

Avi Patel

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EDUCATION

Brown University, Sc.B. Computer Engineering

Providence, RI | **Expected Graduation May 2029**

Relevant Courses: Program Design with Data Structures & Algorithms, Introduction to Object-Oriented Programming, Applied Ordinary Differential Equations, Engineering Statics & Dynamics, Introduction to Software Engineering

Horseheads High School, 4.00/4.00 GPA, 99.71/100, Valedictorian

Horseheads, NY | Class of 2025

SUNY Corning Community College, Dual Enrollment Program

Corning, NY | Class of 2025

PROJECT EXPERIENCE

Vinyl, Creator & Developer

May 2026

- Developed a native macOS Spotify mini-player supporting real-time playback controls, synchronized lyrics, and live metadata by integrating Spotify APIs with a SwiftUI frontend
- Implemented secure Spotify authentication using OAuth 2.0 PKCE and custom URL callback handling
- Reduced perceived playback latency by implementing local progress interpolation and asynchronous API polling with Combine-based state management

Lifeguard Scheduler, Creator & Developer

July 2026

- Eliminated manual creation of rotation schedules by developing an automated scheduling system for teams of 7-9 lifeguards
- Built an interactive frontend using HTML, CSS, and JavaScript to provide an intuitive interface for generating and managing daily schedules.
- Leveraged AI-assisted development tools to accelerate prototyping, debug scheduling logic, and evaluate alternative algorithmic approaches throughout the development process.
- Refined system functionality through an iterative development cycle, incorporating real-world operational requirements and continuous testing to improve scheduling fairness and accuracy.

Gnome Alone, Creator & Developer

December 2025

- Designed and developed a 2D adventure game in Java, implementing object-oriented architecture for player mechanics, game state management, and world object interactions
- Built a procedural world generation algorithm using seeded randomness to dynamically generate terrain and loot layouts, ensuring replayability across sessions.
- Developed custom sprite assets designing characters, environmental tiles, and UI elements for a cohesive visual style.
- Designed inventory and game-state management systems using custom Java data structures to improve maintainability and extensibility.

TECHNICAL SKILLS

Languages: Java, Python, Swift, JavaScript, C#, Lua

Frameworks & Libraries: SwiftUI, Combine, React, Next.js, FastAPI

Tools & Technologies: Git, GitHub, Unity, Fusion360, HTML, CSS, OAuth 2.0, REST APIs

Concepts: Data Structures & Algorithms, Object-Oriented Programming, API Design

EMPLOYMENT EXPERIENCE

Chemung County Harris Hill Pool, Head Lifeguard & Swim Instructor

Elmira, NY | June 2024 – Present

- Maintained a safe environment for 100+ daily patrons by enforcing pool regulations and responding to emergencies
- Accelerated onboarding of 4-5 new lifeguards each season by training staff on rescue procedures, protocols, and risk prevention
- Instructed swim lessons for 30+ students per session across varying age and skill levels
- Designed structured lesson plans focused on stroke technique, endurance, and water safety

LEADERSHIP EXPERIENCE

Horseheads High School Bands, President

Horseheads, NY | June 2024 – June 2025

- Led 80+ member competitive marching band, coordinating section leaders and supporting director with rehearsal planning
- Organized sectionals and peer mentorship to improve musical precision and ensemble cohesion
- Represented band in meetings with faculty and administration, advocating for funding and performance opportunities
- Helped guide band through competitions and community performances

Multicultural Club, President

Horseheads, NY | June 2023 – June 2025

- Organized cultural food-sharing events and presentations attended by 100+ students
- Coordinated with faculty advisors to secure funding and event approval
- Created space for dialogue around identity and global perspectives