Gus Halwani, PHD

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Experienced executive and technologist driven by curiosity and first-principles thinking. Architects custom AI/ML systems while translating innovations across healthcare, motorsport, education, and entertainment sectors. Finds unexpected synergies across different parts of the value chain, grafting ideas between industries to create outcome-driven products. Leads with a translational mindset: sees what works in one domain and reimagines it for another.

EXPERIENCE

Associate Director, AI Education
October 2025 – Present

Dana-Farber Cancer Institute · Boston, MA

- Lead engineering teams building generative AI and predictive modeling solutions for research, clinical, and operational stakeholders
- Architect AI education program: 150+ trained in 3 months, targeting 1,500+ annually; designed certification framework and competency assessments
- Co-define KPIs and success metrics with stakeholders across clinical, research, and business operations teams; translate requirements into product specifications for engineering teams
- Build value-chain partnerships with MIT and Harvard Medical School through personal network; exploring national distribution models for AI education products

Chief STEAM & Innovation Officer
March 2021 – Present

The Possible Zone · Boston, MA

- Designed and deployed **ZoneSight**, a custom AI pipeline integrating OpenAI Whisper, PyAnnote, and Anthropic Claude for multimodal competency assessment; published IEEE EDUCON 2025
- Led data infrastructure strategy for AI-driven analytics across partner ecosystem; designed evaluation frameworks for student outcomes
- Drove organization-wide AI adoption: gamified hackathons for staff engagement, 5% innovation time initiative, department-specific training programs
- Grew strategic partnerships with Converse, MIT, Harvard Graduate School of Education, and PlayLab AI; co-developed learning modules integrating emerging AI tools
- Represent organization on Capitol Hill for workforce development policy; serve on committees researching technology sector workforce changes and upskilling requirements

Founder & President
July 2013 – Present

NeuRace, Inc. · Boston, MA

- Built neurophysiology data science platform for elite motorsport performance optimization; integrated driver neurological data with vehicle telemetry
- Developed ML models analyzing EEG, ECG, and biometric signals to quantify cognitive load, attention states, and stress response during competition
- Piloted system with Pirelli World Challenge teams; expanded to Formula 1 partnerships delivering real-time performance insights
- Delivered cognitive performance metrics for driver coaching programs; enabled data-driven training protocols for peak performance
- Collaborated with racing league chief medical officers on research protocols and safety standards for neurological monitoring

EXPERIENCE CONTINUED

Business Development Lead
2020 – 2021

Victory XR · Southborough, MA — Developed VR adoption strategy for schools; designed educator training programs for immersive technology

Chair, Science Department
2019 – 2020

The Fay School · Southborough, MA — Led AR/VR curriculum integration and faculty professional development

Associate Head of School
2018 – 2019

The Discovery School · Jacksonville Beach, FL

Director, Research & Assessment
2014 – 2018

Acera School · Winchester, MA — Partnered with MIT Media Lab and HGSE; established research center for evidence-based education practices

PhD Candidate & Research Fellow
2009 – 2013

Harvard Medical School · BIDMC / Mass Eye & Ear — Developed neuroimaging protocols and statistical analysis methods for fMRI studies on attention and motor control; built behavioral paradigms for music cognition research; awarded MIT IDEA² Fellowship; presented at Human Brain Mapping and TEDx Abu Dhabi

Research Assistant
2005 – 2007

University of South Florida · Tampa, FL — Developed brain-computer interface for ALS patients using EEG and event-related potential analysis

EDUCATION

PhD, Neuroscience · 2012
MIT, Harvard-MIT Division of Health Sciences & Technology · Cambridge, MA

BA, Biopsychology · magna cum laude · 2008
University of South Florida · Tampa, FL

TECHNICAL EXPERTISE

AI/ML
Full-stack AI development: OpenAI (multimodal realtime, Sora, GPT-image-1.5), Anthropic (Claude Code agentic workflows, MCP servers), Gemini (Veo 3, NotebookLM, native audio models). Deploy across cloud architectures (Azure, AWS, Vertex, Google Cloud) and local infrastructure: from hardware setup to training and finetuning models to production apps with ComfyUI, Stable Diffusion, Qwen, Deepseek, Flux, and open source models

Data Science & Neurotech
Neuroimaging analysis (fMRI/DTI), computational neuroscience, Bayesian/GLM modeling, diarization and speech analysis, statistical modeling, time-series analysis, signal processing, behavioral analytics, Python scientific stack. Cognitive modeling, neuroplasticity applications, performance instrumentation, clinical/behavioral signal analysis

Systems & Infrastructure
Distributed system design, GPU pipelines, containerized inference (Docker, CUDA, ONNX), local + cloud deployment, edge compute, data governance and privacy. RAG pipelines, LoRA/LCM workflows, dataset construction, transcription (Whisper), visualization toolchains (Matplotlib, Plotly, napari, Blender). Educational technology platforms, MLOps pipelines, experimentation & analytics frameworks

Human-Centered AI / AI Education
AI-fluency program design, curriculum authoring, enterprise "champions" programs, competency assessment tools (ZoneSight), workshop facilitation, human-in-the-loop workflows

Simulation & Interactive Systems
Unity/VR/AR systems, simulation engines, educational game mechanics, multimodal data capture (audio/video/sensor), real-time performance and telemetry analysis

Creative Media & Production
Sound engineering, creative media design, Digital Signal Processing (DSP), DAWs (Logic Pro, Ableton Live, Pro Tools), audio synthesis. Video production (Premiere Pro, Final Cut Pro, DaVinci Resolve). Image design (Photoshop, Illustrator, Figma, Canva)

LEADERSHIP

Executive leader who understands that technology transformation is fundamentally about people. Recognizes patterns across healthcare, motorsport, and education to identify synergies, then builds the relationships and trust needed to make them real. Guides teams through change by keeping them inspired, aligned, and empowered during uncertainty. Balances strategic vision with deep empathy for stakeholders at every level. Cross-sector collaboration, change management, program development, budget stewardship

Languages: English & Arabic (native fluency)

SELECTED ENGAGEMENTS & PUBLICATIONS

- **Formula 1 & Pirelli World Challenge Technical Partnerships**, NeuRace neurophysiology platform for elite motorsport performance

- **MIT IDEA² Fellowship** (2012): awarded for novel translational therapy methodology for stroke-induced aphasia

- **Halwani GF, Baird M, Selles D.** "ZoneSight: Generative AI for Assessing Practical Competency in Project-Based Learning." **IEEE EDUCON**, London, 2025

- **Halwani GF.** "Music, Neuroscience & Education: What We Can Learn from the Spaces Between." **TEDx Abu Dhabi**, 2012

- **Halwani GF.** "White Matters: Musical Training & The Brain in Adults." **Human Brain Mapping Conference, Barcelona**, 2010

- **Halwani GF, Loui P, Rüber T, Schlaug G.** "Effects of practice and experience on the arcuate fasciculus: comparing singers, instrumentalists, and non-musicians." **Frontiers in Neuroscience**, 2011