Ajinkya Prabhu

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EDUCATION

Carnegie Mellon University — Pittsburgh - Pennsylvania
Master of Science in Mobile and IoT Engineering - 3.64/4.0 — *May 2022 – December 2023*

- Coursework - Compiler Design, Distributed Systems, Intro to Computer Systems, Information Security, Embedded Systems, Computer Networks

Vellore Institute of Technology — Vellore - Tamil Nadu
Bachelors in Electronics and Communication Engineering - 9.1/10 — *July 2016 – June 2020*

- Coursework - Digital Logic Design, Intro to Deep Learning, Advanced Micro-controllers, Signal Analysis and Processing

PROJECTS

Realtime Operating System Kernel

- A multithreaded kernel for the ARM cortex M4 in C and Assembly
- Implemented context switching, mutex, thread scheduling and kernel mode drivers for I2C, PWM, UART, GPIO

Safety Oriented Operating System Kernel

- An X86 kernel with keyboard, console and physical page manager with focus on safety using the guarantees of the rust compiler

C0C Compiler

- A Turing complete safe subset of the C0 language (used at CMU to teach programming) extended with copying garbage collector and aggressive optimization techniques (register allocation, CSE, and dead code elimination), implemented using Rust

CMU-TCP

- A user-space RFC compliant implementation of TCP protocol for reliable delivery and congestion control written in C

Dynamic Memory Allocator

- Developed a malloc package implementation that achieved a peak performance of 74% utilization while maintaining a throughput of $\sim$ 9000Kops in C

WORK EXPERIENCE

Qualcomm — San Diego, California
Engineering Intern — *May 2023 – August 2023*

- Developed a user-mode emulation framework for running camera software tests without needing a physical device using C++ and CMake

BlackRock — Gurugram, India
Software Engineer — *Jan 2020 – July 2022*

- Collaborated with five software engineers to develop a data lake called Regulatory Book of Records (RBOR)
- Employed industry standard frameworks such as Apache Spark and Airflow compute and automated workflows
- Spearheaded automated ingestion of securities data which pulls 600GB with 293 unique columns
- Boosted batch query performance of securities data by 10x as compared to original relational query engine

RESEARCH

ITC — Vellore Institute of Technology - Vellore
Student Researcher — *May 2019 – July 2019*

- Collaborated with a team of students to develop a prototype that detects defects in high aspect ratio objects
- Developed a convolutional neural network and image processing pipeline for object detection and classification
- Achieved an accuracy of 82% while maintaining throughput of five objects per second

Creation Labs - Team AutoZ — Vellore Institute of Technology - Vellore
Student Researcher — *September 2018 – November 2019*

- Collaborated with a team of 10 students to develop an autonomous mobile robot
- Led development of sensor localization using kalman filters on GPS, inertial motion unit and wheel encoders

SKILLS

Programming Languages: C, C++, Golang, OCaml, Rust, Python, Java, Scala, SQL, GNU Assembly (x86 and ARM)
Technologies: GNU Toolchain, LLVM , Linux, Git, CUDA, ROS, Apache Spark, Docker, Kubernetes, TensorFlow, PyTorch, Hadoop, Spring Boot

PUBLICATIONS & PATENTS

Publication: Image Compression and Reconstruction Using Encoder-Decoder Convolutional Neural Network - Prabhu A., Chowdhary S., Narayanan S.J., Perumal B.
Patent: A scanning device for inspecting and sorting high aspect ratio objects and method thereof - N202041047428

AWARDS & ACHIEVEMENTS

Goa Scholars 2022-23: Awarded a merit based scholarship for exemplary over performance as one of the top 30 in the state of Goa, India.