Usama Sadiq

Principal Software Engineer · Cloud & AI Application Architect · Open edX Core Contributor

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PROFESSIONAL SUMMARY

Principal Software Engineer with 8 years building production backend systems, cloud-native infrastructure, and AI application platforms in Python and Django. Authored **1,300+ pull requests across the open-source ecosystem** (**670+ merged in Open edX across 95 repositories**, with 159 merged ecosystem-wide in 2025) and **reviewed 4,400+ pull requests** for contributors, driving ecosystem-wide Python, Django, and CI/CD modernization. Most recently architected and led delivery of **two production AI platforms in a single quarter** — an enterprise client's AI document-validation system on AWS (ECS + Lambda + Bedrock) and Moneta's self-hosted five-app platform with **production Model Context Protocol (MCP) servers** for Outline, Plane, and SurfSense. Combines deep backend engineering with hands-on DevOps and a decade of OSS maintenance, repeatedly trusted to take systems from prototype to first production release and to integrate LLM capabilities into live products.

CORE SKILLS

Languages: Python, Bash, TypeScript, SQL
Backend & Frameworks: Django, Django REST Framework, Celery, Scrapy, REST API design
AI / ML Infrastructure: AWS Bedrock, LLM tool-calling integration, **Model Context Protocol (MCP) server architecture**, OAuth-gated MCP proxies, AI-assisted development pipelines
Cloud & DevOps: AWS (ECS, EKS, Lambda, API Gateway, RDS, Aurora, S3, CloudWatch, Secrets Manager, IAM), GCP (GKE), Docker, Docker Compose, Kubernetes, ArgoCD, Ansible
CI/CD: GitHub Actions (reusable workflows, matrix strategies, self-hosted Kubernetes runners with autoscaling), GoCD, Jenkins, CircleCI, Travis
Monitoring & Observability: CloudWatch, Datadog, Splunk, New Relic
Auth & Platform: OIDC / OAuth2, AWS Cognito, multi-tenant authentication
Data & Eventing: Kafka event bus, PostgreSQL, Pandas, NumPy, OpenSearch
Testing: Pytest, Tox, Django test framework, unit / functional / integration testing
Frontend: React.js, TypeScript
Practices: Microservices, serverless architecture, multi-environment promotion, infrastructure-as-code, monitoring and observability, technical mentorship

EXPERIENCE

Arbisoft, Principal Software Engineer

2018 – Present · Lahore, Pakistan

Progressed from web developer to backend specialist to Principal Engineer and Cloud / AI Application Architect, leading production delivery across AI, DevOps, and large-scale open-source engagements for enterprise clients.

Enterprise AI Document Validation Platform: Senior Cloud Architect and Lead Backend Engineer · *2025 – 2026*

- Designed the complete backend architecture of a production AI document-validation platform and took it from prototype to first production release as lead backend engineer and team lead.
- Built a hybrid AWS design: ECS for Django application servers, Lambda for AI tool-calling and workflow execution, and AWS Bedrock for the large-language-model layer, with a three-stage GitHub Actions pipeline (Test, Build, Deploy) to ECS.
- Integrated an LLM capability for automated document verification, shipping the in-production AI feature layer of the product.
- Recognized company-wide for leading the team's first production application release; credited by the client project lead as the bridge across the AI, backend, and frontend layers.

Self-Hosted Open-Source Application Platform (Moneta): Platform Architect and Team Lead · *2026*

- Architected and led delivery of a self-hosted platform bundling five open-source applications (Outline, Plane, Penpot, SurfSense, Twenty CRM) with a team of six.

- Designed multi-tenant OIDC / Cognito authentication and a Docker Compose plus GKE-with-ArgoCD deployment topology across staging and production, enforcing a branch-based promotion strategy.
- **Authored three production MCP servers — outline-mcp-server, plane-mcp-server, and surfsense-mcp-server — exposing platform tools to an AI assistant via OAuth / Cognito-gated auth and a stateless execute-tool proxy; reused beyond the immediate team.**
- Built a content-migration tool that preserved page hierarchy, formatting, images, diagrams, threaded comments, and original authorship for a clean production cutover.
- Recognized company-wide for leading a first production application release (2026).

External Grading Event-Bus Migration (Open edX, Axim-funded): Technical Lead · *2025*

- Took over a stalled cross-organization initiative and delivered the migration of external grading from legacy polling to an event-driven, Kafka event-bus architecture.
- Implemented custom signals, viewsets, and comprehensive test coverage; shipped a backward-compatible solution released in the Open edX Ulmo release and published to PyPI.
- Authored community testing documentation that external contributors used to independently validate the migration.

Open edX / edX Platform: Backend and Cloud Engineer, Open-Source Maintainer · *2019 – Present*

- Led ecosystem-wide Python (3.8 → 3.12) and Django LTS (3.2 → 4.2 → 5.2) upgrades across dozens to hundreds of repositories, authoring generic codemods and reusable “modernizer” tooling.
- Delivered platform migrations: translation API v2 → v3, Elasticsearch → OpenSearch, CI Jenkins → GitHub Actions, and GitHub-sourced dependencies → PyPI.
- Owned production deployments for edX / 2U (GoCD with AMI deploy and rollback for core services); retained past a general contractor wind-down specifically to lead the full knowledge-transfer handover to the incoming vendor team.
- Authored and reviewed code across multiple core Open edX repositories, accumulating **670+ merged pull requests across 95 repositories** in the openedx GitHub organization since 2019 (235 to edx-platform alone), plus **128 merged in the legacy edx organization**. Reviewed **4,400+ pull requests** for contributors across the ecosystem, with **1,300+ lifetime PRs authored across the OSS ecosystem**.

SELECTED PROJECTS

- **Production MCP Server Fleet:** three OAuth / Cognito-gated MCP servers (Outline, Plane, SurfSense) implementing a stateless execute-tool proxy pattern — among the first production-hardened MCP implementations against real multi-tenant applications.
- **Enterprise AI Document Validation Platform:** hybrid AWS architecture (ECS, Lambda, Bedrock) for LLM-driven document verification, taken from prototype to production.
- **Five-App Self-Hosted Platform (Moneta):** multi-tenant OIDC platform on GKE and ArgoCD with custom MCP integration servers.
- **Event-Bus Grading Migration (Open edX):** Kafka event-bus external grading with custom signals, viewsets, and full test coverage; released to PyPI.
- **Serverless Data Processing Pipeline:** event-driven Lambda functions for data transformation over APIs, with comprehensive CloudWatch logging.
- **Docker Adoption and Environment Standardization:** containerized 8+ major services and eliminated environment inconsistencies across teams.
- **CI Infrastructure Migration and Auto-Scaling:** migrated CI from Jenkins to Kubernetes-managed AWS runners with dynamic autoscaling via GitHub Actions.
- **AI-Assisted Workflow Automation:** internal automation aggregating activity across tools into daily engineering logs and summaries, adopted as a reusable team pattern.

OPEN-SOURCE LEADERSHIP & COMMUNITY

- **Open edX Core Contributor and Maintainer** in the Open edX ecosystem; member of the Maintenance and platform Working Groups, collaborating with globally distributed maintainers and steward organizations including Axim Collaborative.

- **OSSVitals:** built and maintain the public open-source health platform (ossvitals.org), the evolution of the Open edX Repo Health Dashboard, now covering both Open edX and Moneta project health; reframes repository maintenance as a measurable, ecosystem-level practice.
- **Named maintainer of five Open edX packages:** django-config-models, django-user-tasks, edx-rest-api-client, pytest-repo-health, and edx-repo-health.
- **Incident response, eMudhra CA key compromise (Oct 2026):** ran the community bulk-upgrade job for certifi, uv, and pip across Open edX, reviewed 40 of the 118 certifi pull requests across 82 repositories, hand-fixed the repositories the job could not patch, and built a live campaign tracker on OSSVitals during the incident; security releases for master and Verawood were ready within 48 hours of public disclosure.
- **Upstream contributions outside Open edX:** merged pull requests in tox, virtualenv, algoliasearch-django, django-cache-memoize, swagger2rst, and python-cloudflare.
- **Conference speaker:** presented “Elevating Open edX Development: The Repo Health Dashboard” at the Open edX Conference 2024, Stellenbosch, South Africa (talk recording).
- **Meetup speaker:** “Observe, Connect, Act: an agent loop for open source maintenance” at AI Tinkerers Lahore (Oct 2026): the OSSVitals dashboard, repository health data over MCP, and an automated remediation skill.

RECOGNITION

- **Open Source Contributor Award:** Arbisoft, Oct 2026, for the eMudhra CA key-compromise response.
- **Public credit from Axim Collaborative:** Oct 2026, for the eMudhra response, in the Open edX community Slack.
- **First Production Release (×2):** recognized company-wide for leading two teams to their first production application release in a single quarter (Mar 2026 and Jun 2026).
- **Open Source Contribution (×2):** recognized for sustained, high-impact open-source contribution.
- **Peer Collaboration Recognition:** recognized company-wide for engagement and collaboration (Jan 2026).
- **Client Commendation:** cited by client leadership for cross-functional technical leadership.

MENTORSHIP

Mentored and developed engineers with documented outcomes, including transitions to specialized platform and AI teams and an intern-to-full-time conversion, and led a complete team knowledge transfer during a client vendor transition. Mentor open-source contributors across the Open edX community through code reviews and live guidance.

RESEARCH EXPERIENCE

Undergraduate research intern at ITU (part-time, 2016 – 2018), roughly two years combined across two machine-learning labs.

CSALT Lab (Center for Speech and Language Technologies), ITU · Undergraduate Research Intern · 2016 – 2018 (~1.5 years, part-time)

- Worked on data tagging and annotation, model training, and machine-learning workflows for speech and language research.

Computer Vision Lab, ITU · Undergraduate Research Intern · 2016 – 2018 (~6 months, part-time)

- Contributed to data annotation and model-training tasks for computer-vision research.

EARLIER EXPERIENCE

Eccentrica Technologies (Pvt.) Ltd. · Game Development Intern · 2015 – 2016 (~6 months)

- Built multiplayer and VR games in Unity, integrating Google Play Games Services for achievements and live events.
- Designed and developed both the backend game-engine logic and the frontend asset-building pipeline.

EDUCATION

Information Technology University (ITU), Lahore · BS Computer Science · 2014 – 2018
Dean’s Honor List every semester through graduation.

Superior College, Lahore · 2012 – 2014 · Full merit scholarship.