

VATSAL MALKARI

Class of 2025 | Rutgers University

Bachelor of Science in Computer Science & Data Science

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Website: [\[My Portfolio\]](#)

SUMMARY

Senior Computer Science and Data Science student at Rutgers University with experience in software development, machine learning, and web development. Strong leadership background through Alpha Phi Omega and multiple personal projects. Seeking opportunities to apply my skills in coding, problem-solving, and machine learning to real-world challenges.

EDUCATION

Rutgers University – New Brunswick, NJ

Bachelor of Science in Computer Science & Data Science

Expected Graduation: May 2025

Relevant Coursework: Algorithms, Data Structures and Algorithms, Intro to Data Science, Computer Architecture, Systems Programming, Deep Learning

TECHNICAL SKILLS

Languages: C++, C, Java, Python, R, JavaScript, HTML/CSS

Frameworks & Tools: React, Node.js, TensorFlow, Git

Technologies: Machine Learning, Data Analysis, Shell Programming

Databases: SQL, MongoDB

Operating Systems: Linux, Unix

PROJECTS

Custom Unix-like Shell [college assignment]

- Developed a shell in C with interactive and batch modes.
- Supported built-in commands and external execution with fork, execv, and wait.
- Implemented I/O redirection (>, <), piping (|), and wildcard expansion (*).
- Designed a dynamic tokenization system with memory management for efficient input parsing.

- Added conditional execution using a status-checking mechanism.
Technologies: C, Unix/Linux, System Calls, Memory Management, I/O Redirection, Piping, Debugging (AddressSanitizer)
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React To-Do List App with AI Integration

- Built a task management app with persistent data storage using localStorage.
 - Integrated a chatbot for task creation and categorization (daily, important, leisure).
 - Enabled sorting tasks by day and time with a mobile-responsive UI.
 - Ensured accessibility compliance with ARIA standards.
Technologies: React, JavaScript (ES6+), HTML/CSS, ARIA Accessibility, LocalStorage
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NFL Game Outcome Predictor

- Developed a machine learning model to predict NFL game outcomes using team stats (2004-2023).
 - Used SMOTE to balance class distribution and improved model accuracy.
 - Achieved an AUC score of 0.92 with XGBoost; also applied Logistic Regression and Random Forests.
Technologies: Python, scikit-learn, XGBoost, SMOTE, Pandas, NumPy, Matplotlib, Seaborn
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Infinity War – Graph Algorithms & Simulations

- Implemented Java programs based on graph theory for simulations inspired by the Marvel Universe.
 - Predicted timelines with DFS and optimized pathfinding using Dijkstra's Algorithm.
 - Simulated network integrity using randomized vertex deletion for connectivity analysis.
Technologies: Java, Graph Theory, DFS, Dijkstra's Algorithm
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LEADERSHIP & ACTIVITIES

Alpha Phi Omega Co-Ed Service Fraternity (March 2023 – Present)

- **Webmaster:** Managed fraternity website and online platforms.
- **Brotherhood Engagement Committee:** Organized events to increase engagement and retention.
- **Alumni Chair:** Coordinated outreach and events to maintain relations with alumni.

Volunteer, Five Loaves Food Pantry

- Regularly volunteered to organize and distribute food to those in need.
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ADDITIONAL EXPERIENCE

Website Development: Created a personal website to showcase skills, projects, and portfolio.

Hackathons: Participated in university hackathons, developing collaborative projects under tight deadlines.