SUJOT SINGH

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Work Experience

Optum Global Solutions, UnitedHealth Group

Software Engineer, India *Jul 2021 - Jul 2024*

- Built a FHIR API server and application suite using Spring Boot and Maven, achieving <40ms p95 response times and >99% uptime while also ensuring secure and robust handling of PII/PHI data.
- Optimized the data validation applications, achieving a 50% efficiency boost and a 100% increase in operating window, enhancing overall system performance.
- Led the migration of applications to the Kubernetes platform, setting up multiple environments while maintaining >99% application availability resulting in enhanced scalability capabilities.
- Led the initiative to resolve multiple security vulnerabilities across codebases, including remediating a critical zero-day vulnerability within 12 hours of discovery, ensuring minimal disruption.
- Received the Bravo recognition award for leading the effort to remove vulnerabilities from code bases.
- Led the upgrade of database servers for the application suite, collaborating with multiple cross-functional teams ensuring minimal impact.

Jio, Reliance India

Software Engineer Intern, India *May 2020 - Jul 2020*

- Assisted in the development of the JioMart mobile application backend.
- Oversaw and maintained the client databases.

Projects

Lightweight Custom Operating System

- Developed a custom operating system using the Linux kernel under 250 mB, achieving a 98% reduction compared to typical modern OS sizes (~15 GB).
- Integrated GUI, networking, and package manager features to support extensibility and user-level customization.

SCX Ba-Bawm

- Built a scheduler management system for Linux using C, eBPF, Sched_ext, and Python to optimize system scheduler performance.
- Profiled workloads via eBPF and dynamically switched to optimal schedulers based on detected system scenarios.
- Ongoing enhancements aim to minimize profiling latency and reduce scheduler switch overhead.

Transleight-of-Hand

- Identified concrete WASM flaws including unchecked stack overflows, suppressed exceptions, and permissive null pointer access through systematic analysis.
- Demonstrated critical discrepancies between WASM and native execution using proof-of-concept exploits, revealing risks such as information leaks, logic violations, and unintended code execution when cross-compiling C/C++.

Education

University of Illinois Chicago, College of Engineering, Computer Science

Master of Science (MS) *GPA: 4.0*

Indian Institute of Information Technology, Una, School of Computing, Computer Science and Engineering

Bachelor of Technology (B.Tech) *CGPA: 8.58/10*

Skills

Technical: C, C++, Java, Python, Solidity, SQL, Algorithm Design, Data Structures, Jenkins, Docker, Kubernetes, Openshift, Azure, REST APIs, Spring, J2EE frameworks, Test Automation, Postman, JUnit 5, SonarQube, Networking & Security, Git

Creative: UI/UX design, Adobe CC(InDesign, Photoshop, Illustrator, Lightroom, Premiere Pro, After Effects), Canva, Figma

Positions of Responsibility

Coordinator at Team Pixonoids, responsible for media and content creation for official college and club activities at National Institute of Technology, Hamirpur. Additionally, served as the head of the graphics team within the club.

Volunteer at a local NGO to promote sports among the underprivileged children in the rural areas of Jammu, India, 2021.