Kathan Ashishkumar Shah

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EDUCATION

University of Alberta   **Edmonton, AB**
Bachelor of Science, Honors in Computing Science   *September 2023 – April 2027*
- Relevant Coursework: Data Structures and Algorithms, Databases, Introduction to Software Engineering

TECHNICAL SKILLS

Languages: Python, Java, C, R, SQL
Database: SQLite, MongoDB
Frameworks and Libraries: Pandas, NumPy, Scikit-learn, face-api.js, RESTful APIs
Developer Tools: Git, GitHub, GitLab CI/CD, VS Code, Android Studio, Linux, Google Cloud, Microsoft Azure
Development Practices: Agile Development, Software Development Life Cycle (SDLC), CRUD Operations, MVC Pattern

PROJECTS

Hands-Free Web Navigator | 1st Place, HackED 2025
- Built a Chrome extension enabling cursor control via head movement using **face-api.js** and delivered **sub-100ms response time** on a laptop for real-time accessibility
- Designed UI cues and calibration system that improved navigation success rate by **35 percent** for first-time users during hackathon testing phase

Feelink: Location-Based Android Mood Sharing Application | Java, Firebase, Google Maps API
- Developed location-aware Android application with emoji-tagged mood sharing, integrated Google Maps API with **500+ geotagged locations**, implemented Firebase **Realtime Database chat with less than 1 second latency**, and designed Database **offline synchronization** for seamless user experience
- Architected MVC pattern across **15+ activities and fragments** with Firebase Authentication, Firestore **handling 500+ entries**, RecyclerView with DiffUtil optimizations for **200+ posts**, and image compression to **approximately 65KB** for optimized application performance
- Delivered **54 user stories** and resolved **136 issues** using GitHub Actions CI/CD, Scrum boards, UML diagrams, CRC cards, pair programming methodologies, and tested with **JUnit, Mockito, Android instrumentation** achieving **85 percent code coverage**

Database Enterprise System | Python, SQLite, MongoDB
- Engineered authentication system, paginated feeds, follower analytics, and regex search functionality that reduced query time for hashtag lookups by **60 percent via strategic indexes and aggregation optimization**
- Designed and prototyped MongoDB implementation with advanced **aggregation pipelines** for real-time data insights including top trending hashtags and peak user activity hours analysis

Ray Tracer 3D Renderer | C, Dynamic Memory Management
- Built a 3D ray tracer generating **640 by 480 pixel** photorealistic images with Phong lighting, shadow casting, and **9-sample anti-aliasing**, achieving **greater than 90 percent shading accuracy** using low-level programming and file input/output
- Implemented ray-sphere intersection, dynamic lighting calculations, and rendering pipeline **handling 50+ objects** with dynamic memory allocation and custom vector data structures for efficient memory management
- Developed modular architecture with vector operations, **qSort-based** color indexing for **5+ HEX colors**, and Makefile automation maintaining **zero memory leaks** across test cases verified via **Valgrind**

PROFESSIONAL EXPERIENCE

External Events Executive   **September 2025 – Present**
TEDxUAlberta   *Edmonton, AB*
- Coordinate and manage partnerships with external organizations to support TEDxUAlberta events and community engagement initiatives
- Contribute to the overall success of TEDxUAlberta by ensuring smooth logistics and effective external communications with sponsors and partners

Academic Tutor   **July 2024 – Present**
University of Alberta   *Edmonton, AB*
- Tutor peers for first-year and second-year courses including Calculus, Foundations of Computation, Programming Methodologies, Database Management Systems, Probability and Statistics, providing academic support by clarifying core concepts and assisting in problem-solving

CERTIFICATIONS

Google Data Analytics (August 2024) | **Google AI Essentials** (July 2024) | **Introduction to Data Analysis with Excel** (July 2024)