DANIEL KOSUKHIN

Aspiring Mechatronics Engineer

Great Neck, NY

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github.com/fishnos

TECHNICAL EXPERTISE

- Autonomous motion control and trajectory generation
- ROS2 and PyTorch
- CAD and CNC machining
- 3D printing and Arduino
- Software architecture and machine learning
- Java, Python, and C++
- JavaScript, HTML and CSS
- React and Next.js

EDUCATION

Junior at Great Neck South HS
Graduation Jun 2027
GPA: 95.1

Relevant Coursework

- University of Pennsylvania's Engineering Summer Academy at Penn
- Nickel protein research at Stonybrook's Tonge Lab
- AP Computer Science A
- Intro to CAD
- Robotics
- Intro to Mechanical Engineering
- AP Physics 1

Awards & Honors

- Engineering Innovation Award at FRC World's in Houston

Interests

- Guitar playing
- Aerial robotics
- Trajectory generation
- Software development

SUMMARY

Award-winning high school Junior, aspiring researcher, and engineer focused on the development of autonomous agents and machine learning systems. Proficient in trajectory generation, machine learning, and motion and motor control loops. Proven track record of leading multidisciplinary teams through the full lifecycle of student engineering projects, ensuring reliable integration across perception and actuation layers. Skilled in frontend website and mobile app development with adept JavaScript and TypeScript frameworks.

PROFESSIONAL EXPERIENCE

Principal Investigator
CINE: Cinematic Intelligent Navigation Engine Aug. 2025 – Present

- Integrated CineMPC and EGO-Planner frameworks to generate autonomous B-spline trajectories optimized for cinematic movement and obstacle avoidance.
- Developed cinematographic cost functions to automate framing and glare reduction, significantly improving visual consistency in dynamic environments.
- Leveraged Ultralytics' HomeObjects-3K dataset to train robust machine learning models for real-time object detection and tracking.
- Architected a ROS2 and RViz simulation environment to validate control systems and ensure cross-device compatibility for hardware-in-the-loop testing.

Lead Programmer at Rebel Robotics, Team 2638
Great Neck, NY Sep. 2024 – Present

- Implemented autonomous path-planning systems using Java and WPILib frameworks.
- Designed and implemented control logic for a variable-angle shooter prototype.
- Mentored new team members of Rebels Robotics in WPILib and Java programming, as well as subsystem operations.
- Developed autonomous alignment using Bezier-based systems.

Engineering Summer Academy at Penn
University of Pennsylvania Jul. 2025

- Completed hands-on coursework in mechanical systems, electronics with Arduino, and motor control systems.
- Coordinated with professionals at Pennovation and GRASP for future opportunities and research insights.
- Applied CAD software and CNC machining techniques to support 3D printing workflows.

Lead Developer
Great Neck South Web Development Club Sep. 2025 – Present

- Built and deployed web applications using React, Next.js, and Vercel.
- Collaborated with designers and project managers to create production-ready websites.
- Designed websites for local businesses and various clubs throughout our community.
- Orchestrated development with Javascript, Typescript, HTML, and CSS.

Vice-President
Great Neck South Programming Club Jan. 2025 – Present

- Led strategic planning initiatives to expand programming and mathematical proficiency across the club.
- Tutored new members by providing app development lectures and language learning sessions.
- Spearheaded development of mobile applications using React Native, Expo, and TypeScript.

VOLUNTEERING

Sound Chief and Designer
Theater South Sep. 2024 – Present

- Orchestrated live sound design and cue execution with QLabs during shows.
- Led electrical work throughout the theater and management of microphones, transmitters, and receivers.

Student Mentor for 2638's First Lego League
Great Neck, NY Oct. 2024 – Jan. 2025

- Introduced STEAM to elementary school students and mentored in competitions.