Sayyed Shozib Abbas

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To utilize my creativity and IT skills to craft new methods and improve existing systems to bring innovation

Experience

Head of Engineering   Compact Machines   Oct 2025 – Present

- Led end-to-end **Software Development Life Cycle (SDLC)** execution for HudLink, an **AI-powered due diligence platform**, translating business and stakeholder requirements into scalable, production-grade software systems.
- Owned **system architecture and technical strategy**, designing **microservices-based, cloud-native architectures** for web and AI modules, enabling modular feature development and seamless internal and external API integrations.
- Directed **hands-on full-stack engineering**, including feature implementation, code reviews, performance optimization, and enforcement of **engineering best practices**, ensuring high code quality, maintainability, and reliability.
- Designed and deployed **queue-based AI processing pipelines** on **GPU-accelerated infrastructure**, supporting scalable workloads across **AWS, GCP, and on-premise environments**, with fault tolerance and horizontal scalability.
- Built and delivered **secure, thoroughly tested software components** aligned with product milestones, supporting accurate financial modeling, market intelligence, and risk analysis outputs for enterprise clients.
- Defined and documented **system architecture, data flows, workflows, and integration standards**, enabling long-term scalability, faster onboarding of engineers, and reduced technical debt.
- Led **cross-functional engineering execution**, coordinating internal teams and external contractors to ensure on-time delivery of critical milestones and alignment with product and business goals.
- Partnered closely with executive leadership to align **engineering execution with business strategy**, driving product iteration, infrastructure improvements, and continuous technical evolution of the platform.
- Oversaw **CI/CD pipelines, deployment strategies, and infrastructure improvements**, ensuring secure, reliable, and performant releases in production environments.

Director IT   AILA   Apr 2024 – Sep 2025

- Led **end-to-end product development** of AILA's flagship platform from ideation through production, delivering **secure, scalable web, mobile, and desktop applications** for academic and student-focused use cases.
- Architected and implemented a **microservices-based backend** using **NestJS, MySQL, MongoDB, and Docker**, enabling modular service growth, secure REST APIs, and efficient data handling.
- Designed and launched a **cross-platform desktop MVP using Electron**, accelerating time-to-market and expanding platform accessibility across operating systems.
- Integrated **AI-driven workflows** using **LangChain**, enabling natural language processing, automated task assistance, and intelligent academic support features.

- Conducted **market research and data analysis** to inform feature prioritization and product direction, aligning engineering decisions with **local academic requirements**, particularly within the Pakistani education ecosystem.
- Researched and implemented **resource-efficient plagiarism detection mechanisms**, optimized for **low-bandwidth and constrained compute environments**, ensuring performance and accessibility.
- Built and optimized **OCR pipelines, structured review systems, and role-based access control (RBAC)** to support educational workflows, assessments, and content moderation.
- Integrated **Stripe APIs** for secure payments, recurring subscriptions, and invoicing, with cloud infrastructure deployed on **AWS (EC2, S3)** to ensure reliability and scalability.
- Implemented **authentication and identity management** using **Google OAuth** and **AWS Cognito**, supporting secure user onboarding and session management.
- Applied **microfrontend architecture** for frontend scalability and ownership, and established **CI/CD pipelines using Jenkins**, ensuring reliable, automated build and deployment processes.
- Defined and enforced **engineering standards and best practices**, including **ESLint, Prettier, code reviews, and documentation**, improving long-term maintainability and team velocity.
- Delivered **high-performance client-side applications** using **JavaScript, React, Next.js, and React Native**, while incrementally modernizing legacy components without disruptive backend refactors.
- Built and led a strong **engineering culture**, mentoring junior engineers, conducting regular code reviews, and leading internal training on **AI systems, backend architecture, and cloud deployments**.
- Authored **technical architecture, security, and compliance documentation**, supporting **GDPR alignment, SOC 2 readiness**, and long-term scalability planning.
- Collaborated closely with founders, product, and business stakeholders to ensure **technical strategy aligned with product-market fit, user needs, and business objectives**.

Senior Software Developer   siParadigm   Feb 2022 – Apr 2024

- Led **frontend architecture and development** for enterprise-grade pathology software, enabling **end-to-end digitization of laboratory workflows** with **role-based access control (RBAC)**, secure review pipelines, and technician/annotator dashboards.
- Developed and maintained **high-performance web applications** using **React, Redux, and RTK Query**, delivering responsive, data-driven interfaces optimized for complex medical workflows.
- Architected and delivered **cross-platform video conferencing applications** using **React Native**, supporting real-time communication on **Android and iOS** platforms.
- Engineered **high-resolution image annotation systems** using **OpenSeadragon**, enabling precise review, zooming, and markup of large-scale pathology scans.
- Designed and enhanced **OCR-based web applications** with fine-grained annotation tooling to improve text detection, recognition accuracy, and review efficiency.
- Delivered **full-stack features** across **React (frontend)** and **ASP.NET (backend)**, including complex modules such as **insurance billing reports**, internal lab management tools, and reporting dashboards.
- Designed and implemented a **monorepo architecture** to unify **React and React Native** codebases, improving code reuse, maintainability, and development velocity across platforms.
- Implemented **microfrontend architecture** using **single-spa**, enabling modular development and incremental modernization of legacy **ASP.NET** applications.
- Integrated **modern React-based interfaces** into existing legacy systems, facilitating progressive UI upgrades without disrupting critical backend services.
- Developed a **Chrome Extension** featuring real-time animated avatars using **three.js**, built with **Vite** to enable fast development cycles and optimized modular builds.
- Applied **Tailwind CSS** across frontend projects with customized theming, responsive design systems, and optimized production builds to **reduce bundle size and improve performance**.

- Integrated and standardized **third-party UI and utility libraries**, enabling modular, reusable component development across multiple products.
- Led **technical mentorship and internal training initiatives**, upskilling junior engineers in **frontend architecture, modern React patterns, and scalable API integration strategies**.
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Software Engineer   Alachisoft   Jul 2018 – Oct 2020

- Contributed to core engineering of **NCache**, a **high-performance distributed caching platform** for **.NET and .NET Core**, optimized for **multi-threaded, low-latency workloads** across clustered network environments.
- Designed and implemented a **cloud management portal** using **ASP.NET Core and Angular**, enabling automated **VM provisioning, configuration management, and cluster orchestration** on **AWS and Azure**.
- Developed a **web-based monitoring and diagnostics system** using **C#, jQuery, and ASP.NET**, providing real-time visibility into performance metrics, resource utilization, and distributed system health.
- Built and maintained a **cluster management and administration interface** using **ASP.NET MVC and Razor Pages**, enabling fine-grained control over caching topology, configuration, and runtime operations.
- Worked on the **Distributed Caching Manager for Java**, extending and customizing **Java Collection interfaces** to closely mirror **.NET collection semantics**, ensuring seamless cross-platform developer experience.
- Engineered **custom JSON serialization and deserialization modules** to enable efficient, interoperable data exchange between **C# and Java clients** in distributed environments.
- Enhanced the **Publisher/Subscriber messaging subsystem**, delivering feature improvements and scalability enhancements for high-throughput event distribution.
- Developed **PowerShell automation scripts** to streamline deployment, configuration, monitoring, and lifecycle management of distributed caching services.
- Maintained a strong focus on **performance optimization, reliability, and developer tooling**, contributing to production-grade systems within **Visual Studio-based .NET and .NET Core ecosystems**.

Education

MS Software Engineering

CEME, NUST   2024

BS Computer Science

SEECS, NUST   2018