Kartik Khosa

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Full-Stack Engineer with over five years of experience transforming legacy scientific research platforms such as Arabidopsis.org and Morphobank into scalable microservices. I devise architectural strategies to overcome scaling challenges, eliminate performance bottlenecks, and ensure systems remain reliable under heavy load.

Work Experience

Phoenix Bioinformatics, Dallas TX, US — ***Full Stack Software Engineer*** Oct '22 – Present

- Architected a Spring Boot pipeline that replaced SQL queries with S3 JSON data indexed in Solr, reducing search times from 60s to 300ms, boosting page load speeds by 40%, and scaling to 10M+ annual page views.
- Automated reporting workflows using SpringBoot APIs, enabling dynamic data aggregation and integrating AWS SES to deliver reports and save 1,000+ hours annually for business teams.
- Defined and implemented an automated Docker-based CI/CD platform (Jenkins + GitHub Actions) that accelerated release cycles by 70%, reduced rollbacks by 90%.
- Designed and engineered microservices architecture and RESTful APIs in Node.js to modernize Arabidopsis.org backend, enabling seamless integration and improving overall application flexibility.
- Implemented intuitive Vue.js pages using Bootstrap for bioinformatics data, increasing user engagement by 40%.
- Developed an AI-powered chatbot using React, Node.js, Supabase and OpenAI embeddings that reduced TAIR subscription support tickets by roughly 40% by automating common inquiries and documentation retrieval.
- Contributed to peer-reviewed research in *Genetics* and presented at ISMB 2024 on scalable bioinformatics architectures.

Appian Corporation, Mclean VA, US — ***Solution Engineer*** Mar '20 – Oct '22

- Maintained 100% compliance and strengthened security for 100K+ users by auditing custom Java plugins and integrating SAML, OAuth, and LDAP protocols across 100+ businesses.
- Developed custom Bash scripts to automate error log parsing and analysis, facilitating root cause identification and cutting debugging time by 30% while reducing incident resolution time by 40%.
- Created 5+ knowledge base articles and led training sessions for global teams, boosting operational efficiency by 25%.
- Partnered with cross-functional teams to deliver tailored client solutions, achieving a 95% "Very Satisfied" client satisfaction rate and increasing account retention.

Education

University of Pennsylvania
Master's in Computer and Information Technology May '24

Pennsylvania State University
Honors Bachelor's in Science Mechanical Engineering with magna cum laude Dec '19

Personal Projects

ThumbnailGen - Ultra-Fast Image Processing Service:

- Built a high-performance C++ thumbnail generation service achieving <50ms end-to-end latency using libvips
- Implemented modern HTTP server with Boost.Beast async I/O, multi-threading, and Docker containerization
- Integrated Prometheus metrics and Grafana dashboards for production monitoring and performance tracking

Celebrating Cinema Web App:

- Built a React movie app with personalized watchlists and AI recommendations powered by IMDB data on Amazon RDS.
- Enhanced database performance with sharding and indexing, cutting query times by 40% for complex searches.
- Implemented state management with Redux for seamless user experience and optimized API calls to reduce latency by 20%.

InfiniLearn AI:

- Created an AI-driven learning platform with adaptive educational trajectories using Python/Flask, OpenAI API, and JavaScript.
- Improved course recommendation accuracy by 25% through iterative model fine-tuning.

Technical Proficiencies

Backend: Java (SpringBoot and Maven), Python (Django, Flask & FastAPI), JavaScript (Node.js)
Frontend: Vue.js, React.js, Next.js, HTML/CSS, Tailwind, Bootstrap
Data Engineering: PySpark, AWS Databricks, Data Warehouses and Data Mesh Architectures, SQL, NoSQL (S3, MongoDb)
DevOps: Bash, Docker, Kubernetes, Git, AWS (ECS, Lambda), CI/CD Pipelines (Jenkins, GitHub Actions)
Machine Learning: Scikit-learn, TensorFlow, Keras, PyTorch, NLTK, Seaborn