

Vedant Agarwal

Pune, India | U.S. Citizen

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EDUCATION

Birla Institute of Technology and Science, Pilani

Jul 2022 – Jul 2026

B.E In Electronics And Communication Engineering

SKILLS

- **Languages:** Python, JavaScript, TypeScript, Swift, SQL, GLSL
- **Frontend & Mobile:** React.js, Next.js, Tanstack, Tailwind CSS, Three.js, R3F, WebGL, SwiftUI, ARKit, RealityKit, Expo
- **Backend & Data:** Node.js, Express.js, FastAPI, GraphQL, REST, WebSockets, Prisma, PostgreSQL, MongoDB, Redis
- **Tools/Platforms:** AWS, DigitalOcean, RunPod, Firebase, Supabase, Docker, Kubernetes, LangChain

WORK EXPERIENCE

Unrealizex

Jan 2025 – June 2026

Founding Engineer

Delaware, United States, Remote

- First and **sole engineer** at a 4-person AI startup.
- Built a browser-based 3D mesh editor in React/R3F with a custom half-edge data structure for **triangle-to-quad retopology**, converting AI-generated triangle meshes into editable quad-topology models entirely on the web.
- Wrote Rust/WebAssembly modules for OBJ parsing, mesh statistics, and topology computation, offloaded to a Web Worker pool to render **900MB+ OBJ files with 500K+ triangle meshes** in the browser.
- Designed a six-stage asset pipeline (concept, generation, retopology, UV, texture, publish) over WebSockets with per-stage editing, session parallelization, versioning, and local caching.
- Built the Python/FastAPI backend with real-time WebSocket job tracking, Supabase auth, RunPod serverless GPU inference, and structured logging via AWS CloudWatch.
- Built a scene-generation agent (Claude SDK + Blender MCP server) for text-to-room generation with physics and quality scoring.
- Shipped the iOS app in Swift/ARKit/RealityKit for AR preview and LiDAR-based 3D capture.

Kapil Group

May 2024 – July 2024

Software Engineering Intern

Hyderabad, Telangana

- Built an admin dashboard in React/Supabase with Google Maps API for real-time field sales geolocation tracking and visualization.
- Developed the cross-platform mobile app in React Native (Expo) for sales staff check-in, live location sharing, and task management.

Unifest

Nov 2023 – Apr 2024

Founder

Hyderabad, Telangana

- Founded a ticketing platform for Indian college fests (BITS Hyderabad, NIFT Hyderabad); **20,000+ users, 14,000+ transactions** in year one.
- Built the organizer app in React Native for QR-based gate entry, ticket scanning, and real-time event analytics, backed by the same Node.js/PostgreSQL/Prisma backend with Redis caching.
- Handled burst-traffic ticket drops with row-level PostgreSQL inventory locking to prevent overselling and asynchronous payment webhook processing via AWS SQS and Lambda.
- Hired and managed the brand designer; led business development, partnerships, and customer support across client colleges.
- Deployed on DigitalOcean with Docker and NGINX, monitored with New Relic; **sole developer** and on-call during peak ticket releases.

UNIVERSITY PROJECTS

Multi-Modal CAD Research

June 2025 – July 2025

Research Assistant under Prof. S. K. Aziz Ali, Birla Institute of Technology and Science, Hyderabad

Hyderabad, Telangana

- Built the web interface for a **conversational CAD system** with Firebase, enabling natural-language 3D model generation and editing.
- Implemented geometry parsing using pythonOCC to extract topological features (faces, edges, vertices, and their relationships) from STEP and BREP CAD files, enabling the chat agent to reason over and modify model geometry programmatically.
- Set up a headless rendering pipeline via noVNC/X11 to produce high-resolution images of CAD models as visual context for a vision-language model, and integrated OpenMV-based USB camera capture to bring real-world reference objects into the multimodal prompting workflow.
- Coordinated a multi-service backend behind a LangChain agent that routed natural-language user requests across pythonOCC parsing, headless rendering, camera capture, and cloud GPU inference endpoints.