

EDUCATION

Birla Institute of Technology & Science, Pilani

Goa, India

B.E., Computer Science | Core CS GPA: 9.3 | Overall GPA: 8.84

2017 - June 2021

- Key Courses: Computer Networks (A-Grade), Data Structures and Algorithms, Real-Time Systems, Operating Systems (A-Grade), Data Storage Technologies and Network, Data Center Design and Network, Artificial Intelligence, Machine Learning, Deep Neural Networks
- Awards: Merit Cum Need Scholarship (80% of Tuition Fees)

WORK EXPERIENCE

Member Technical Staff - Oracle

July 2021 – Present

[Oracle Cloud Infrastructure](#) | [Oracle Process Cloud Team](#)

- Building highly secure, scalable, and high performance applications for the cloud.
- Using microservice architecture to develop multi-tenant applications that service more than 2 billion requests per month.

Research Intern - [High-Performance Real-Time Lab](#), UNIMORE, Italy

Jan 2021 – June 2021

Undergraduate Thesis

- Worked with new and upcoming tools in Virtualization and Automation.
- Integrated the Workload Automation(WA) tool by ARM and Jailhouse partitioning hypervisor on a custom Linux kernel to develop a system for remote benchmarking of workloads in embedded systems.
- This improves the predictability of the workload execution and provides real-time guarantees to the contention faced in the shared memory hierarchy.

Research Software Developer - RTEMS Real-Time Operating System

May 2020 – August 2020

Google Summer of Code | [More details here](#)

- [RTEMS](#) is a real-time operating system which is used in several NASA/ESA satellites, sports bikes, and in particle accelerators at almost all US DoE National Labs and several European facilities.
- [Implemented](#) the Strong Arbitrary Processor Affinity (APA) scheduler, which is a state-of-the-art scheduling algorithm that has not been implemented in a real-world operating system before.
- **Strong APA scheduler** allows higher-priority tasks to be moved among processors in order to make space for lower priority tasks that are limited by affinity constraints. The scheduler is proven to be able to schedule roughly **15-20%** more task sets than other schedulers for certain utilizations.

Software Engineer Intern - Oracle

April 2020 – June 2020

[Oracle Cloud Infrastructure](#) | [Oracle Integration Cloud Team](#)

- Proposed a system and method to identify potential performance degradation in OIC product release pipeline
- Developed a NodeJs Web service that uses Jenkins to show degradation analysis of **500+** OIC tests.
- The Web service helped in detecting the presence of **10%** non-unique tests and close to **5%** degrading tests in the OIC tests that were conducted everyday on Jenkins.

PUBLICATIONS

Work in Progress: Strong APA Scheduling in a Real-Time Operating System

Richi Dubey, Vijay Banerjee, Sena Hounsinnou and Gedare Bloom

SIGBED International Conference on Embedded Software (EMSOFT) 2021.

[Paper Link](#), [Talk Link](#), [Poster Link](#)

Next-Generation Embedded Development Tools and Technologies – Virtualisation and Automation

Bachelor Thesis, at [HiPeRT Lab](#)

[Paper Link](#)

AWARDS

HERCULES Prize- edition 2019/2020 — University of Modena and Reggio Emilia, Italy *October 2020*
Awarded €4500 to work with Prof. Marko Bertogna on High-Performance Real-time Architecture for Low-Power Embedded Systems at HIPeRT Lab, Unimore, Italy.

McGill Summer Undergraduate Research in Engineering (SURE) Award — McGill University, Canada *May 2020*
Awarded \$5,625.00 in Summer 2020 to work with Prof. Liboiron-Ladouceur on Photonic Hardware for AI.

TECHNICAL BLOG

RTEMS with Richi — Visit [here](#) *May 2020 - Present*
I write about coding in C language, software development for real-time operating systems and operating systems concepts here. Visited by hundreds of people across the globe.

RESEARCH PROJECTS

Approaches towards censorship circumventions BITS Pilani
August 2020 – December 2020

- Reviewed Noctiluent, a software that tests different use cases of Encrypted-SNI (ESNI) in TLS 1.3 to circumvent censorship. Nearly **30%** of all the websites on the Internet and **59%** of websites hosted on Cloudflare use TLS1.3.
- Set up a server on Microsoft Azure to test security vulnerabilities in DNS over HTTPS and other network security protocols.

Review of Mixed Criticality Systems BITS Pilani
August 2019 – December 2019

- Reviewed various scheduling algorithm like Global Preemptive EDF, Criticality Based EDF (CBEDF) etc. and various resource sharing protocols like Priority Ceiling Protocol (PCP), Priority Inheritance Protocol (PIP) etc.
- [Implemented](#) the Earliest Deadline First with Virtual Deadline (EDF-VD) [Scheduling Algorithm](#) by [Prof. Baruah](#) et al. in C

POSITIONS OF RESPONSIBILITY

Teaching Assistant - Department of CS & IS BITS Pilani
Designed and took tutorials, corrected papers for the following core disciplinary courses:

- Design & Analysis of Algorithms (Semester II, 2020 - 2021)
- Data Structure and Algorithm (Semester II, 2019 - 2020)
- Computer Programming (Semester II, 2019 - 2020)
- Logic in Computer Science (Semester I, 2019 - 2020)

Student Coordinator - Film Screening Club BITS Pilani
Led the student member committee in the Film Screening Club

- Hosted **5** latest Bollywood movie screenings which saw a participation of over **3000** people per movie.
- Decreased the cost of procuring the film from Mumbai, by **25%** compared to previous years
- Built a new business relationship between the college and multiple cinemas around Goa and conducted multiple off-campus screenings and documentary screenings

SKILLS

Programming Languages: C, C++, Java, Python 3, MySQL
Systems: Linux Kernel, RTEMS Real Time Kernel

OPEN SOURCE CONTRIBUTIONS

RTEMS: [Code Contributions](#), [Documentation Contributions](#)

VOLUNTEER WORK

Nirmaan — Cause: Education

August 2017 - August 2020

Teaching underprivileged kids in the slums around the college and organizing festivals for them.