Tanvin Kalra

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EDUCATION

North Carolina State University — **Raleigh, North Carolina**
Master of Computer Science
- **Relevant Coursework***: Design and Analysis of Algorithms, Operating Systems Principle*s — *August 2024 - Present*

The LNM Institute of Information Technology — **Jaipur, India**
*Bachelor of Technology, Computer Science and Engineering (**GPA**: 8.97/10)* — *Graduation Date: July 2022*
- **Accomplishments***: Facebook Hacker Cup'21-Round 2 (Rank 1971), Google Hash Code'21 (Rank 5749), Qualified for Round 1 Google Code Jam'21 and '22*

TECHNICAL SKILLS

- **Areas**: Algorithms, Cloud Computing, Data Structures, Distributed Systems
- **Programming Language**: **Proficient**: C++, Java, Python, SQL, **Intermediate**: C, Javascript, HTML, CSS
- **Frameworks**: Django, Spring Boot, Reactjs
- **Infrastructure**: Amazon Web Services (AWS), Docker, Kubernetes, DynamoDB, MongoDB, MySQL, PostgreSQL, Google Cloud Platform (GCP), Redis, Sentry, Git, JIRA

WORK EXPERIENCE

TartanHQ Solutions Private Limited — **Gurugram, India**
Backend Engineer — *January 2023 - May 2024*
- Maintained and extended the user management module using **AWS Cognito**, enabling B2B opportunities and **increasing the user base by 20%**, while scaling the system for multiple account creation flows, including **SSO** integration.
- Led a team to address VAPT findings, enhancing security by implementing **HTTP Security Response Headers** (Content-Security-Policy, X-Frame-Options) and integrating additional security checks into the codebase using **Spring Security**.
- Engineered a Consent Service to reduce customer verification timelines using **REST API** development in **Spring Boot** and **MySQL**.
- Reduced infrastructure hosting costs by migrating the cloud resources from **AWS** to **a multi-cloud architecture** without affecting system availability.
- Remodeled database relationships to enhance **MySQL** performance, resulting in more efficient data analytics dashboards.
- Orchestrated data migration from **DynamoDB** to **MongoDB** to save hosting costs using **Python** and **S3**.

OYO — **Gurugram, India**
Software Development Engineer - 1 — *July 2022 - January 2023*
- Programmed a **Backend For Frontend** service to handle UI requests, as well as fetch and aggregate data from multiple services using **Spring Webflux**.
- Improved the load time of the front-end service to less than 50% by introducing **pagination**.
- Optimized the performance of an API by reducing the response time by more than 70% with the help of **multi-threading**.
- Engineered a mechanism to emit audit logs to monitor data and probable security breaches using **Django Rest Framework** (DRF).

OYO — **Gurugram, India**
Software Development Engineer Intern — *January 2022 - July 2022*
- Streamlined home-owner onboarding by reducing timelines through efficient backend enhancements using **Django Rest Framework** and remodeling the **PostgreSQL** database to accommodate new data fields.
- Extended the frontend service with new data information by designing UI components using **Next.js.**
- Upgraded the frontend service with a configurable Content Management System using **Strapi**.

Amazon — **Chennai, India**
Software Development Engineer Intern — *May 2021 - July 2021*
- Developed and Integrated RESTful APIs to support remote activities using Kotlin.

PUBLICATIONS

A Comparative Study and Analysis of Time Series Forecasting Techniques for Indian Summer Monsoon Rainfall (ISMR) — *ANTIC 2022*
- Conducted a comparative analysis and hyper-tuned various **deep learning algorithms** (**MLP**, **CNN**, **LSTM**, and Wide Deep Neural Networks) to forecast ISMR using **TensorFlow's Keras API**.

ACADEMIC PROJECTS

XINU OS: Operating Systems — *October 2024*
- Developed multiple scheduling algorithms for process management using C and assembly, improving system efficiency.
- Programmed a utility tool to monitor execution times and track the frequency of system call invocations, enabling performance analysis and debugging.

2D Platformer Game Engine Development — *October 2024*
- Developed a custom game engine using C++ and SDL3 for creating 2D platformer games, featuring collision detection, and a simplified physics engine.
- Integrated multiplayer functionality with ZeroMQ, supporting both peer-to-peer and client-server networking models for seamless multiplayer gameplay.

CERTIFICATIONS

- **SystemsExpert** — *September 2022*
- **Algorithmic Toolbox** — *November 2020*
- **CS50's Introduction to Artificial Intelligence with Python** — *July 2020*
- **6.00.2x: Introduction to Computational Thinking and Data Science** — *May 2020*
- **6.00.1x: Introduction to Computer Science and Programming Using Python** — *March 2020*