# CRÎȘMARIU CODRIN

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## EDUCATION

**2024 - 2028** Tufts University **GPA:** 3.94
Pursing a double degree in Bachelor of Science in Mechanical Engineering and Computer Science

## EXPERIENCE

**2024 - 2025**  **Tufts Center for Engineering Outreach** Student Researcher

- Developed a new embedded firmware for the OpenMV camera powered by the ESP32, capable of running lightweight face landmark detection on resource-constrained devices.

**2024 - 2025**  **Tufts Solar Vehicle Project** Mechanical Lead

- Designed the steering system of our competition car, working with custom carbon fiber composites and aluminum CNC machining.
- Lead a team of 10 students in designing a steel-welded rollcage and the roof angle-ing mechanism to maximize the amount of solar power the car gets while idle.

**2020 - 2024**  **FIRST Tech Challenge Robotics Team Peppers** Team Leader

- Managed a team of 20 members
- Managed and volunteered in over 10 team-organized events and helped in raising over $114,000 through partnerships with companies such as Amazon, KPMG, Mercedes, and Pentalog
- Coordinated the 3D design, mechanical, and software team in creating the robot voted 2nd in the world
- Utilized data-driven design to create robust and efficient mechanisms. Experimented with advanced manufacturing techniques and material selection to lighten parts and decrease actuation time without compromising on rigidity
- Productionized over 6000 lines of code in Java. Utilized industry-standard control techniques and algorithms including inverse kinematics, feedforward/PIDF controllers, motion profiling, and computer vision

## PERSONAL PROJECTS

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| **ZORO ROBOT DOG** | Fully autonomous 3D-printed robotic dog for ISEF, designed to map and navigate its surroundings. Equipped with a modified Xbox Kinect for RGBD mapping, encoders for proprioception, high-torque servos, and an Intel NUC computing unit for mapping and localisation. I researched robot control theory, gait dynamics, and inverse kinematics, and designed all mechanical components in Fusion 360. |
| **OPEN-DRONE** | Open-source autonomous quadcopter with a custom cost-efficient stereo camera for Visual Stereo SLAM for the Romania National Olympiad of Innovation. Researched quadcopter kinematics, visual stereo simultaneous localization, and mapping using algorithms such as sparse optical flow and orb feature detection and matching |
| **VOLUMETRIC DISPLAY** | Hologram projector using a Swept-surface volumetric display relying on persistence of vision and a 4kHz FPS projector |
| **B.A.R.K.** | Open-source 3D printed robotic dog developed for Romania's National Innovation Olympiad. Researched robot control theory, robotic gait, and inverse kinematics; Completely designed all parts in Fusion 360 and developed all the algorithms to work on an Android phone running Java |

## HONORS

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| **ISEF GRAND AWARD WINNER** | • Won the grand award in the robotics section with a completely autonomous robot dog that could map and navigate its surroundings |
| **FIRST TECH CHALLENGE** | • Second Place Motivate Award at the FIRST World Championship 2023<br>• Robot voted 2nd in the World in 2023<br>• Second Place Inspire Award at the FIRST Romanian National Championship 2023<br>• Third Place Think Award at the FIRST Romanian National Championship 2022 |
| **RISE FOR THE WORLD** | • Rise for the World finalist award, ranking in the top 500 of the 90,000 participants |
| **COMPETITIVE PROGRAMMING** | • Silver Medal 3 years in a row at the National Computer Science Olympiad 2021-2023<br>• 10th place in the International AGM Competitive Programming contest |
| **INNOVATION OLYMPIAD** | • 2nd Place at the Romania National Olympiad of Innovation and 1st place in the Open Section |