Divij Motwani

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Education

University of California, Berkeley — Berkeley, CA
B.S. Electrical Engineering & Computer Sciences; Minor in Philosophy — *Aug 2025 – May 2029*

Palo Alto High School — Palo Alto, CA
ACT 36 (Superscore) — *Aug 2021 – May 2025*

- *Relevant Coursework (all 5s)*: AP Calculus BC, AP Physics C: Electricity & Magnetism, AP Physics C: Mechanics, AP Chemistry

Research Experience

UC Santa Cruz — IR & Knowledge Management Lab — Santa Cruz, CA
Student Researcher, 3 Citations — *Sep 2023 – Present*

- Co-authored **RAGUARD** fact-checking benchmark (ACL FEVER-8 2025) spanning 2,648 U.S. presidential-campaign claims (2000–2024) linked to 16,331 Reddit-sourced evidence docs labeled supporting / misleading / unrelated (avg. 6.2 docs/claim).
- Benchmarked seven LLM-RAG systems; misleading-only retrieval caused a mean 46.5% relative accuracy drop; GPT-4o most robust, Claude 3.5 strongest zero-context baseline.
- Engineered scalable LLM-guided labeling workflow to auto-tag misleading vs. supporting evidence at scale.

OralAI — 1st Place, Regeneron ISEF, Top ∼40 of >10,000,000 students — Palo Alto, CA
Nonprovisional Patent Pending; in talks with Philips Sonicare — *Jan 2023 – Present*

- Designed UV-fluorescence dental diagnostic system with custom 405 nm intra-oral camera and Raspberry Pi.
- Trained image-segmentation models: 98.4% precision (tooth detection), 93.4% (plaque segmentation).
- Deployed full-stack mobile app with real-time inference; cloud backend on AWS Cloud + MongoDB Atlas.

Selected Projects

GuardAIn — Multi-modal Wearable for the Blind — *MIT CRE[AT]E Challenge Winner 2024*

- 3D-printed wearable powered by Raspberry Pi Zero 2 W; streams frames and transcribed queries to GPT-4o Vision, STT/TTS using Google Cloud; low perception-to-speech latency with Linux PipeWire and bone-conduction headphones.
- Pilot tests with visually impaired volunteers at the Palo Alto Vista Center showed immense results; users could read maps, news articles, find missing items, and much more. Mentored at MIT Lincoln Labs

FIRST Robotics Team 6036, Top 10 worldwide | *Build & Software Subteams* — *2023 – 2025*

- Veteran Build and Software member, focusing on high scale perception systems for control and tracking with fiducials
- Repurposed NASA JPL's **mrcal** calibration systems on multi-threaded multi-coprocessor architecture to implement with custom autonomous control systems for centimeter level positioning in 3D-space relative to operating field
- Developed and prototyped hardware with CAD/CAM for rapid iteration; weight/stress optimization; maintained motor & battery management systems; proficient with advanced power tools for precise fabrication; served on pit crew for real-time repairs

LEO Satellite Network Simulator — CesiumJS & TypeScript — *2025*

- Full software control system for LEO satellite mesh networks; connectivity with optical inter-satellite laser links; satellites use custom standardized hardware to receive and send data; geostationary as data exit-nodes with constant ground-based laser links
- Star-tracker localization (GPS-independent) to enter network, improving high-speed orbital network access at low cost.
- Interactive CesiumJS dashboard visualizes latency heatmaps, network-resilience scenarios, collision prevention, and uptime.

Zeta — AI Research Discovery System — *AI Agent Hackathon (Exa × Anthropic × AWS × Lightspeed) 2025*

- Crawled and parsed 6,117 latest *arXiv* Computation & Language papers (1.2 M sentences); Claude Opus classifier flagged 32K possible future-work statements and unnoticed sentiments.
- Embedded and clustered statements with BGE-Large; graph analysis surfaced cross-disciplinary research gaps and ranked hypotheses; highlighted directions for interdisciplinary improvement.
- Made *ZetaEvolve*, an AlphaEvolve-inspired genetic-algorithm engine that turns hypotheses into fast, testable "microexperiments".

Honors & Awards

Regeneron ISEF Grand Award: 1st Place Biomedical Engineering (2024)

MIT CRE[AT]E Assistive Technology Competition: Winner (2024)

Pfizer DRL Global AI Flight Competition Finalist: Top 3 contestants internationally (Nominated for Grand Prize) (2025)

Stanford BASES Challenge: Round 2 Qualifier (top 20 of 200+ startups) (2025)

U.S. National Gallery for Young Inventors: 1 of 6 selected nationwide (2024)

UC COSMOS: Accepted into the AI Cluster at UCSC's COSMOS program (∼ 5% accepted) (2023)

Rise Global Challenge: Finalist—top 500 of 80,000 applicants (2023)

NSPA Specialty Magazines Best Of Show: Ranked 6th nationally for *Veritas* (2023)

Certificate of Special Congressional Recognition: Awarded personally by sitting Congresswoman Anna Eshoo (2023)

Skills

Languages: Python, Java, C++, JavaScript, TypeScript

ML/AI: PyTorch, TensorFlow, CUDA, Transformers, YOLO, Weights & Biases

Tools: Docker, Git, Linux, Pandas, Scikit-Learn, OpenCV, Conda, React, Next.js, Node.js, Vercel

Hobby: Classically trained tenor singer, v5 rock climber @ Berkeley Mosaic, film & digital photography, print & digital journalism