Advait Badrish

advaitb.net | advaitbadrish@gmail.com | github.com/firefly293 | Seattle, WA

Education

Redmond High School 2024 – 2028

GPA: 4.0 / 4.0 SAT: 1600 / 1600

- **AP Scores:** Computer Science A (5), Computer Science Principles (5), Calculus AB (5), Chemistry (5), Environmental Science (5)
- **Relevant Coursework:** AP Computer Science A, AP Computer Science Principles, AP Calculus BC, AP Language and Composition, AP Physics C: Mechanics, AP Biology, Spanish I–IV

Peer-Reviewed Publications

Advait Badrish, Hanwen Liu, and Ibrahim Sabek. When Not to Hint: Adapting an LLM Query Optimizer to a New Database Instance. In *Proceedings of the MLForSys Workshop @ Annual Conference on Neural Information Processing Systems (NeurIPS)*, 2026, Sydney, Australia. [PDF]

Technical Skills

Languages: C, C++, C#, Python, Java, HTML/CSS/JavaScript, Kotlin, Rust, TypeScript, Dart
Frameworks & Tools: PyTorch, TensorFlow, pandas, NumPy, React, React Native, Git, Android Studio, Unity

Select Projects

When Not to Hint: *Adapting an LLM Query Optimizer to a New Database Instance* 2026

- Found LLM query optimizers underperform on new databases; designed a low-cost pipeline to adapt them.
- Cut latency 31% vs. PostgreSQL on hinted queries (8% overall); 2.79x faster than the foreign-trained model.
- Published a first-author paper at the MLForSys Workshop @ NeurIPS 2026; presenting it in Sydney on Dec 12.

Q-Cards | *Fine-Tuning LLMs for Database Query Optimization* 2026

- Designed and implemented a novel fine-tuning pipeline to train LLMs to produce database query hints.
- Cut execution latency by 26% (up to 91% on complex queries) and energy use by 23% on unseen queries.
- Outperformed prior work on high-complexity queries.
- **Awards:** First Place at the Washington State Science and Engineering Fair.

PosturePerfect | *AI & Geometry-Based Posture Correction* 2024

- Combined PoseNet with custom geometric formulas to assess posture in real time with 97.3% accuracy.
- Built a Python desktop app to help users correct posture and reduce the risk of musculoskeletal symptoms.
- **Awards:** First Place and Health & Fitness Special Award at the Washington State Science and Engineering Fair; National STEM Challenge Finalist.

HeartNN | *Neural Network for Cardiac Auscultation* 2023

- Built and trained a convolutional neural network on heartbeat sounds, achieving 98% accuracy on unseen data.
- Programmed a Python/Flask/TensorFlow web API to run neural network inference in the cloud.
- Developed a Kotlin/Android app that uses the network to let users diagnose their own heart sounds.
- **Awards:** First Place Technology Award at the Thermo Fisher Junior Innovators Challenge (national); National STEM Challenge Champion; First Place, Best in Category, and Health & Fitness Special Award at the Washington State Science and Engineering Fair.

TrashPic | *Waste Classification App* 2023

- Built and trained a convolutional neural network to classify waste into 7 categories with 97% accuracy.
- Deployed it via a Python/Flask/TensorFlow cloud API powering a smartphone app with disposal guidelines.
- **Awards:** Second Place at the Congressional App Challenge.

Automated Mridangam Transcription | *Mridangam Audio Recording Transcription with AI* 2023

- Designed a mridangam (Indian percussion) notation covering 8+ strokes and all major talas, adding beat markers and tala/tempo switching absent from prior notations; presented it to 50+ people.
- Trained a custom 21-layer CNN to identify strokes with 94% accuracy, powering automatic transcription.

TrekPack | *DECA Independent Business Plan* 2025

- Co-designed a smart hiking backpack with solar charging, a GPS locator with emergency SOS, and a water filter.
- Wrote and presented a 20-page business plan covering marketing, cost analysis, staffing, and projected growth.
- **Awards:** DECA State Finalist.

Experience

Beaver Works Summer Institute, Cyber Operations 2026

Massachusetts Institute of Technology

- Selected for a competitive summer program in cybersecurity, cryptography, and AI.
- Presented a researched lightning talk on fully homomorphic encryption and AI.
- Collaborated to build an app that trains people to detect AI scams, and competed in a capture-the-flag challenge.

Computer Science Mentor & Teaching Assistant 2025 – present

AlphaStar Academy

- Selected to mentor a student in the Carina Scholarship Program, a 3-year need-based national program for low-income middle schoolers, teaching weekly one-on-one USACO training sessions in C++, Python, and Java.
- TA for introductory Python, Java, and C++ courses, helping 20+ students learn the languages, solve programming problems, and debug code.

Volunteer Instructor 2025 – 2026

STEP Academy

- Taught a summer video game development camp, guiding 10 students as they built games in Construct 3.
- Taught a Thunkable app development camp for 10 students in grades 3–8, covering coding and design.

National Science Bowl Club 2025 – present

Co-President (2026 – present); PR Officer (2025 – 2026) *Redmond High School*

- Grew club membership and meeting attendance by more than 2x to about 50 students as co-president.
- Led the club's outreach at the school's Club Jamboree and Mustang Extravaganza events.
- Organize and host weekly meetings to practice and teach students various scientific disciplines.

Awards & Honors

- First-author paper "When Not to Hint" accepted into NeurIPS ML for Systems workshop 2026
- Accepted into and attended MIT Beaver Works Summer Institute, Cyber Operations 2026
- USA AI Olympiad Round 2 Silver Medal 2026
- USA Computing Olympiad Gold Division 2026
- 3x AIME Qualifier 2023, 2024, 2026
- First Place, Washington State Science and Engineering Fair (Q-Cards) 2026
- Top 40 nationally, US Earth Science Olympiad; attended Training Camp 2025, 2026
- Best Earth Systems Presentation, US Earth Science Olympiad Camp 2025, 2026
- DECA State Finalist for 20-page independent business plan 2025
- National STEM Champion; attended National STEM Festival in Washington, DC (HeartNN) 2024
- First Place, Washington State Science and Engineering Fair 2023, 2024
- Health & Fitness Special Award, Washington State Science and Engineering Fair 2023, 2024
- Second Place, BPA Regional Science Bowl (Washington & Oregon) 2023, 2024
- First Place Technology Award, Thermo Fisher Junior Innovators Challenge (national, HeartNN) 2023
- Best in Category, Washington State Science and Engineering Fair 2023
- Second Place, national You Be the Chemist competition (artificial photosynthesis project) 2023
- First Place, International Academic Competitions Science Bee Online Regional Finals 2023
- First Place (individual), Math is Cool Masters 2023
- First Place (regional), North South Foundation Science Bee 2021 – 2023
- First Place in Botany, Science Olympiad Nationals 2022
- Board Game Category Winner, Washington State PTA Game Development Competition 2022
- Third Place nationally, North South Foundation Math Bee 2021
- Johns Hopkins CTY Grand Honors 2021