

# 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, Digital Image Processing, Computer Networks, Probability

## Experience

### 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

### Samsung R&D 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 (**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 the performance, network throughput, CPU usage, memory usage & 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,  $\text{\LaTeX}$  | (*familiar*): Matlab, Java, SQL, Embedded C, HTML

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