Mohil Patel

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Education

University of Wisconsin-Madison
Madison, WI, USA

M.S. in Computer Science | **GPA: 4.0/4.0** *Sep. 2021 - May 2023**

Coursework: *Big Data Systems, Foundations of Data Management, Database Management Systems, Machine Learning, Operating 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, Processor Design, Digital Image Processing, Probability & Random Processes*

Experience

Samsung Semiconductor
San Jose, CA, USA

System Software Intern | GPU Driver *May 2022 - Aug. 2022*

- As an 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 techniques 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

Samsung RnD Institute
Bangalore, India

Software Engineer Intern | Smart Devices *May 2019 - Jul. 2019*

- Worked on Samsung's Smart Devices Team, responsible for analyzing data generated from smart devices & generating useful insights
- **Surveyed multiple research works on clustering techniques** & implemented them using **python** to understand and predict human behaviour

Projects

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**

Analyzing System Characteristics of Different Graph Frameworks
Course Project | CS784: Foundations of Data Mgmt | Report *Jan. 2022 - May 2022*

- Gained familiarity with the following graph frameworks: **Spark**, **GraphX**, **GraphFrames** & **GraphChi** and popular graph algorithms
- Ranked performance, network throughput (distributed frameworks), CPU, memory & disk usage for graph algorithms across these frameworks

Combining Sketch and Tone for Pencil Drawing Production
Personal Project | Github Repository *Mar. 2021 - May 2021*

- Studied a pencil drawing generation technique from natural images, involving **Line Drawing Generation** and **Pencil Texture Rendering**
- Implemented the code using **OpenCV & Java**, producing both Colored and GrayScale Pencil Drawing Images from a Natural Image

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**

Real-Time Server Based Communication with Hardware Encryption
Final Year Project | Guide: Prof. Madhav Desai | Github Repository *Jul. 2019 - May 2020*

- Designed an end-to-end server based **full duplex communication system** using **MQTT based server** implemented in **python**
- Implemented **hardware encryption engine (AES-128)** using **FPGA (Artix-7)** & also designed microphone & speaker circuits for end points

Skills

Languages: *(proficient)*: C, C++, Python, VHDL, LaTeX| *(familiar)*: Matlab, Java, SQL, Embedded C, HTML

Tools & Frameworks: *(proficient)*: NumPy, Pandas, Jupyter Notebook, Git| *(familiar)*: Postgres, Docker, sklearn, SciPy, Perforce, Spark, Arduino