Aarya Chaumal

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Education

- **College of Engineering Pune**
  Bachelor of Technology - Computer Engineering; GPA: 8.4 *2019 - 2023*
  Courses: *Operating Systems, Computer Networks, Computer Organisation and Architecture, Compiler Construction, Distributed Systems*

Skills Summary

- **Languages**: C, C++, Python, R
- **Libraries**: OpenMP, OpenMPI, CUDA, Tidyverse
- **Frameworks**: Olympia, Gem5, ChampSim, QEMU
- **Platforms**: Linux, Windows, x86, ARM, RISC-V

Experience

- **Texas Instruments**
  Intern (Full-time) *June 2023 - July 2023*
  - **Linux device drivers**: Worked on Linux device drivers for TI Sitara MPUs. Implemented interconnect and device frequency (devfreq) drivers for optimising power consumption and efficient on-chip bandwidth utilization for DDR, GPU, VPU and other peripherals.
- **Nvidia**
  System Software Intern (Full-time) *Jan 2023 - June 2023*
  - **Display**: Worked on Windows display drivers for Nvidia GPUs. Made a software debugger for detecting brightness related bugs.
  - **Power**: Enhanced internal GPU power monitoring tool by porting multiple modules to get real time power readings and perform tests using Google Test framework.

Volunteer Experience

- **COEP Satellite Team** Pune, India
  On-board Computer Subsystem *Dec 2020 - Apr 2023*
  - **Subsystem Lead**: Led a team of 5 members, conducted meets, planned the work and managed its execution to fulfil the defined objectives of the On-board Computer (OC) subsystem for a satellite project funded by the Indian Space Research Organization (ISRO).
  - **Member**: Implemented Error Detection and Correction algorithms for nonvolatile flash memories. Developed multiple software timers by using a single hardware timer module. Designed a primary Operating System for the Onboard Computer subsystem. Wrote Device Drivers for multiple sensor devices using standard serial communication protocols.

Open Source Projects

- **Olympia**
  LFX Mentorship *July 2023 - Present*
  - **Add Branch Predictor API to Olympia**: Olympia is a barebones performance model of an example RISC-V superscalar processor using C++ based on Sparta simulation framework. Added parametrized generic branch predictor APIs. These APIs can be leveraged to implement any branch predictor algorithm on Olympia.
- **Ste||ar Group**
  Google Summer of Code *May 2023 - Present*
  - **HPX threading system for LLVM OpenMP**: HPX is a C++ Standard Library for Concurrency and Parallelism. Added support for HPX threads as an alternative to pthread in LLVM OpenMP. This relieves worrying about any new #pragmas introduced by OpenMP, as they would be taken care of by LLVM. This work relies on HPXC, a C interface to a subset of HPX, which provides a replica of pthread's API using HPX.
- **Flashrom**
  Google Summer of Code *May 2022 - Sept 2022*
  - **Erase Function Selection Optimisation**: Wrote code to probe for working opcodes on programmers and flashchips. Designed an algorithm for optimal erase function selection on flash memories. Proposed algorithm enhanced write/erase speeds on flashchips.
- **xv6**
  Curriculum Project *Mar 2022 - May 2022*
  - **Demand Paging in xv6**: xv6 is primitive Operating System used for academic purposes, implemented the concept of demand paging in xv6. Maintained data structures for mapping pages of a process in RAM to the pages on the swapping space, identifying the interrupts and implemented the ISR for the same optimally.

Publications

- **Analyzing Binary Tree based Topology Configuration for Energy Efficient Multicore Architectures**: (Dec 2022)

Honors and Awards

- Merit certificate from CBSE for being in top 0.1% in 12th Board Exam. (May 2019)