Avneh Bhatia

AI/ML & Aerospace Researcher

Pleasanton, CA | avnehb@gmail.com | linkedin.com/in/avneh-bhatia-86714a387/ | github.com/avnehsbhatia

ABOUT ME

High-performing Engineering Track student and researcher with expertise in generative AI, computational fluid dynamics, and autonomous systems. Author of *FoilGen2*, a published preprint on hybrid airfoil generation. Experienced in large-scale synthetic data generation, GPU acceleration (CUDA, MPS), and financial signal modeling. Seeking a research internship to learn from expert ML researchers while contributing meaningfully to challenging AI and ML projects.

RESEARCH & EXPERIENCE

Independent Researcher — Hybrid
Self-employed — *Nov 2025 – Present*
Authored preprint: **FoilGen2: Learning Coupled Latent Spaces for Hybrid and Performance-Driven Airfoil Generation** (DOI: 10.31224/6319).

Developed AI-driven methods to optimize airfoil designs by learning coupled latent spaces.

Integrated computational simulations with hybrid engineering models to improve aerodynamic performance.

Achieved geometric reconstruction errors $< 0.8\%$ of chord, lift coefficient errors $< 3\%$, drag coefficient errors $< 0.3\%$, and L/D errors $< 3\%$.

Artificial Intelligence Specialist — Pleasanton, CA
AmadorUAVs — *Oct 2024 – Present*
Applied ML methods to UAVs and robotics, including autonomous systems, data-driven modeling, and optimization.

Developed large-scale synthetic datasets, expanding from 20 images to **10,000 images** using augmentations, achieving high downstream model performance.

Optimized workflows for GPU-accelerated computing, leveraging **NVIDIA Jetson, CUDA, and Apple MPS**.

Procurement and Compliance Officer — Pleasanton, CA
Amador Valley High School Internship — *Oct 2025 – Present*
Managed budgets and procurement lifecycles for student-led engineering projects.

Team Captain — Pleasanton, CA
Amador Armada — *Sep 2024 – Present*
Led small teams in nonprofit STEM initiatives to foster engineering education in the community.

STEM Workshop Instructor & Fundraiser — Pleasanton, CA
(Organization / Program Name) — *(Jan 2025 – March 2025)*
Taught 10+ STEM workshops and raised $1,000+ to support local community.

TECHNICAL PROJECTS

Market Signal Modeling for Numerai Tournament | ***Python, PyTorch, Pandas*** — *Sep 2025 – Present*
Built and evaluated ML models for Numerai Signals tournament with focus on signal extraction and robustness to non-stationary data.

Utilized **era-aware validation**, correlation-focused metrics, and ensemble strategies to mitigate overfitting.

Achieved multiple top-100 placements on daily leaderboards.

TECHNICAL SKILLS

Languages & Frameworks: Python, PyTorch, TensorFlow, YOLOvision, scikit-learn, NumPy, pandas
Hardware & Acceleration: NVIDIA Jetson, CUDA, Apple MPS (Metal Performance Shaders)
Research Modeling: Synthetic Dataset Generation, Stochastic Modeling, Optimization, Genetic Algorithms, CFD
Engineering: Aerospace Modeling, Airfoil Design, Autonomous Systems

EDUCATION

Amador Valley High School — Pleasanton, CA
Engineering Track — *Aug 2024 – May 2028 (Expected)*

LANGUAGES

English (Native), Hindi (Native), Punjabi (Limited Proficiency)