Aryan Pandey

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EDUCATION

University at Buffalo, State University of New York **Jan 2025 - Present**
Doctor of Philosophy, Hardware Security and Computer Architecture (GPA: 3.7)
- **Achievements:** Dean's List

University at Buffalo, State University of New York **Aug 2018 - May 2022**
Bachelor of Science, Computer Engineering (GPA: 3.7)
- **Achievements:** Dean's List

EXPERIENCE

Axon **Jun 2022 - Apr 2024**
Backend Software Engineer *Remote*
- Supported development of a large scale archival system for one of the largest Azure databases in the world using Temporal and Azure Blob Storage saving $1,500,000 monthly in cloud storage costs.
- Built micro-services using Scala for back-end infrastructure, increasing reliability and speed, which enhanced system performance and user satisfaction.
- Improved file ingestion throughput by 1.5x through memory allocation optimization, enabling service scalability akin to YouTube for Axon footage ingestion, handling data at a scale of 250 petabytes.
- Handled on-call for Axon body-cameras, Taser and CJIS data ingestion throughout the world to ensure critical information for justice is secured at 99.99%+ availability by maintaining Docker containerized services.
- Deployed and released monthly software updates for Axon's Kubernetes and Puppet services in all production regions.
- Implemented comprehensive Grafana graphs for back-end services and optimized logging practices using Splunk.
- Wrote extensive Unit, Integration and Load tests for all Java/Scala projects and services.

University at Buffalo **Aug 2021 - Dec 2021**
Teaching Assistant – Computer Security *Buffalo, NY*
- Introduced basic concepts of Cybersecurity, such as Secure Design and Cryptography, which improved students' understanding and preparedness for advanced topics.
- Demonstrated common vulnerabilities in computer security and their countermeasures, leading to increased student ability to identify and mitigate security risks.
- Collaborated with the professor to enhance course content and created presentations, resulting in clearer communication of complex topics and improved student engagement.

University at Buffalo **Jan 2020 - Aug 2020**
Software Engineer – Research Internship *Buffalo, NY*
- Collaborated with professors to design a portable FASTQ/A DNA analysis machine, enhancing research capabilities and efficiency in genetic data processing.
- Scheduled tasks through OpenMP, for faster execution and efficient use of available power using parallel programming and leveraging all cores of the CPU.
- Developed a directory watchdog for fast asynchronous detection of new/modified files using C, inotify, and polling libraries, which improved file monitoring efficiency and reduced system latency.

PROJECTS

CUDA Neural Network Training Optimization **Mar 2025 - May 2025**
- Optimized Neural Network training through dedicated data transfer streaming multiprocessors.
- Introduced pinned memory buffers and CUDA streams to minimize GPU idle time during training.
- Rewrote pre-processing kernels to dynamically allocate GPU resources and improve efficiency.

SRAM Physically Unclonable Function **Aug 2024 - Dec 2024**
- Designed an implementation of a 6T-SRAM array with charge-sharing capabilities for cryptographic applications.
- Utilized Cadence Virtuoso with 45nm process design kit to create transistor-level schematic and layouts.
- Simulated and extracted created designs to prove real-world applicability.

TECHNICAL SKILLS

- **Programming Languages:** Rust, Scala, C, C++, C#, Python, HTML/CSS3, Javascript, Solidity, Verilog, Kotlin, Assembly (ARM/x86/MIPS), BASH Scripting
- **Tools & API:** TeamCity, Temporal, Apache Spark, Apache Cassandra, Kafka, Databricks, SQLite, MySQL Databases, Android Studio, Wireshark, Docker, Gradle, OpenMP, OpenGL, Git, Protobuf, Prometheus, Grafana, Splunk, Azure Storage, Kubernetes, Puppet, Terraform, Jenkins, JIRA, Cadence Virtuoso, Triton
- **IDE:** VB (Visual Basic), Visual Studio, VSCode, Eclipse, PyCharm, IntelliJ
- **Operating Systems:** Windows, MacOS, Unix/Linux, Android, iOS
- **Concepts:** CI/CD, Big Data, TCP/IP Networking Protocols, Android/iOS Development, Windows, Cybersecurity, Multi Threading, Software Development Life Cycle, Web Development, DSA, Functional Programming, VLSI