Jayden Jeong

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EDUCATION

Paul Laurence Dunbar High School   **2022—2026**
- GPA: 4.0 Unweighted, 4.8462 Weighted | ACT: 35

Relevant Modules: MSTC Java 2, AP Computer Science A, MSTC Algebra 2, AP Calculus BC, AP Precalculus, AP Physics 1, AP Statistics, AP Seminar, AP Biology, MSTC Chemistry, AP Psychology, MSTC Multivariable Calculus, MSTC Linear Algebra and Discrete Mathematics

Math, Science, and Technology Center — **selective admissions program**   **2022—2026**
- AI for Lane Detection, Independent Research   2023—2024
    - *"Lane Detection With Enhanced Reproducibility"*
    - Built a novel lane detection system called TempURRA-NET using new temporal consistency measures and losses, achieving >98% accuracy on the TuSimple benchmark at 75 FPS, beating the previously highest accuracy-to-inference speed ratio on any model up until that point.
- AI for Histopathology, Independent Research   2024—2025
    - *"CAM-KIM: A Precision Surveillance AI Model for Predicting Gene Mutations and Advancing Early Cancer Treatment"*
    - Build CAM-KIM, a novel, interpretable AI model that leverages a novel causal attention mechanism, multimodal data fusion, and biomedical knowledge graphs to predict cancer-associated gene mutations from WSIs. Achieved 101.4% relative increase in (36.8% net improvement) oF1 compared to the previous best model while using up to 7-8x less memory.
- AI with Dr. Vijayan Asari @ University of Dayton, Ohio   2024—Present

HONORS AND AWARDS

International Science and Engineering Fair Finalist, Society for Science (1.6k / 7M)   2024
Naval Science Award, Kentucky Science and Engineering Fair (2 / 300+)   2025
2nd Place Category Winner, Central Kentucky Regional Science and Engineering Fair   2025
3rd Place Best in Fair; Physical Sciences, Kentucky Science and Engineering Fair (6 / 300) 2024
- 1st Category Winner (KY-SEF), 1st Category Winner (CKRSEF), 1st Category Winner (District)

Technology Student Association Awards, Technology Student Association
- 2nd Place Coding, State Level   2024
- 3rd Place Software Development, State Level   2025

Governor's Scholar, Governor's Scholar Program (1,000 / 2,000)   2025
AP Scholar with Distinction, College Board   2024—2025
MSTC & School Awards, MSTC/Paul Laurence Dunbar High School   2022—2025
- "Outstanding Freshman" Award Winner (1 / 55)   2023
- MSTC AP Computer Science A (3 / 55)   2023
- MSTC Algebra II (3 / 55)   2023
- MSTC Chemistry I (3 / 55)   2023
- MSTC Java 2 (3 / 55)   2024
- Best in School for Programming, CTE Pathway (1 / 120+)   2024
- MSTC AP Calculus BC (3 / 55)   2025
- MSTC Junior Research (3 / 55)   2025

MAJOR LEADERSHIP EXPERIENCE & EXTRACURRICULAR ACTIVITIES

Local Robotics Team   2022—Present

Vision subteam lead; primary graphic designer. Built AprilTag system (99% accuracy), introduced generative trajectory formation (80% faster), programmed swerve drive, integrated secondary processors for vision tasks, and caught the team up to the latest tech. Contributions helped secure first playoff appearance in 15 years at Smoky Mountain Regionals (33 teams).

Axira   2023—Present

Founded Axira, an organization that helps businesses, individuals, and labs build good-looking websites. Manage full-stack development, design, and 1:1 consultations. Currently serving 2 clients with a 40-client waitlist (8 served). The result of 18 months of planning, learning, and executing Awwwards-tier work over 3 years.

Independent Research   2023—Present

- Developed a novel AI lane detection model called "TempURRA-NET" using a novel temporal consistency measure and a novel adaptation of CLRNet's LineIoU loss.
- Developed a novel AI pre-screening model for early cancer detection via gene mutation prediction from looking solely at Whole Slide Images (WSIs) of biopsies.

Lab Research — *University of Dayton, Ohio, under Dr. Vijayan K. Asari*   2024—Present

Developing a general-purpose machine learning model for computer vision applications using Judea Pearl's *do*-calculus and causal inference as a foundation.

- For use in the National Science Foundation-funded (NSF) construction site hazard detection program for keeping workers safe under the Occupational Safety and Health Administration (OSHA)'s guidelines.
- For use in an ML-based EEG interpreter for use in a neurofeedback system to help patients with ADHD, depression, anxiety, and other mental health conditions.

The Element   2024—Present

Lead younger students and newer members on how to effectively communicate ideas. Led to a 50% increase in article publication efficiency. Maintain communication between the Element—a MSTC-focused newsletter—and the school, editors, and writers as Chief of Outreach and Communications to ensure articles are published on time and are of high quality.

Band, Marching Band, and Orchestras   2022—Present

Led clarinet section (marching band) and reformed culture, helping the band place 3rd at KMEA marching band state finals (first time in 9+ years). 1000+ hours of effort over 4 years. Culture shifted through strong presence, inspired strongly by Mrs. Froedge's appearance—former director of bands at North Hardin High School—and led to better clarinet players, shown by Dunbar having the 2nd most All-state participants in 2024 (most in 5+ years). Also performed 3 solos across 9 CKYO concerts and 2 All-State concerts, practicing ~4hr./wk. outside rehearsal hours and honing difficult passages w/ peers

Clarinet Tutor   2023–Present

Work with 12+ middle school students and 7+ high school students on a 4x/week basis in a group setting to help improve their playing skills, preparing them for high-grade pieces and All-State, CKYO, UK, Louisville, and District Honor band and orchestra auditions. *This is separate from being a lesson teacher.*

Computer Science Club   2024–Present

Formally founded the computer science club with another student, organizing biweekly meetings, creating practice problems and solutions, and revealing good CS opportunities; 3 USACO Silver medalists in 1 year.

RELEVANT SKILLS

- **CS/ML:** Python, Java, JavaScript, TypeScript, R, Kotlin, PyTorch, TensorFlow, Keras, SciPy, Next.js, React, TailwindCSS, Flask, Node.js, HTML/CSS, GSAP, Framer, Causal Inference
- **Media/Arts:** Fluency in Figma, Adobe Premiere Pro, Adobe Photoshop, Adobe Illustrator, Clarinet
- **Language:** Bilingual; fluent in English and Korean