Chirag C Dasannacharya

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Education

University of California, San Diego - MS Computer Science (Systems Track) — 2022 – Dec 2023 (Expected)
Birla Institute of Technology and Science, Pilani - BE Computer Science (with Distinction) — 2018 – 2022

Experience

Arista Networks — Santa Clara
Intern | Virtual Networks, Packet Processing Platforms | C/C++, Python — Jun – Sep 2023 (Ongoing)

- Built a network security debugging tool that simulates firewall behavior on the router based on configured policy
- Added IPv6 support for VARP, Arista's proprietary VXLAN virtual network routing framework, on Broadcom chipsets
- Optimized the packet forwarding pipeline on certain chipsets to add features without reducing scale

Nutanix — (Remote) Bangalore
Intern, Member of Technical Staff | Distributed Systems, Cloud Storage | C/C++, Python, Go, AWS S3 — Jan – June 2022

- Eliminated operational costs associated with multi-cloud garbage collection and simplified workflows
- Upgraded multi-cloud garbage collection to make use of AWS S3 lifecycle policies and object versioning
- Integrated an S3 object-based protocol server with Nutanix's distributed file server to provide S3 access to file storage

INSPIRE Lab, BITS Pilani — Pilani, India
Undergraduate Researcher | Robotics, Distributed Systems | C/C++, Boost — Jan – Dec 2021

- Proposed strategies comparable to state-of-the-art for multi-robot area exploration, work accepted at IROS 2022
- Developed algorithms for cooperation with limited data in an unreliable communication environment
- Developed methods to ensure progress, coordination, state management and fault tolerance in a decentralized setup

Selected Projects

Compiler | (Link) | x86, Rust, Assembly — 2023
Wrote a compiler in Rust, complete with operators, I/O, functions, heap allocation, automatic garbage collection and optimizations

Distributed File Storage and Synchronization | File Servers, Networks, Raft, Golang, gRPC — 2023
Implemented a distributed, versioned file handling system with data and metadata nodes coordinated using RAFT on RPCs

High Performance Computing | Parallel Computing, SIMD, CUDA, MPI — 2022
Optimized matrix multiplication for single- and multi-core CPUs using cache-locality, vector instructions and OpenMP and for GPUs with shared memory and coalescing. Achieved near library performance (90+% for CPUs, 75+% for GPUs)

Cloud Orchestration System | (Link) | Distributed Systems, Network Programming, Python — 2021
Led a team building a (Kubernetes-like) cluster system running containers with orchestration, autoscaling, monitoring, etc

GFS, Shell, TFTP, etc | (Link) | Systems, Networks, C programming — 2020 - 2021
Implemented Google File System; a terminal shell with piping and redirects; a TFTP server; distributed merge sorting

Publications

Multi-Robot Unknown Area Exploration Using Frontier Trees | (DOI) | IEEE IROS 2022 — Oct 2022
Automated generation of floorplans with non-rectangular rooms | (DOI) | Graphical Models — May 2023

Skills, Competencies

Programming Languages: C/C++, Python, Golang, Rust, Java
Frameworks and Tools: Linux, Multi-threading, GDB, RPCs, Git, Perforce, CUDA, MPI, AWS, Docker, REST APIs
Courses - Operating Systems, Computer Architecture, Cloud Computing, Networks, Parallel Computing, Compilers

Achievements, Additional Experience

Datakrew/NTU Singapore - Summer 2021 NTU Connect intern on Datakrew's IoT platform (data processing flows, testing)
BISAG-N Gandhinagar - Summer 2020 Research Asst (Wrote a QGIS python-plugin to get temperature from Landsat images)
BITS Pilani Merit Scholarship - 2020-22 - Awarded to top 3% of students each semester, 6 time awardee
ACM Student Chapter BITS Pilani - 2018-22 - Core Team member
International Linguistics Olympiad - 2017 bronze medal winner and 2018 participant