# Vansh Gadhia

vanshg@stanford.edu | linkedin.com/in/vansh-gadhia | github.com/Vvg1105 | vansh-gadhia.com

## Education

**Stanford University** — Stanford, CA
*Bachelor of Science in Electrical Engineering; GPA: 3.7* — *Sep. 2024 – Present*
*Coursework: Analog IC Design, Circuits, Digital System Design, Device Physics, Biomaterials*

**Dubai College** — Dubai, UAE
*A-Level: Math, Further Math, Physics, Chemistry, English Literature – All A** — *Sep. 2017 – June 2024*
*GCSE: Grade 9/9 in all 11 subjects; School Topper; World Topper in GCSE History*

## Technical Skills

**Hardware**: PCB design, Class-E RF power amplifier design, LTspice simulation, wireless power transfer (13.56 MHz resonant inductive links), RF characterization, oscilloscope and benchtop measurement, soldering and assembly
**Fabrication**: Fusion 360 (parametric CAD), PDMS processing, SLA resin printing, lattice and pore geometry optimization, device assembly and sealing
**Software**: Python (NumPy, Pandas, scikit-learn, PyTorch, FastAPI), C, Verilog, MATLAB, SQL, TypeScript
**Lab**: in vitro device validation, electrochemical characterization, accelerated aging and hermeticity testing, in vivo rodent studies

## Experience

**Undergraduate Researcher – Biohybrid Cell Therapy, Biosensors, Wearables** Sep. 2025 – Present
*Krishnan Lab, Stanford University* — *Stanford, CA*

- Developing an implantable device that keeps engineered cells alive in vivo through on-demand electrochemical oxygenation, targeting cell-based treatment of Type 1 Diabetes; achieved a 5× larger cell chamber in a 3× smaller device than prior work.
- Fabricated devices end to end – parametric chassis CAD (Fusion 360), PDMS processing, resin printing, and final assembly of a battery-free implant powered by a 13.56 MHz resonant inductive link – and ran reliability testing across battery cycling, accelerated aging, hermetic sealing, and RF antenna coupling.
- Designed the Class-E RF amplifier powering the implant end to end through circuit analysis, SPICE simulation, and benchtop RF characterization; root-caused an efficiency shortfall to incomplete zero-voltage switching, benchmarked against Neurolux, a $14K commercial driver.
- Optimized macroporous lattice geometry against mechanical strength, metabolite diffusion, and fibrotic encapsulation, the dominant chronic failure mode in long-term implants.
- Developing a dual-band wearable transmitter (PCB antenna and PCB Class-E amplifier) delivering continuous wireless power with bidirectional telemetry for closed-loop implant control.
- Awarded $8,500 through Stanford EE's Research Experience for Undergraduates program; presented results at the program symposium.

**Undergraduate Research Fellow** Jan. 2025 – Dec. 2025
*Stanford University's King Center on Global Development* — *Stanford, CA*

- Researched stroke epidemiology and biomarker determinants under Professor Ngaruiya to advance equitable care in Kenyan populations; presented findings at Stanford's Global Development Research Symposium following a fully funded field research trip to Kenya.

**AI/NLP Engineering Intern** July 2025 – Sep. 2025
*Ruya AI* — *Dubai, UAE*

- Built a modular real-time pipeline detecting and tracking global events, ingesting and linking news, Twitter, and Reddit data using FastAPI, Airflow, and PostgreSQL, with a LangChain multi-agent system for summarization and sentiment classification.

**Lead Investigator** Nov. 2021 – Dec. 2023
*Lions Diabetes Care & Lions SightFirst Eye Hospital* — *Nairobi, Kenya*

- Secured IRB approval from the Kenyatta University Ethics Review Committee, designed patient intake systems, and interviewed 500+ participants across diverse tribal regions.

- Built and deployed a machine learning pipeline (Python, scikit-learn, XGBoost) predicting Type 2 Diabetes risk from demographic, clinical, and retinal imaging data; identified novel statistical correlations between tribal ethnicity and diabetes prevalence.

**Clinical Research Assistant** Apr. 2023 – Dec. 2023

*Yale Medicine* *New Haven, CT*

- Researched genetic variants and single nucleotide polymorphisms elevating gestational diabetes risk in sub-Saharan Africa, and AI approaches to early detection.
- First author, *Yale Journal of Biology and Medicine* (March 2024), under Dr. Jaspreet Loyal.

**Artificial Intelligence Research Assistant** Sep. 2021 – May 2022

*Clinical AI Lab, NYU Abu Dhabi & Cleveland Clinic* *Abu Dhabi, UAE*

- Developed machine learning models predicting urinary tract infections to reduce excessive antibiotic prescription, under P.I. Professor Farah Shamout.
- Awarded podium presentation at the Faculty of Clinical Informatics Scientific Summer 2022 Conference; published in *BMJ Health & Care Informatics* (2022, Vol 29, Suppl 1).

## Projects

**Inception** | *Real-time EEG decoding and multi-brain interface* Apr. 2026

- Built a real-time neural interface streaming live EEG from dual headsets (OpenBCI Cyton, g.tec BCICore-8), decoding per-user emotional state at 10 Hz and detecting blink artifacts for hands-free control.
- Implemented a multi-brain pipeline computing cross-subject signal correlation, and a vision pathway mapping Meta TRIBE v2 brain-encoder feature vectors to classified outputs via scikit-learn; built in 48 hours at Global NeuroHack 2026, Frontier Tower SF.

**Maestro** | *Real-time gesture-to-audio instrument and AI music coach* Feb. 2026

- Placed 2nd in the Suno-sponsored music track at TreeHacks 2026; built a system turning an ordinary broom into a playable guitar via MediaPipe hand tracking and OpenCV marker detection, with velocity-triggered strum detection and an iPhone companion app for chord input.
- Implemented dual-model AI coaching running in parallel on an ASUS GX10 (NVIDIA Blackwell GPU): Qwen2.5-VL analyzing posture and technique from video, NVIDIA Music Flamingo analyzing timing and style from audio, merged into spoken feedback; performances seed full track generation through the Suno API.

## Leadership & Fellowships

**Rise Global Winner** 2023 – Present

*Schmidt Futures & The Rhodes Trust* *Oxford, UK*

- Selected as one of 100 Rise Global Winners worldwide from over 14,000 applicants; featured on the *GN Inspire* podcast by Rhodes Scholar Dr. Gladys Ngetich.
- Attended the fully funded two-week Rise Residential Summit in London and at Rhodes House, Oxford, spanning AI, engineering biology, entrepreneurship, and climate; collaborated with Think of Us to develop an AI chatbot bridging healthcare, mental health, and welfare systems for California's homeless population.

**Global Student Prize – Top 50 Finalist** 2023

*Chegg.org & The Varkey Foundation* *Dubai, UAE*

- Selected from 3,851 global applicants as one of the world's top 50 student changemakers, recognized for work in equitable health access in Kenya.

**Founder, Old Frames for New Eyes** 2017 – 2019

*The Diana Award Roll of Honour* *Nairobi, Kenya*

- Partnered with Lions Club, Al Jaber Optical, Sabatia Hospital, and the Noor Foundation; enabled vision screening for 63,000+ children, delivered 500 tailor-made glasses, and funded 25 sight-restoring surgeries. Featured by Dubai TV, The Asian Weekly, and Gulf News.

## Interests

**Drumming**: all 8 grades of the Trinity College Rock & Pop drumkit syllabus; preparing for the ATCL diploma. **Poker**: selected player at the SoCal College Poker Tournament (120 students nationally), sponsored by Jane Street, HRT, Citadel, and Jump Trading. **Tennis**: UAE Tennis Federation competitor, peak national ranking 44th in U18 Male (2022).