Shikhar Chaurasia

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EDUCATION

University of Toronto | *BASc, Computer Engineering – 4th Year on Professional Experience Year (PEY)* **2020-2025**

- Relevant Courses: Operating Systems, Computer Security, ML, Computer Networks and Data Structures & Algorithms.
- Awards/Certifications: **Dean's Honor's List** (2020, 2021, 2023), **C++, Web Developer, and MySQL** Bootcamps.

WORK EXPERIENCE

Software Security Engineer Intern | *Content Protection Team – AMD* **May 2023 – Present**

- Received the **AMD Spotlight Award** in recognition of implementing Content Security features on the **AMD Platform Security Processor** (PSP) of an upcoming **Ryzen Series** Accelerated Processing Unit (APU) with enhanced AI Engine.
- Developed robust graphics driver code in **C and C++**, enabling **Hardware DRM** and **HDCP** capabilities for trusted applications operating within the Trusted Memory Zone of the PSP.
- Contributed towards the development of bootloader architecture in **AMD Instinct MI350 Series Accelerators**, supporting robust performance for processing Generative AI and High-Performance Computing workloads.
- Implemented Trace Buffer debug tool for comprehensive error analysis via **JTAG**. Reduced error resolution time **by 70%**.
- Proactively resolved **95** Jira tickets varying in complexity and participated in **125 code-reviews**. Experienced in **Agile Methodologies** and collaborated with **cross-functional teams** to deliver client products within set deadlines.
- Identified critical security bugs during the ASIC bring-up process, reducing workaround time by approximately **6 weeks**.

EXTRACURRICULARS

University of Toronto Robotics Association - PacBots | *SW Team Lead* **May 2023 – Present**

- Led a team of 10 to compete in the UIUC and Harvard PacBots competition. Secured **2nd place** in UIUC Competition.
- Utilized **Reinforcement Learning** to design a Monte Carlo Tree Search algorithm, augmented with a resilient clustering heuristic and intelligent target selection. Substantially improved simulation scores **by over 300%**, from 3650 to 15000.
- Established client-server infrastructure for the **Raspberry Pi** robot using **Python** and **Go**. Maintained a scalable codebase.
- Managed resource and task allocations to consistently meet internal deadlines and assisted new recruits with onboarding.

UofTHacks 11 | *Sponsorship and Web Dev Executive* **May 2023 – Jan. 2024**

- Built the **UofTHacks 11** Judging Portal and Website using **React** and **NextJS.** Improved judging process speed by **65%.**
- Spearheaded successful sponsorship initiatives, securing **110% of the budget** for Canada's largest student-led hackathon.

PROJECTS

Text Conferencing Application | *Computer Networks* **Mar. 2023 – Apr. 2023**

- Designed and implemented server-side code in **C**, following **TCP protocol** standards and **socket programming**.
- Built a scalable application infrastructure using **efficient data structures** to ensure seamless flow and storage of data.
- Implemented functionalities including user registrations and group messaging for up to 10 people synchronously.

RoomTone | *MakeUofT Hackathon* **Feb. 2023 – Feb. 2023**

- Collaborated with a team of 4 and integrated an acoustic ray-tracing algorithm with Qualcomm Snapdragon HDK8450 to provide comprehensive acoustic analysis of a room based on its 3D Model.
- Triangulated point-cloud surfaces and modelled sound absorption and reverberation to provide optimal speaker location.
- Won the '**Most Innovative Use of Qualcomm Snapdragon HDK**'.

Cached Webserver | *Operating Systems* **Nov. 2022 – Dec. 2022**

- Created an efficient cache for a webserver using a robust hash map data structure, and LRU eviction algorithm.
- Cache response rate averaged to about **<0.04 seconds for files greater than 8 MB**.

GIS Navigation Application | *Software Design* **Jan. 2022 – Apr. 2022**

- Created an API based GIS Application in **C++** using OSM Database and Gtk Library. Developed on Linux environment.
- Extracted and stored data into efficient data structures while **reducing load time by 75%**. Enhanced UI and UX.
- Rendered path-finding results using a multi-threaded approach on A* algorithm in 3 seconds. Used **Git** for collaboration.

TECHNICAL SKILLS

Languages & Frameworks: C, C++, Python, MySQL, Go, JavaScript, React, TypeScript, NextJS, PowerShell and PyTorch.
Tools: GitHub, Gerrit, Jira, Jenkins, WinDbg, Valgrind, Coverity, Wireshark and PostgreSQL.