 Part 3. Components, State Management
& Secure Forms

Project 3 Part 4. Frontend Security and Testing

Sprint 13.
Secure Full-
Stack Extension,
Validation, and
Delivery with AI
Assistance

Project 3 Part 5. Secure Backend Setup & Data Models

Project 3 Part 6. Secure Backend CRUD API

Project 3 Part 7. Full-Stack Integration

Project 3 Part 8. Security Testing & Debugging

Project 3 Part 9. Secure Deployment,
Documentation & Final Polish

Data Structures and Algorithms in Product Work

**Sprint 14.
Portfolio Website,
Deployment
Communication,
and Interview
Readiness**

1. Portfolio Site Architecture using TypeScript

2. Deploying Frontend-only Sites to Production

3. Interview Prep

4. Tech Interview Prep

**Project 4. Portfolio Building and Refining
the Portfolio Website**

Data Structures and Algorithms Practice

Employment Preparation

Before graduation

Access lessons to build essential time-management and soft skills to stay on track during your studies

Attend career workshops and ask me anything sessions with career coaches to define your goals, learn how to position yourself as a strong candidate and network

Participate in Industry Experience program to get hands-on experience with a real company (you'll learn more as you advance)

In the Active Job Search Period

Stay supported and accountable while actively applying:

- Join regular workshops and group sessions to keep momentum, refine your approach, and learn from others' experience
- Receive detailed feedback to improve your applications
- Continue using the AI-powered platform to optimize your search and stay organized

After graduation

Continue with career-focused lessons to strengthen both hard and soft skills needed to successfully land a job

Use an AI-powered job search platform to organize your applications, track progress, prepare for interviews, and stay consistent in your search

Work with a career coach to:

- Build a clear, personalized job search strategy based on your goals and market demand
- Create a strong resume and LinkedIn profile that attracts recruiters
- Learn and practice self-presentation and effective networking strategies

tripleten

Learn the job. Land the job.

7 months

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