Shaurya Gupta

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Education

University Of Michigan **Ann Arbor, MI**

Degree: *Computer Science (B.S.E.),* ***Minor:*** *Mathematics* *Aug. 2020 – May 2024*

- **GPA:** 4.00/4.00
- **Relevant Coursework:** Data Structures and Algorithms, Machine Learning, Computer Organization, Discrete Mathematics, Linear Algebra, Robotic Mechanisms, Statistics and Data Analysis.
- **Honors:** University Honors, Dean's List.

Projects

Log Manager | *C++* **November 2021**

- Evaluated the runtime and storage tradeoffs for storing, accessing, and parsing text data from a master log file.
- Implemented an interactive program in C++ using hash maps and heaps to allow users to efficiently search for logs by a range of timestamps, keywords or categories.

Resize Bot | *Node.JS, npm, Python, C++* **August 2021**

- Developed a Discord Bot using Discord.JS and C++ that performs Content Aware Image Resizing and allows the user to change the aspect ratio of an image without distorting its important features.
- Used the Discord.JS API to create a Canvas context and extract individual pixel data from the image sent by a user on Discord.
- Used a Child Process to pass image data to a C++ program that performs Seam Carving in a parallel thread for faster processing.

Piazza Post Classifier | *C++, Python* **March 2021**

- Implemented a Naive Bayes Classifier to categorize posts by content on Piazza.
- Trained the Machine Learning model using log probability scores based on posts made in previous years and achieved a Subject-Prediction accuracy of 85%.
- Utilized recursion, Binary Search trees, templates, comparators and map data structures in C++ to classify a large number of posts efficiently.

Map Building from LiDAR data | *Julia, Jupyter* **October 2020**

- Used a Kalman Filter Algorithm to process and transform point cloud data collected from a thirty-two beam LiDAR on a bipedal robot to build a map using Julia.
- Parsed robot pose and point cloud data to calculate Linear Affine Transformations needed to bring data into the World Frame in real time.
- Fused Data collected collected over multiple time periods with the robot's motion to gain full scene understanding and build a map.

Technical Skills

- Programming Languages: C/C++, Python, Java, JavaScript, Node.js, Matlab, Julia, R.
- Markup Languages: LaTeX, HTML, Markdown.
- Developer Tools: XCode, VS Code, Jupyter, Vim.
- Technologies/Frameworks: Linux, Github, npm, NumPy, Pandas, PyTorch.

Experience

Norma **May 2019 – July 2019**

Value Engineering and Logistics Intern *Uttar Pradesh, India*

- Performed a Cost-Benefit analysis to help determine whether the company should change its manufacturing process based on data collected about the profitability of the existing processes.
- Studied various machining processes for Stainless Steel flanges and predicted the infrastructure cost for each of them.