AVINASH KUMAR

Indian Institute of Technology, Kanpur

B.Tech in Computer (MINOR) & Mechanical (MAJOR), Graduated in 2019

+91-7054116758   github/im4vk   linkedIn/im4vk   avinashjsr97@gmail.com

---

TECHNICAL SKILLs & CERTIFICATIONs : *Certificates*

Competitive Programming	Rated **1761 (**in Advanced Data Structures**)** on platforms like Codeforces & CodeChef
Security Domain	**Certified** in *CompTIA CyberSecurity* Track → **Security+, Pentest+, CySA+ and CASP+** Pentesting Testing **Tools** like Jadx, BurpSuite-Pro, Frida, IDA-Pro etc Rated **Hacker** level on HackTheBox, PortSwigger and on HackerOne Reported vulnerabilities, did threat analysis and penetration testing in **Bug Bounties**
Backend Domain	ReactJS & NodeJS, Context APIs, MERN stack, Postgres, Elasticsearch, Redis Udemy **Certified** in Amazon Web Services (EC2, S3, CI / CD) & Distributed Systems Github & Git, ELK, Load Testing, Artemis, MQTT, Kafka, Kubernetes & Microservices Hold certification in blockchain development on RUST
Language / Frameworks	RUST, C++ / C / C#, Python, JAVA SpringBoot, SQL, Android / Windows / Kali-Linux
Soft Skills	Problem Solving, Critical Thinking, Attention to Detail, Continuous Learning and Adaptability **Prompt Engineering on AI models** to build and test products, problem solving and learning

EXPERIENCEs

Samsung Research Institute, Bangalore
Mar 2023 - Sep 2024

Backend Software Engineer II

- **Implemented secure server-side certificate provisioning** and key management by verifying EKCert and IDBinding with nonce and signature, creating and signing CSRs, and integrating Key Attestation with nonce2 and CSRs for encrypted communication and secure TPM and AWS storage
- **Engineered a revolutionary Message service** by using authentication method to transmit critical communications from Blackboard server to Devices
- **Optimized Build Time of Message service from 10 minutes to under 4** minutes and upgraded to latest artemis version. Added Load Testing for connecting Multiple Devices at multiple Intervals
- Added Multiple APIs that **performs connect using token based authentication** along with other operations in Membership service (Service used to connect multiple devices with same SA Account and share data with proper security)

Security Software Engineer II

- **Led Red Team activities** including penetration testing on phones and TVs, and successfully executed bounties and Capture The Flag (CTF) competitions on online platforms, identifying critical vulnerabilities
- **Developed and implemented a Windows TPM security framework** while leading a **team of four** engineers to provision signed certificates locally, ensuring cryptographic operations remain secure via TPM, and thus reducing security breaches
- **Integrated Trusted Apps (TAs) on Android devices**, securing key communication channels within the Trusted Execution Environment (TEE) and protecting sensitive information from unauthorized access
- **Pioneered virtualization for Android security** by building and testing secure OP-TEE on Android Virtualization Framework (AVF), decreasing threats to applications running on AVF by 30%
- Built and enabled **TEE of 3 major chipsets** – Qualcomm, TEEgris and UniSoc for Headquarter office in Korea

PayPal, Bangalore
Aug 2021 - Mar 2023

Backend Software Engineer

- **Spearheaded the migration of chatbots** from IBM Watson to Google Dialog Flow, seamlessly handling both IVR and chat systems for 10+ major locales, improving customer support efficiency

- **Developed a Neo4j-based tool** for visualizing and optimizing complex legacy workflows, streamlining the migration to Google Dialog Flow and reducing manual effort by 25%
- **Created a new version of Chat-Simulator**, integrating an automated **Cypress tool** to execute test cases, significantly accelerating the testing process and improving efficiency by 40%, ensuring high reliability in production
- **Redesigned the Google Dialog Flow architecture** and integrated it with in-house NLP, reducing dependency on third-party NLP services and cutting costs by 15%
- **Built a real-time dashboard on Looker** to monitor chatbot traffic, reducing data latency from 48 hours to just 1 hour, enabling faster decision-making and improved performance tracking
- Leveraged TFIDF algorithms to analyze raw WSDL text to predict CRUD operation type, then formulated **REST API requests and responses** using the **Spring-Boot framework**, enabling seamless integration of legacy WSDL services into modern RESTful architectures for improved consumption and scalability

Security Software Engineer

- **Conducted comprehensive security tests** on the migrated Google Dialog Flow (GDF) architecture, identifying and mitigating vulnerabilities, threats, and edge case failures within the chatbot system, ensuring secure data handling and reducing system downtime by 15%
- **Ranked in the top 1%** among participants in the **cmd+ctrl 2-day hackathon**, completing all 48 challenges and demonstrating strong problem-solving skills in various security scenarios.

EXL Services, Gurgaon
Sep 2019 - Aug 2021

Backend Data Analyst II

- **Applied advanced data analytics techniques**, such as Entropy Balancing in R and Python, to test and validate hypotheses, driving data-driven decision-making for clients
- **Developed and automated web scraping solutions** using Selenium, enabling clients to efficiently download large data sets and files, saving hours of manual work weekly
- **Utilized text mining and sentiment analysis** to tailor customer communications, resulting in a 20% increase in response rates and improved customer satisfaction
- **Led analytics on marketing campaigns**, leading to a 17% increase in client conversions through data-driven optimizations

Security Data Analyst II

- **Developed and automated an encryption tool** using **VBA** to securely store and manage personal customer information, ensuring compliance with data protection regulations and reducing data breaches by 25%
- **Enhanced data storage security protocols** by integrating advanced encryption algorithms, resulting in faster and more secure storage of sensitive customer data for clients

*PROJECTs & LEARNINGs

Rust Operating System
https://github.com/im4vk/OSinRust   *Personal Projects*
A BareMetal operating system that can boot off of a USB stick on any BIOS-compatible machine like the QEMU emulator

Full Stack Web Development
@Shiksha Sopan – Online Examination for Students   *Personal Projects*
Collaborating with H.C. Verma and Team, established an interactive and responsive front end of the website that handles a traffic of around 100K+ registrations. Implemented CRUD operations and API integration
@Sheriff Incorporation – Ticket Management System : https://sheriffinc.com/   *Personal Projects*
Migrating a live WordPress website to MERN stack, since adding new features was not easy. On the Website, customers raise tickets for law related queries, a lawyer is assigned, or a response is given, and once the issue is solved, the ticket is closed. Traffic is between 500-1500, with a satisfaction of around 70%

Programming Language
https://github.com/im4vk/CustomTranspiler   *Personal Projects*
Developed a language Transpiler which takes a language file ending with .gf extension as input, creates a parse tree out of it, transpiles this tree into JavaScript code, finally compiling JavaScript and producing output. Language supports variable operations, nested conditionals and loops, along with code commenting and error handling