Tushar Billakanti

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Education

Memorial University of Newfoundland **Sept 2020 – Dec 2024**
Bachelor of Science in Computer Science (Honors)
Minor: Business Administration
Dean's List 2020-21

Certifications

– **AWS** - Solutions Architect Associate **Jan 2025**

Skills

Languages – TypeScript, JavaScript (ES6+), Python, Java, Swift, C++/ C#, SQL, VBA
Backend – Express, Flask, Django, GraphQL, REST, Socket.io
Frontend – Next.js, React, React Native, SwiftUI, Angular, Tailwind CSS, Framer Motion
3D/XR – Unity, Meta Oculus SDK, OpenCV, Three.js
Cloud & DB – AWS, Firebase, MongoDB, PostgreSQL, Docker, GCP
Tools – Blender, Figma, Rive, Spline, Git, Bitbucket, Postman, Replit, Streamlit

Professional Experience

Freelance Developer **Jan 2025 – Present**
Remote

– Engineered a suite of personal utility applications and experimental projects to solve technical problems, ranging from generative 3D models to autonomous AI personas.
– Shipped production-grade MVPs for businesses, delivering scalable cloud infrastructure and intuitive user experiences.
– Tech stack: TypeScript, Python, Docker, Render, AWS

Undergraduate Research Developer **Jan 2024 – Dec 2024**
Memorial University - Human Computer Interaction Lab

– Co-authored the research paper "Comparing Pinch and Point Poses for Single Stroke Drawing in Virtual Reality." with Dr. Jay Henderson. Currently under review for IMWUT 2026 (Proceedings of the ACM).
– Built and designed a Unity VR app with ECS architecture for a robust game-like experience to allow users drawing on multiple surfaces with various hand poses.
– Implemented algorithms to optimize user experience like procedural mesh generations, ray-casting, filters reducing hand tracking jitters, resulting in high-fidelity data collection for academic analysis.
– Tech stack: Unity, C#, ShaderLab, Meta Oculus SDK, Python, MATLAB

Front-End Developer (Intern) **Apr 2023 – Dec 2023**
Carnegie Learning - Zorbit's Math

– Developed and maintained the product dashboard, contributing to 10+ projects focused on implementing new features and internal testing tools. Significant bug-fixing, code refactoring to ensure smooth re-branding of the product.
– Designed reusable Angular components, services, and modules, enhancing code scalability by 25% in key features like student performance reports, teacher resources, district profiles.
– Implemented analytical strategies by leveraging Pendo, to track user interactions with features within the product, enabling a 40% improvement in product decision making because of quality data points.
– Tech stack: Angular, TypeScript, Git, Node.js, Transloco, Tailwind CSS, Pendo, jsPDF

Projects

Gauss Labs: Screenshot-to-Reality AR Engine **Jan 2026**

– Developed an end-to-end generative AI pipeline using Meta's SAM 3D models to transform 2D images into textured 3D assets for Augmented Reality and gaming.
– Built a native iOS AR renderer in Swift and Metal to spatially anchor high-fidelity Gaussian Splats and textured 3D assets in real-world environments, sustaining a stable 60 FPS for immersive, real-time visualization.

- Engineered a high-performance backend on RunPod Serverless, implementing custom JIT kernel warming to reduce AI cold-start latency from minutes to under 15 seconds.
- Tech Stack: Python, CUDA, Swift, ARKit, Metal, Docker, PyTorch3D

Echo Chamber: Autonomous AI Infrastructure **Aug 2025**

- Architected an event-driven microservices ecosystem using AWS Lambdas to orchestrate autonomous AI personas capable of real-time social interaction and content generation.
- Developed a serverless control panel using Discord HTTP Interactions, implementing signature verification and interactive UI components for ”human-in-the-loop” content curation.
- Engineered a resilient data ingestion pipeline leveraging self-hosted Nitter instance and Amazon EventBridge to bypass platform rate limits and ensure 99.9% uptime.
- Tech Stack: AWS Lambda, DynamoDB, EventBridge, Gemini Pro, TypeScript, Serverless Framework, Discord API

3D VR-Draw (Honours Research Project) **May 2024**

- Created a Unity VR application for Meta Quest evaluating bare-hand gesture precision and surfaces in 1:1 digital twin environment.
- Engineered procedural mesh generation algorithms for real-time 3D rendering and implemented OneEuro filters to reduce hand-tracking jitter for sub-millimeter precision.
- Built a modular framework that reduced setup time for HCI research experimentation by 80%.
- Tech Stack: Unity, C#, Meta SDK, ShaderLab, Blender, Git

Liar’s Bar: Multiplayer Social Deduction Engine **Dec 2025**

- Developed a real-time multiplayer IRL party card game PWA built with React and Framer Motion to simulate immersive card game environment.
- Architected a server-authoritative backend using Socket.IO to manage synchronized global game states, Russian Roulette mechanics, and deck logic across multiple mobile clients.
- Integrated the Web Haptics API and CSS parallax effects to deliver native-level physical feedback and depth, optimized for low-latency performance on mobile browsers.
- Tech Stack: Socket.io, React, Node.js, TypeScript, Vite, Framer Motion, Web Haptics

Mystic Gifts: E-Commerce Store **Oct 2025**

- Developed a solo full-stack platform featuring a dynamic product catalog, shopping cart, and order tracking system designed to digitize an antique business.
- Built a private admin dashboard for real-time inventory management and an automated affiliate portal for creator-based commission tracking and link generation.
- Engineered a modular backend on Google Cloud Functions using Node.js and MongoDB, implementing JWT with refresh token logic for secure, long-lived user sessions.
- Tech Stack: React, Node.js, MongoDB, Google Cloud, Express, JWT, Cloudinary, Stripe API.

Non Technical Projects

Marketing Research Report (Team Collaboration) **Jan 2024**

- Drafted a 70+ page document on market research about a food product with detailed report on macro/micro environment analysis, SWOT analysis, market segmentation/justification, positioning, development and financial reports for a class under Dr. Kirby Shannahan.