Saarthak Gupta

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Education

University of Virginia, Charlottesville, VA **August 2021 – May 2025**
School of Engineering, BS, Computer Science (Cumulative GPA: 3.99 | Major GPA: 4.00)
Data Science Minor
Awards: Dean's Research Fellowship, Dean's List
Relevant Coursework: Machine Learning, Databases, Operating Systems, Advanced Algorithms, Data Structures, Advanced Software Development, Web Programming, Cybersecurity, Computer Architecture, Linear Algebra, Probability, Statistics, Calculus, Discrete Math

Technical Skills

Programming Languages: JavaScript, TypeScript, Python, Dart, Java, C/C++, Swift, HTML, LESS/SCSS/SASS/CSS, PHP, SQL
Frameworks: React, Node.js, Flask, Django, React Native, Flutter, Bootstrap 5, Material UI, jQuery, NumPy, Pandas, TensorFlow, scikit-learn
Technologies: AWS (IAM, EC2, S3, Lambda, RDS/Aurora), PostgreSQL, MongoDB, MySQL, Git, Heroku, REST, Agile, CI/CD, Figma, Postman

Experience

UVA Engineering, Charlottesville, VA **August 2022 - Present**
Lead Computer Science Teaching Assistant
- Guided 200+ students on x86-64, C/C++, Linux, and hardware for operating systems and computer architecture focused classes
- Led labs and review sessions, held office hours, graded and proctored exams, resolved questions on Piazza, and graded assignments

Biocomplexity Institute, Charlottesville, VA **June 2022 - Present**
Research Intern- Network Systems Science and Advanced Computing Division
- Developed optimized algorithms for constructing and analyzing 1 million+ node networks, reducing computation time by over 32,000x
- Used machine learning (linear regression, gradient boosting, random forest, SVC, XGBoost) to predict hospital-acquired infection spread
- Developed Python tools for data cleaning, visualization, data mining, and spatio-temporal analysis on 1 billion+ insurance claims
- Automated analysis and created pipelines for job deployment on a high-performance computing cluster using Slurm and bash scripting
- Collaborated with researchers at Johns Hopkins University and the Center for Disease Dynamics, Economics & Policy (CDDEP)

Publicis Sapient, India (Remote) **May 2022 - July 2022**
Software Engineer Intern (Database Team)
- Integrated MySQL databases with a backend Java application using JDBC API to streamline data injection and reduce API calls by 5-10%
- Developed ETL packages that efficiently processed the data of 2000+ clients from flat files for an internal information management tool
- Designed 12 packages in SQL Server Integration Services (SSIS) for data transformation and event handling on MS SQL Server databases
- Collaborated on projects with a team of 7 people including interns, staff software engineers, a senior engineer, and a manager
- Presented a Power BI dashboard and SSIS packages to managers for use in future business intelligence solutions and data warehousing

Carolina Engineering, Turning, and Steel, New Delhi, India **May 2019 - May 2020**
Engineering Intern
- Developed, tested, and deployed an Arduino device for regulating HVAC systems using sensor data and relays to lower power use
- Created a proprietary algorithm and software in C for Arduino that reduced power use by 20% and greenhouse emissions by 35%

Selected Projects

Haiku Cam | *AWS (Lambda, S3, SQS), Raspberry Pi, Python, C, SQLite 3* | GitHub **December 2023 - Present**
- An AI-powered, Raspberry Pi-based IoT device that writes poems about captured images with a cloud-native backend for processing

Predicting Traffic Collision Risk In Virginia | *TensorFlow, scikit-learn, Pandas, NumPy* | GitHub **August 2023 – December 2023**
- Managed a team of 3 to build ML models that predict fatality risk with 85% accuracy, cluster accidents, and forecast accident time series

Flick Picks App | *PHP, JavaScript, jQuery, AJAX, PostgreSQL, HTML, SCSS/LESS* | GitHub | Website **September 2023 – December 2023**
- Led the development of a social cataloging service with 1M+ movies, enabling users to curate shared collections and interact with blogs

Caldera: Roguelike Video Game | *JavaScript, Algorithms, Design patterns* | GitHub | Website **August 2023 - September 2023**
- A 2D, top-down, turn-based, strategy dungeon crawler with procedurally generated enemies, loot, and infinite levels using BSP trees

Task.it Platform | *React, Flask, Flutter, Firebase, PostgreSQL, Material UI* | GitHub | Website **July 2023 - August 2023**
- A scalable task management platform with advanced collaboration and data visualization features to keep project teams organized

Image Factory Mobile App | *React Native, Node.js, Express.js, MongoDB* | GitHub | Demo **June 2023 - July 2023**
- An iOS/Android social media application for creating and sharing AI generated images with prompts, comments, likes, and captions

Tutor Me Web App | *Django, Bootstrap 5, PostgreSQL, Heroku, JavaScript* | GitHub | Website **February 2023 - May 2023**
- Managed a team of 5 as Scrum master for Agile development of an MVC application to match students with tutors on college campuses

Leadership & Volunteering

Pure Hearts NGO, Gurgaon, India **April 2018 - December 2021**
Head of Initiatives
- Set up an online school for 60+ students, raised $3,000 for supplies, and organized waste reduction drives for low-income communities

International Journal of Research and Analytical Reviews | Publication **November 2020 - April 2021**
Co-Author
- Published "Big Tech Stock Predictions Using Recurrent Neural Networks" with Dr. (Prof.) Sarvjeet Herald and coached other students
- Led research on Multi-EMD2FNN, RNN/LSTM, Motif Extraction and CNN, SVM-RBF, and Random Forest algorithms for stock prediction

Other Skills & Interests

- *Languages*: English (Native), Hindi (Native)
- *Professional*: Creative problem-solving, Effective communication, Leadership, Abstract thinking, Slack, Microsoft Office
- *Interests*: Photography, Astronomy, Guitar, Creative Writing, Trekking