

# Murali Krishna

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## EDUCATION

### PES University

Bachelor of Technology in Computer Science

*Courses: Distributed Systems, Machine Intelligence, Computer Networks, Operating Systems, Design and Analysis of Algorithms, ...*

Bengaluru, KA

Aug 2019 – June 2023

## TECHNICAL SKILLS

**Programming Languages:** C++, Python, C, Golang, SQL, NoSQL, TypeScript

**Frameworks:** OpenSSL, Docker, eBPF, k8s, Tensorflow, Gin, Flask, Node.js

**Developer Tools:** Git, Perforce, Neovim, Linode

## EXPERIENCE

### Akamai Technologies

Software Engineer II

Bengaluru, KA

Dec. 2024 – Present

- Working on enhancing and securing Akamai's **HTTP/3 & QUIC** implementation as part of the Edge Platform team.

Software Engineer

Aug. 2023 – Dec. 2024

- Added crucial stability fixes for the **QUIC** stack that brought memory-related crashes down by over **50%**.
- Led the enablement of **TLS 1.3 0-RTT Data** via TCP over the Akamai edge network, and contributed to the development of the same via QUIC.

Software Engineering Intern

June 2022 - July 2022, Jan. 2023 - June 2023

- Identified delays in processing xml files while serving content using **DASH**, and revamped the xml parsing system to eliminate the identified delays, with an upper bound of a *200% improvement* in parsing speed.
- Built a PoC end to end HTTP/3 client-server test pipeline via the use of nginx and the Rust implementation of quiche to research and benchmark the impact of TLS 1.3 0-RTT Data.

## PUBLICATIONS

- Analysis of RNA-Seq data using self-supervised learning for vital status prediction of colorectal cancer patients.*

Padegal, G., **Rao, M.K.**, Boggaram Ravishankar, O.A. et al. BMC Bioinformatics 24, 241 (2023).

<https://doi.org/10.1186/s12859-023-05347-4>

- Towards Self-Supervised Learning for Prediction of Vital Status of Colorectal Cancer Patients.*

Girivinay Padegal, **Murali Krishna**, Om Amitesh B. R, Sathwik Acharya, Gowri Srinivasa

NeurIPS 2022 Workshop: Self-Supervised Learning - Theory and Practice (2022).

Archived at: [https://sslneurips22.github.io/paper\\_pdfs/paper\\_45.pdf](https://sslneurips22.github.io/paper_pdfs/paper_45.pdf)

## SELECT PROJECTS

**h2-framer (HTTP/2, OpenSSL):** Python tool to craft HTTP/2 frames. The frames can be piped into OpenSSL s\_client to make HTTP/2 requests over TLS, which is (currently) the only way to use 0-RTT data with HTTP/2 via CLI.

**Capstone Project (Tensorflow, Keras, TabNet, Deep Learning):** Analysed RNA-Seq data of cancer patients using self-supervised learning to estimate prognosis of colorectal cancer patients, by pretraining on a large unlabelled corpus.

**Golang implementation of a Raft simulation (Golang, Distributed Systems, Consensus Algorithms):** Built a multi-node raft cluster and simulated leader-election and log-replication.

**Simulating Lock-Free Data Structures (C++, Concurrency):** An exploratory project to build a rudimentary multi-producer multi-consumer simulation of a message queue using both locking and lock-free primitives and benchmark them.

## TEACHING & MENTORSHIP

### Alumnus Mentor

(c)early data: Adding TLS 1.3 0-RTT Data to cURL

The Innovation Lab, PES University

June 2024 – July 2024

- Mentored a team of 4. The project has spawned a pull-request to add the TLS 1.3 0-RTT Data extension to the ubiquitously used open source project **cURL**.

willow-go: Implementation of the Willow protocol in Golang

June 2024 – July 2024

- Co-mentored a team of 5, to create an opinionated Golang implementation of the nascent peer-to-peer protocol Willow. The project was open-sourced, and received a star from the creator of the Willow protocol.

### Undergraduate Teaching Assistant

UE20CS351: Cloud Computing

PES University: Bengaluru, KA

Jan. 2023 – June 2023

- Designed and assessed 5 of the 10 weekly assignments, based on the topics *serverless compute, docker, kubernetes, consensus algorithms, and zookeeper*.
- Designed and evaluated 1 of the 3 problem statements for the course project, which was to finish an incomplete codebase made to simulate a multi-node *Raft cluster with WAL*.
- Conducted office-hours to help students solve their queries.

## EXTRACURRICULARS

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### **Student President**

*The Innovation Lab, PES University*

*Feb. 2022 - March 2023*

- Conducted recruitments for and oversaw a **summer internship** program from June 2022 to July 2022.
- Designed, architected and developed *The Hunt 1.0*, a pseudo-CTF.
- Oversaw from start to finish, the annual hackathon HashCode in March 2023.

### **Web Developer**

*Child Rights and You*

*Aug. 2021 - Oct. 2021*

- Contributed to the development of the website of the NGO.

**Languages Spoken:** English, Kannada, Hindi

**Stuff I'm interested in:** Playing the guitar, Music theory, Physics, CTFs, Linguistic history, Lemmino, Football, Minecraft;