Vani Agarwal

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Education

University of Washington Seattle, WA

3.5 | BS. Mathematics, BS. Informatics *Sep 2022 – Jun 2026*

Clubs: Society of Women Engineers, Husky Coding Project, CSEED
Relevant Coursework: Data Structures and Algorithms, Linear Algebra, Linear Optimization, Real Analysis, Intermediate Data Programming, Data Visualisation, Database Management

Technical Skills

Languages: Java, Python, SQL, p5, JavaScript, HTML/CSS, R, LaTeX
Frameworks/Libraries: React, Node.js, Tableau, Vega-Lite, MS Office, R-Studio, Pandas, NumPy, GeoPandas, Folium, Matplotlib, Seaborn, Azure, Flask
Tools/IDEs: Git, GitLab, Jupyter Notebooks, Figma ObservableHQ, Visual Studio Code, IntelliJ, Sublime
Certifications/Courses: Google Data Analytics Professional Certificate, The Complete Web Developer ZTM

Experience

Undergraduate Teaching Assistant Mar 2024 – Present

Intermediate Data Programming, Data Structures and Algorithms *Seattle, WA*

- Facilitated sessions for **150+** students, simplifying technical problems and boosting class performance by **20%.**
- Developed and integrated JUnit test suites to assess algorithm efficiency and correctness for student projects.
- Leveraged GitLab CI/CD for automated testing, identifying performance bottlenecks, offering optimization advice

Undergraduate Research Assistant Mar 2024 - Present

UW HCDE, TikTok Crisis Imagery *Seattle, WA*

- Qualitatively coded analyzed 300+ TikTok videos related to crisis imagery, performing exploratory data analysis.
- Conducted trend analysis by applying time-series decomposition techniques to explore patterns in audience engagement over key crisis events, uncovering seasonal spikes in video viewership.

Projects

Education Inequality in The US, UW Seattle | *Javascript, R, Vega-Lite*

- Developed a **data visualization** project to analyze and highlight education inequities in the United States
- Engineered an interactive notebook on **ObservableHQ** using **JavaScript** and **Vega-Lite**, addressing education inequality questions using 4+ complex interactive data visualisations

Geospatial Data Analysis and Visualization Project | *Python, GeoPandas, Matplotlib, Pandas, Folium*

- Developed a comprehensive **data analysis pipeline** using **Python** to analyze food access in Washington State.
- Merged geospatial and tabular data to create an integrated dataset using **GeoPandas**, enabling **spatial analysis.**
- Generated detailed geospatial visualizations including choropleth maps and interactive maps leveraging data from the **2010 U.S. Census** and the **USDA's Economic Research Service.**

Backend Engineering Virtual Experience, Lyft Inc. | *Python, Flask*

- Implemented a new feature to determine whether cars in a new rental fleet are serviceable or not using **Python** and developing microservices for the Vehicle, Engine, & Battery components for **3M+** Lyft customers
- Applied principles of **software architecture, unit-testing, refactoring,** and **test-driven development**

NBA 2023 Player Performance Analysis | *Python, Pandas, Tableau*

- Engineered a comprehensive data pipeline using Pandas to process **10,000+** rows of NBA shot data.
- Built interactive Tableau and Matplotlib visualizations to display spatial shot distribution and game context.
- Optimized data wrangling techniques to extract performance metrics such as shot accuracy, distance analysis, and player trends.

Vaccine Scheduling System | *Java, SQL*

- Architected and built a **Java** and **SQL** based vaccine scheduling tool to allow patients and caregivers to track vaccine stock and appointments.
- Integrated a patient appointment booking feature that processed over **500** reservations, ensuring the allocation of available vaccine doses and caregiver schedules in real-time using **SQL** triggers and **Java's JDBC** for database communication.