Shambhavi Goyal

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Education

University at Buffalo, The State University of New York *Aug 2023 – May 2027*
BS in Computer Science, Honors College

- **GPA**: 3.85/4.0
- **Coursework:** Operating Systems, System Programming, Computer Systems Administration, Computer Architecture, Data Structures, Algorithms & Complexity, Object-Oriented Programming, Linear Algebra
- **Campus Involvement:** Member of the Leadership House and Women in Science and Engineering
- **Awards:** Dean's List, Women Empowerment Scholarship, University at Buffalo Flagship Scholarship

Skills

Languages: C, Java, Python, JavaScript, HTML, CSS, MIPS, VHDL

Frameworks & Libraries: Node.js, Express.js, React, Bootstrap, Tailwind CSS, TensorFlow, Spring Boot, Flask, Django

Databases: MongoDB, MySQL

Version Control: Git, GitHub (branching, pull requests, issue triage, merge/conflict resolution)

Tools: npm, Docker, Postman, VSCode, IntelliJ, PyCharm, Eclipse, REST APIs

Operating Systems: Linux, Windows

Mobile Development: Kotlin, Android Studio

Projects

Chat Application github

- Designed and developed a full-stack real-time chat application using Flask, Flask-SocketIO, and Socket.IO, featuring multi-room support, private messaging, emoji reactions, and typing indicators.
- Built a responsive, theme-switchable UI with dynamic JavaScript, implemented secure authentication with Flask-Login and Bcrypt, and managed persistent storage using SQLite.

Productivity Bundle Task Manager github

- Developed a full-stack Task Manager app with Node.js, Express, MongoDB, and vanilla JavaScript, supporting full CRUD operations via RESTful APIs.
- Implemented custom middleware for error handling and async control, alongside a responsive UI using Tailwind with validation, alerts, and loading indicators to enhance reliability and user experience.

Cellular Automaton Simulator github

- Developed a hybrid Cellular Automaton Simulator by programming the Arduino Uno R4 in C++ and designing a logic circuit using NPN transistors and diodes to simulate Conway's Game of Life rules.
- Gained hands-on embedded systems experience by solving voltage regulation and hardware-software synchronization challenges using custom-built AND, OR, and NOT gates.

Experience

Undergraduate Teaching Assistant: Discrete Structures & CSE Seminar *Buffalo, NY*
CSE Department *Aug 2024 – Present*

- Delivered academic support in Discrete Mathematics and Computing Ethics courses by leading weekly recitations and holding 20+ office hours, helping students understand complex technical and ethical concepts.
- Graded assignments and exams with detailed, constructive feedback to reinforce learning and uphold academic standards across topics such as data representation, misinformation, data mining, and internet infrastructure, helping boost midterm scores by 12% on average.

Mathematics Tutor *Buffalo, NY*
Thomas J. Edwards Undergraduate Learning Center *Aug 2024 – Present*

- Tutored over 100 students in Advanced Calculus, Linear Algebra, and Business Math, leading to an average grade improvement of 10–15% based on follow-up assessments and student reports.
- Adapted instruction to diverse learning styles, guided students through targeted problem-solving, and consistently received positive feedback—with 90% reporting increased confidence and clarity in mathematical concepts.