Utkarsh Bansal

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Education

- **University at Buffalo, The State University of New York** — Buffalo, NY
  Master of Science - Computer Science and Engineering; GPA: 4.0 — *Expected Dec 2022*
- **Ambala College of Engineering and Applied Research** — Ambala, India
  Bachelors in Technology - Computer Science and Engineering; Percentage: 85.2/100 — *Aug 2017 - Jul 2021*

Skills & Tools

- **Computer Languages** — Python, C++, JavaScript, Java, C, SQL.
- **Software & Libraries** — React, Node.js, MongoDB, Docker, ROS, Scikit-learn, NumPy, Pandas, Postman.
- **Courses & Certifications** — Front-end Web Development with React and Bootstrap, Machine Learning, Data Science, Programming in C, Database Management Systems.

Work Experience

- **University at Buffalo, Teaching Assistant - CSE 421/521 Operating Systems** — Feb 2022 - Present
  - Mentoring students in course projects and holding doubt clearing sessions.
- **VA Software Solutions, Intern** — May 2020
  - Created training material on leveraging Postman to build and test Web APIs.
- **Entrepreneurship Promotion and Incubation Council, UI Design Intern** — Dec 2019 - Jan 2020
  - Built UI for an application to measure temperature of hot metals using smartphone camera.
- **VA Software Solutions, Intern** — Jul 2019 - Aug 2019
  - Presented documentation on Web API best practices and authentication techniques (OAuth 2.0).

Course Projects

- **Distributed Systems** — Feb 2022 - May 2022
  - Working on a distributed file access manager where a user can upload files and set file access rights.
  - Leveraging React.js, Node.js and Express.js for build of the application. Using Docker to simulate the distributed environment.
  - Using Redis for session management and RAFT algorithm for achieving consensus among nodes.
- **Robotics Algorithms** — Sep 2021 - Dec 2021
  - Executed planning algorithms in C++ such as Bug2 and A* taking advantage of ROS, tf and stage.
  - Designed a perception system, making use of RANSAC algorithm, for wall detection.
  - Modeled a system for feature matching in images by applying Harris Corner Detection and RANSAC.
- **Operating Systems** — Sep 2021 - Dec 2021
  - Accomplished priority scheduling and MLFQ scheduling among threads.
  - Improved alarm clock functionality enabling threads to sleep without busy waiting.
  - Worked on process initialization and setup of user level processes. Implemented all functionalities in C language.
- **Machine Learning** — Sep 2021 - Dec 2021
  - Implemented Linear Discriminant Analysis (LDA) and Quadratic Discriminant Analysis (QDA) on a sample dataset and compared results.
  - Modeled a neural network to classify images with people wearing/not wearing glasses.
  - Implemented CNNs and SVMs using NumPy and Scikit learn libraries on the MNIST dataset for digit classification.

Personal Projects

- **Printing Job Management System** — Feb 2021 - May 2021
  - MERN application formulated for Rupa Packaging Industries to digitalize job management operations.
  - User can view, add, update jobs and track steps (designing, printing etc.) needed for a job's completion.
- **Data Structures and Algorithm Visualizer** — Sep 2020 - Dec 2020
  - Visualized stack and queue data structures as well as BFS and DFS graph traversal algorithms utilizing React and Bootstrap to assist remote learning during COVID-19 pandemic.
- **Personal Travelogue Website** — Aug 2020 - Sep 2020
  - Travel blog and portfolio built using Bootstrap and React libraries.