Nayan Deshmukh

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Education

Indian Institute of Technology Kanpur — Kanpur, India

B.Tech in Computer Science and Engineering; CPI: 9.3/10.0 — *2014 - 2018*

Experience

Samsung Electronics — South Korea

Software Engineering Intern, Cloud Lab — *May'17-Jul'17*

- Worked on the NFV Management and Orchestration (MANO) software stack which is part of Samsung's network virtualization solution
- Worked with different open-source technolgies like OpenStack, OpenSource MANO, Docker, Kubernetes
- Contributed to Open Network Automation Platform (ONAP) and compared its features with Samsung's solution

Mesa(Xorg)

Open Source Contribution under Christian König (Senior Developer, AMD) — *Jun'16-Mar'17*

- Implemented luma keying as part of color space conversion code and bicubic interpolation algorithm as fragment shaders in TGSI
- Reworked the VPDAU mixer implementation so that it uses temporary buffer to allow parallel read and writes while applying filters
- Implemented DRI3 helper code for PRIME GPU offloading, and utilized it to avoid copying of frames to reduce the I/O load in video pipeling

Edge-disjoint spanning trees in undirected graphs

Research Intern under Dr. Ovidiu Daescu (Professor, The University of Texas at Dallas) — *May'16-Jul'16*

- Analyzed problem of finding 2 edge disjoint spanning tress in an undirected graph with n vertices & 2n-2 edges
- Proved a lemma regarding allocation of edges of 2,3 and 4 degree vertex
- Conceptualized an algorithm to construct the two trees using the lemma

Selected Projects

Analysing the effect of kernel mode switch on multithreaded applications

Undergradutae Project, Prof. Mainak Chaudhuri — *Mar'17-Apr'17*

- Used a modified version of qemu, linux kernel to collect traces for mutlithreaded applications including traces for OS activity
- Analyzed LLC disturbance due to mode switch, DRAM performance in user and kernel mode and Row locality disturbance due to mode switch

evdev-rs: rust bindings for libevdev

Maintainer, mentored by Peter Hutterer (Senior Software Engineer, Red Hat) — *May'17-present*

- Implemented a safe wrapper to use libevdev in Rust, libevdev is a wrapper library for handling evdev kernel devices
- Used high level rust features to incorporate enum type safety, memory safety, and type inference

Analysing high performance cache replacement policies for CloudSuite

Modern Memory Systems, Prof. Biswabandan Panda — *Mar'17-Apr'17*

- Analyzed the CloudSuite for their performance with respect to Last-level cache replacement policies like Hawkeye, ShiP++, etc
- Used CRC2 simulator "ChampSim" which models a out-of-order superscalar processor with the entire cache heirarchy and a DRAM model

Java Compiler in Python (JCP)

Compiler Design, Prof. Amey Karkare — *Jan'17-May'17*

- Implemented a Java to x86 compiler from scratch in python using ply
- Incorporated advanced features like object heap allocation, classes, foreign funtion interface

Online Academic Registration System(OARS)

Prof. P.P. Kurur and Prof. Satyadev Nandkumar — *Aug'16-Nov'16*

- Build a web application using Ruby on Rails to facilitate the process of academic registration
- Used docker for development and deployement of the system in production

ZIZO101: Social Robot

Electronics Club Project — *May'15-Jun'15*

- Developed an animatronics head capable of human interaction via speech and through its Twitter handle
- Used Radxa Rock as the main development board, Python as the primary language, implemented speech to text using Google's speech API and Artificial Intelligence through Pandorabots

Skills

Programming	C, C++, Python, JavaScript, Rust, Ruby, Java
Libraries and Tools	git, OpenStack, qemu, docker, kubernetes, bash, Ruby on Rails, Processing, LaTeX, GDB, GNUplot, autotools
Development Platforms	Atmel AVR, Arduino