YASH LALA

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EDUCATION

UCLA B.S. in Computer Science — GPA: 3.782, 2018 - 2022
BASIS Independent Silicon Valley High School — GPA: 3.9, 2014 - 2018

TECHNICAL SKILLS

Programming Languages C, Python, Unix shells, Java, Go, C++, OCaml, SQL
Software & Tools QEMU + GDB, Linux kernel debugging, Docker, Ansible, PyTorch, Git, AWS, LaTeX

PROFESSIONAL EXPERIENCE

SOLAR Lab, UCLA CS Department — Sept 2021 - Present
Student Researcher — *Supervisor: Prof. Harry Xu*

- Volunteered during the school year, employed full-time to work on kernel patches over the summer. Focused on developing OS kernel mechanisms to allow for transparent memory disaggregation. Worked heavily with kernel programming and debugging tools, such as **QEMU + GDB**, serial port debugging, and **perf**.
- Independently developed patches for the Linux kernel's swap subsystems, with the goal of merging these changes upstream. Patchset extends the cpuset controller to allow per-cgroup control of active swap devices. Associated refactoring has positive implications for swap throughput, and makes it easy to manage frontswap-based remote memory systems.
  Code at github.com/yashlala/canvas-linux.
- Developed a patchset to improve the Linux kernel's physical page allocation latency. The patch reduces tail latencies by refilling the percpu low-order free page lists asynchronously using RCU.
- Profiled swapout latencies for RDMA-based remote memory systems under various workloads and prefetch strategies.

Veritas Technologies LLC — June 2021 - Sept 2021
SDE Intern

- Worked on large-scale data consolidation and backup devices (NetBackup Flex platform).
- Implemented functionality allowing Flex nodes to automatically discover new backup nodes over the datacenter network, then to securely assimilate them into a backup cluster. Primarily worked with **Ansible**, **Docker**, and various glue languages.
- Replaced SSH-based inter-node communication protocols with a RESTy HTTP based protocol.
- Added web dashboard for backup cluster management.

Pringle Lab, Stanford Genetics Department — June 2017 - August 2017
Undergraduate Research Intern

- Tested algal species for selective binding to various lectin proteins in order to understand the chemical processes behind coral bleaching. Poster available at yashlala.com/pringle-poster.pdf.
- Developed an image recognition program in **Java** for use in algal cell haemocytometry.

PROJECTS

SC-DNN$_{cc}$: A Compiler for Stochastic-Computing Accelerators — May 2022 - June 2022

- Developed a compiler backend that transforms programs written in conventional IRs into forms that can be run on a stochastic-computing based hardware accelerator (stochastic accelerators have unusual probability-based programming semantics, and can be difficult to program). Developed an interpreter in **Java** to emulate a stochastic accelerator with a limited set of stochastic primitive operations.

NDN Multicast — May 2022-Present

- Worked on extending routing protocols for NDN (Named Data Networks). Extended NLSR (a link-state routing algorithm for NDN) to allow for efficient multicast delivery of NDN Interest packets. Worked primarily in **C++**, Student paper submitted to ICN 2022.

GRU4RecBE: Session Based Recommendations with Features — March 2021 - June 2021

- Developed session-based recommendation system in **PyTorch** which extends the GRU4REC architecture with rich item features extracted from the pre-trained BERT architecture. Non-attentive model outperforms state-of-the-art session-based models over the benchmark MovieLens 1M and MovieLens 20M datasets. Paper accepted to AAAI Student track.

Junknet: Distributed Compilation Framework — January 2021 - March 2021

- Worked on developing a distributed computing framework for a home environment. Project parses Makefiles and runs them in a distributed manner over available LAN devices. Network and device failures are tolerated.