Mohil Patel

✉ mohilp1998@gmail.com | ⌂ mohilp1998.github.io | ⚫ mohilp1998 | in mohilp1998

Education

University of Wisconsin-Madison   *Madison, WI, USA*
M.S. in Computer Science | GPA: 4.0/4.0   *Sep. 2021 - May 2023*
Coursework: *Distributed Systems, Big Data Systems, Advanced Operating Systems, Machine Learning, Database Management Systems*

Indian Institute of Technology Bombay   *Mumbai, India*
B.Tech with Honors in Electrical Engineering | **Minor in Computer Science** | GPA: 9.58/10.0   *Jul. 2016 - May 2020*
Coursework: *Data Structures & Algorithms, Computer Architecture, Digital Image Processing, Computer Networks, Probability*

Experience

Oracle   *Redwood City, CA, USA*
Software Engineer | GoldenGate - Database Org   *July 2023 - Present*
- Part of Oracle's GoldenGate team, responsible for feature development, bug fixes and maintenance of **GoldenGate** product (**C++**)
- GoldenGate allows customers to setup **real-time database replication** pipelines across multiple databases instances & big data systems

Samsung Semiconductor   *San Jose, CA, USA*
System Software Intern | GPU Driver   *May 2022 - Aug. 2022*
- As intern in GPU SW team worked on the **ANGLE** project, which translates **OpenGL ES** API calls to **Vulkan** API calls at runtime in smartphones
- Developed methods to profile GPU memory usage using **Vulkan** Extension & implemented memory optimizations in **ANGLE** codebase (**C++**)

Nvidia   *Hyderabad, India*
Software Engineer | Geforce Now - Cloud Gaming Service   *Jul. 2020 - Jul. 2021*
- Member of Nvidia's Cloud Game Streaming **QoS team**, handling **real-time algorithms** to enhance the gameplay experience dynamically
- Ran experiments & analyzed results (**python**) to understand the **impact of networks parameters on cloud game streaming**
- Implemented new algorithms & optimized existing features (**C++**) to improve user experience by reducing stutter, latency & packet loss

Projects

Low Bandwidth Google File System
Course Project | CS739: Distributed Systems | Report   *Mar. 2023 - May 2023*
- Improved design of GFS for Low Bandwidth conditions by **identifying duplicate blocks** on client & server to **avoid redundant data transfer**
- Implemented solution as a wrapper on top of **HDFS** & showed significant reduction in data transmitted over network for specific workloads

Efficient Distributed Transfer Learning using Pipelined Model Parallelism
Course Project | CS744: Big Data Systems | Report   *Oct. 2022 - Dec. 2022*
- Designed a system to incorporate pipelined model parallelism in transfer learning & reduced training speed by improving resource utilization
- Implemented system using **pytorch** & **async communication** library, & showed perf. improvement by training multiple **resnet50** in parallel

Improving Performance in LSM-Tree Based Key-Value Stores using NVMe
Course Project | CS736: Adv. Operating Systems | Report   *Sept. 2022 - Dec. 2022*
- Analyzed the performance of Log-Structed Merge (LSM) Tree's compaction process in **RocksDB** for NVMe SSD & HDD, using **fio** benchmark
- Improved performance by **splitting hot & cold data** between SSD & HDD, and using **SPDK** to **bypass kernel** for direct NVMe reads/writes

Database to Graph Conversion Tool
Research Project | Team: Marius | Github Repository   *Oct. 2021 - May 2022*
- Designed a tool (**python**) which outputs a graph (as an edge list) from an input database using user-defined configuration and SQL queries
- Implemented **out-of-memory** processing to generate **billions of edges** within **few hours**. Currently supports **Postgres**, **MySQL** & **MariaDB**

CHIP-8 Emulator
Personal Project | Github Repository   *Jan. 2021 - Mar. 2021*
- Chip-8 is a **8-bit interpreted language** with **35 opcodes** & **4KB memory** used in 1970s in many microcontrollers
- Designed a chip-8 emulator with additional functionalities like timer, keyboard & graphics **using C++ and SDL2.0**

Skills

Languages: *(proficient)*: C, C++, Python, VHDL, LaTeX | *(familiar)*: Matlab, Java, SQL, Embedded C, HTML
Tools & Frameworks: *(proficient)*: NumPy, Pandas, Jupyter Notebook, Git | *(familiar)*: Pytorch, Postgres, Docker, sklearn, SciPy, Spark