

# Abhishek Bhattarai

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## Software Engineer

Senior Software Engineer with 4 years of experience architecting high-scale platforms for 10M+ users. Expert in the **TypeScript** ecosystem (React/Next.js/Node.js) and **Python** backend architecture, with a focus on building complex execution engines, **Workflow Automation** and **AI-driven internal tools**. Proven track record of reducing operational bottlenecks by **70%** and optimizing critical user paths (**45% latency reduction**). Deeply experienced in bridging the gap between engineering and growth via advanced marketing data pipelines (**sGTM/CAPI**).

## WORK EXPERIENCE

### Programiz • Lalitpur • 07/2022 – Present

#### Senior Software Engineer

- **AI Strategy & Automation:** Architected a multi-stage AI content workflow using **GPT/Gemini** and **Slack API integrations**, automating the transition from raw **Documentation** to structured courses and increasing production velocity by **2x** from 12 to 6 days.
- **Lead Visualizer Architect:** Spearheaded the end-to-end engineering of the **Code Visualizer** suite (Python, C, and DSA); managed the architectural bridge between **TypeScript** state management and **Python Execution Pipelines** for 100K+ users.
- **Advanced Data Pipelines:** Designed a high-scale marketing data pipeline using **sGTM** and **Meta CAPI**, improving tracking accuracy by 50% and ensuring privacy-compliant **Conversion Tracking** while collaborating with **marketing and growth teams**.
- **System Performance:** Optimized critical user path, reducing authentication latency by **45%** through non-blocking background task re-architecture.
- **Mentorship:** Lead code reviews and technical **Documentation** standards, enforcing strict **TypeScript** type-safety and modern **REST API design** patterns.

#### Software Engineer

- **Execution Infrastructure:** Primary developer of the **Playground IDE**, a browser-based environment supporting 8 languages with real-time **Execution Pipelines** for 1M+ monthly learners.
- **Process Optimization:** Engineered a custom **Python/Node.js** Content Workflow System (cws), reducing deployment cycles from 14 days to 4 days through **Workflow Automation**.
- **UX Reliability:** Debugged complex **cross-browser behavior** and frontend rendering bottlenecks, ensuring a seamless **Responsive UI** for learners on diverse devices and networks.
- **Feature Flag Systems:** Built the initial internal admin dashboard and feature flag controls, enabling granular product experimentation, operational visibility and easier software development and testing.
- **Scalable API Design:** Built and maintained **REST APIs** supporting Lessons and Quizzes, handling millions of requests per month with high reliability.
- Implemented **CI/CD pipelines and deployment automation**, improving reliability across environments.

## SKILLS

**Core Languages:** TypeScript, Python, SQL (MySQL/PostgreSQL/BigQuery), Rust (Exploratory/Personal projects), JavaScript, HTML / CSS

**Frontend Architecture:** React, Next.js (App and Pages Router/SSR), Design Systems, Component Libraries, Responsive UI, Cross-browser behavior optimization, Framer Motion

**Backend & Systems:** Node.js, REST API design, Microservices, Execution Pipelines, Docker, CI/CD, Workflow Automation, AI Pipeline Design

**Growth & Marketing Analytics:** Google Tag Manager (GTM), Server-side GTM (sGTM), Meta Pixel, Facebook CAPI (Conversions API), GA4, Conversion Tracking, Funnel Analysis, RudderStack, Mixpanel

## EDUCATION

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### BSc (HONS) in Cyber Security and Ethical Hacking

Coventry University • GPA: 3.6+ • 09/2019 – 09/2022

## PROJECTS

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### AI-Powered Content Engine

Programiz

- Developed a Slack-integrated AI engine that automates content outlining and brand-compliant asset generation.
- The primary tool for the content team, halving the time-to-market for new courses.

### Analytics Tracking & Marketing Data Pipeline

Programiz

- Led the design of a server-side event pipeline (**sGTM/CAPI**) that achieved **90%+** tracking coverage. Integrated **RudderStack** and **BigQuery** to enable deep funnel analysis and data-driven marketing decisions.
- Enabled **data-driven marketing decisions**, improved attribution accuracy, and supported **paid marketing optimization**.

### Code Visualizer Suite (Python, C, DSA)

Programiz

- Built a **line-by-line Python & C code visualizer**, designing backend services, React/TypeScript frontend, and CI/CD deployment.
- Built real-time, interactive frontend visualizations using **React and TypeScript**, coordinating with backend execution engines in Python and Node.js.
- Solved complex problems around **debugger state extraction, variable tracking, and recursive call visualization**.
- Tool now serves 100K+ monthly users, central to Programiz learning platform.
- Extended the Code Visualizer to visualize **Data Structures & Algorithms**, with optimized UI layouts and animation flows for **intuitive algorithm visualization**.

### Guided Project Environment

Programiz

- Contributed to system design for **scalable, real-world project environments** with automatic validation and portfolio support.
- Enabled thousands of learners to complete projects with measurable success outcomes.

### Playground (Browser-based IDE)

Programiz

- Built a **multi-language browser IDE** enabling real-time code execution for 1M+ monthly learners.
- Developed backend architecture and **scalable APIs** to enhance hands-on coding and platform engagement.
- Followed agile methodologies to deliver within deadlines

## CERTIFICATIONS

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**Applied Data Science Labs** • 08/2023 - 08/2023

World Quant University

## VOLUNTEERING & LEADERSHIP

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**Edulift Organization** • 12/2025 - 12/2025

Resource Person/ Trainer

Led an interactive training for 18 government schoolteachers, teaching how to create engaging digital lessons, use quizzes for instant feedback, and apply Google Classroom for announcements and assignments.