

## ROBOSUB 2025

University of Maryland  
Robotics @ Maryland

### Community & Outreach Description

Robotics at Maryland (R@M) began as a small team focused solely on building autonomous underwater vehicles (AUV) for the RoboSub competition. Over time, that mission grew. Today, R@M builds three autonomous systems: Qubo, an AUV; Terry, a Mars rover prototype; and Testudog, a quadruped robot. While our technical reach has expanded, our foundation remains people-driven: using robotics as a platform for education, mentorship, and community.

This year, R@M's outreach efforts centered on building lasting, meaningful connections, starting with Maryland Day on April 26th. Thousands of people visit campus that day to celebrate Maryland, many without any background in robotics. Our challenge was to make the field accessible without oversimplifying it. We brought out interactive demos. Our remote setup let visitors control actuators and observe real-time sensor feedback. For many, it was the first time they had seen engineering beyond a screen. Members rotated through stations for over eight hours, explaining PID loops, stereoscopic vision, and CAN bus communication in simple terms to children, parents, alumni, and prospective students. We opened our workspaces for guided tours. These were not polished displays, but real spaces in use. The authenticity resonated.

Our Design Review events took that a step further. Held each semester, these reviews are open to all of campus, including faculty, sponsors, peers, and anyone interested. While presentations dive into software architectures, mechanical tradeoffs, and testing protocols, what makes these nights impactful is the cross-disciplinary conversation. Students from unrelated majors often attend and ask thoughtful questions that push us to rethink assumptions. This year, we had to rework how we visualized our proposed chassis design after an aerospace engineering professor pointed out a flaw in our modeling. These moments strengthen not just our systems but our ability to explain and defend our designs under pressure.

Mentorship also plays a major role in how we give back. In the spring, R@M hosted a group of FLL students from Urbana and Clarksburg Middle Schools who had qualified for the state championship. They toured our lab, saw our AUV, and asked detailed questions, ranging from how we waterproof components to how we handle sensor calibration underwater. Rather than a scripted session, our members shared personal experiences, including how they first got into robotics, what failed during their first builds, and why they stuck with it. The visit lasted longer than scheduled because the students wanted to keep talking.

Internally, R@M also invests in community. Our Pi Day tradition (an open invite to throw whip cream pies at R@M members for fundraising), team dinners, hikes, and spontaneous snack runs are not just for fun. They are how we stay motivated through long build nights and tight deadlines. We are teammates, but also friends who support each other's growth. At every level, R@M is committed to using our resources, time, and passion to uplift others and foster curiosity. Through open labs, honest conversations, and technical transparency, we aim to make robotics less of a mystery and more of a possibility.











