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Education

- **PES University, Bengaluru** **CGPA: 9.53/10.00**
  Bachelor of Technology in Computer Science and Engineering *Aug 2018 – May 2022*
  Completed degree in ***First Class with Honors***.
  Relevant courses: Big Data, Cloud Computing, Computer Networks, Design and Analysis of Algorithm, Microprocessor and Computer Architecture, Operating Systems, Performance Engineering

- **Vidya Mandir Ind. PU College, Bengaluru** **Grade: 93.7%**
  Pre-University Education Grade 12 *July 2016 – May 2018*

- **Sindhi High School** **CGPA: 10.0/10.0**
  CBSE Grade 10 *June 2006 – March 2016*

Experience

- **Advanced Micro Devices (AMD)** Bengaluru
  Design Engineer 2, Server Performance Group *December 2023 - Present*
  Design Engineer 1, Server Performance Group *May 2022 - December 2023*
  - Involved in post-silicon performance validation and optimization for latest server Zen4 core processors **Genoa (96 core per socket SoC) and Bergamo (128 core per socket SoC)**. Debugged bottlenecks in SoC (Core and Infinity Data Fabric) that prevented workloads from scaling. Currently involved in post-silicon performance optimization activities for the upcoming server processor lineup **Turin**.
  - Configured suite of database workloads - MongoDB, Cassandra, MySQL, Redis, etc for maximized throughput and minimized tail latency scenarios. These workload configurations are used for performance evaluation and IpC (Instructions per Cycle) uplift claims.
  - Characterized core warmup and sampling instruction intervals systematically for a suite of server-kernel workloads. This is used to drive RTL simulations for core IpC uplift analysis.

  Intern, Server Performance Group *Dec 2021 - May 2022*
  - Performed competitive analysis and characterization of SPEC CPU2017 benchmarks on competing SoC designs and compiler variants

- **Morgan Stanley** Bengaluru
  Summer Technology Analyst *May 2021 - July 2021*
  - Developed a full-stack web application that provides real-time data drill-down and analysis capabilities on a live backend data source on a simple search keyword. The algorithm identifies relationship between the search parameter and backend data. This information is used to construct dynamic database queries and service calls to various endpoints to consolidate data onto an interactive dashboard.

- **Center for Cloud Computing and Big Data, PES University** Bengaluru
  Undergraduate Researcher *May 2020 - Aug 2020*
  - Worked with a team to develop a microservice application for the Department of Computer Science, PES University to reduce paperwork involved in senior year thesis evaluations.
  - Presented at the **student project showcase** event in **IEEE International Conference on Cloud Computing in Emerging Markets, 2020**

Research

- **MiSeRTrace - Kernel-level Request Tracing for Microservice Visibility** PES University, Bengaluru
  Undergraduate Researcher *Jan 2021 - May 2022*
  - MiSeRTrace (MicroService Request Trace) is a tool developed to trace the end-to-end path of requests entering a microservice application at the kernel space without instrumentation of the application code. It also supports isolating user-enabled kernel trace-points and events provided by BPFTrace and FTrace for each request. [CODE]

- Observability in the kernel space at the granularity of a single request allows breakdown of activities at Network Stack, Scheduler and Interrupt handler aiding in performance bottleneck identification for Tail Latency .
- **Publication** : *Thrivikraman V, *Vishnu R Dixit, ***Nikhil Ram S**, *Vikas K Gowda, Santhosh Kumar Vasudevan, and Subramaniam Kalambur. 2022. MiSeRTrace: Kernel-level Request Tracing for Microservice Visibility. **Workshop on Hot Topics in Cloud Computing Performance** in companion of the **ACM/SPEC International Conference on Performance Engineering (ICPE) 2022**. [PAPER DOI]

- **Faster, Better Workload Sampling for Architecture Simulations** AMD, Bengaluru
  Design Engineer 1, Server Performance Group *June 2022 - Mar 2023*
  - Designed a new approach to perform targeted sampling of workloads for instruction traces in a microarchitecture independent fashion. This method delivers improved accuracy in performance projection with 5 to 10x reduction in storage, computational requirements and engineering efforts over the legacy approach.
  - Employed within AMD to sample **SPEC CPU, an industry-standard CPU performance benchmark suite** that drives the company server processor roadmap.
  - Accepted in **AMD's Global Technical Author's Conference (GTAC) 2023**.

- **Workload Trace Extrapolation for Future High Core-Count Processor Designs** AMD, Bengaluru
  Design Engineer 2, Server Performance Group *Sept 2023 - Present*
  - Designing a new approach to synthetically generate high-thread count instruction traces of data-sharing intensive workloads to project performance on future high core-count processor designs.

Projects

- **YACS (Yet Another Centralised Scheduler)**: Simulated a scheduling framework to manage and allocate resources of a cluster to handle incoming jobs. [CODE] *Parallel-Processing*
- **Greenest Parts of Bengaluru**: Used Hadoop "map-combine-reduce" to determine the green regions of Bengaluru. This model was run on a pseudo-distributed Apache Hadoop cluster. [CODE] *Hadoop-MRJob, OpenCV*
- **Time-Series analysis of Equity Markets**: Developed an equity prediction tool by analysing Time-Series data using ARIMA modelling and LSTM. *Data Analytics, Machine Learning*
- **Mini Projects**:
  - **IntAL C Library** to perform arithmetic operations on whole numbers of the order 10^{1000}.
  - **Command Line Interface** with a custom scripting language.
  - **Best Fit Memory Management** in a given page of memory.
  - **RegEx Engine** in C to match strings.
  - **SQL Version Control Management System Schema** to simulate functioning of Github.

Achievements

- **Prof. C N R Rao Merit Scholarship**: Semester 1 and 2. *Awarded to the top 20% students of PES University.*
- **Prof. M R Doreswamy Merit Scholarship**: Semester 3, 4, 5, 6 and 7 *Awarded to the top 20% students of PES University.*
- **Certificate of Merit from Central Board of Secondary Education**: Securing A1 in all the subjects of class 10.

Volunteering

- **National Supercomputing Mission's Computer Architecture Winter School 2021**: Led a laboratory session for undergraduate students on **Linux performance monitoring** tools like perf, sar, and gprof. The session aimed to demonstrate how these tools can be utilized for debugging and analyzing system performance.
- **Teaching Assistant**: Involved in evaluating assignments and projects of undergraduate students for elective **"Big Data"** and special topic **"Software Systems Performance"** at PES University.

Extra Curriculum

- **Trinity College of London**: Graded Examination in **Piano: Grade 1-5**, Graded Examination in **Music Theory: Grade 1-6**.
- **Carnatic Music (Vocal) Junior Grade**: Qualified First Class.