

# 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 IEEE 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 Docker 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 and similar projects

## 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