Derek Dietz

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EDUCATION

Northwestern University, *MS in Robotics* Dec 2026
College of William & Mary, *BS in Physics* May 2022

SKILLS

Software: C++, Python, C, Matlab, ROS/ROS2, MAVROS, ArduSub, Git, Linux
Robotics: SLAM, Computer Vision, CAD, MoveIT, tf2, Gazebo, YOLO, Rviz2, Unit Testing, Path Planning
Embedded Systems: I2C, UART, PID Control, Brushed DC Motors, Microcontroller Architecture

EXPERIENCE

Epic Systems - Madison,WI, *Technical Solutions Engineer* Sept 2023 – May 2025
- Developed software solutions in M to meet unique client needs and optimize use of Epic software.
- Provided custom system integration and debugging support, improving Epic performance and client satisfaction

NASA - Hampton, VA, *Aerospace Engineering Intern* June 2022 – Feb 2023
- Led intern cohort group to develop novel methods of resource delivery to wildland firefighters in CAD
- Developed Python scripts for beyond-LOS testing and data analysis of autonomous aerial drone systems

PROJECTS

Sensing and retrieval using BlueROV2 (ROS2, Python, OpenCV, YOLO) March 2026
- Built a ROS2 autonomy stack for a BlueROV2 achieving successful autonomous underwater object retrieval
- Implemented a Python MAVROS–ArduSub interface enabling full 6-DOF velocity and actuator control
- Designed a closed-loop PID control node integrating vision-based detection with autonomous grab sequencing
- Trained and deployed a custom YOLOv8n model in ROS2 for real-time underwater object detection

Extended Kalman Filter SLAM(C++, ROS2, Rviz2) January 2026
- Developed an EKF SLAM system in C++ to track turtlebot3 pose and map environment landmarks
- Built a C++ library for 2D rigid body transformations and differential drive kinematics for odometry
- Implemented circle detection and data association to identify and track landmarks from laser scan data
- Leveraged CMake and Catch2 to build and validate a modular navigation stack with extensive unit tests

Sensing and grasping with Franka arm (ROS2,Python,CV,YOLO) November 2025
- Integrated Intel RealSense D435i with a YOLO model to detect and correctly place model train cars onto a track
- Implemented Python API to handle motion and scene planning using ROS2 MoveIt package
- Developed open loop control methods to adjust train bogies to perfectly align with the track

Biometric responsive Swarm Robotics game(Microbit, C) November 2025
- Developed an embedded C control stack on Micro:bit (nRF52) for joystick control of a Cutebot
- Wrote low-level drivers for SAADC, GPIO, and I2C motor control to drive chassis at deterministic rates
- Built closed-loop pursuit and avoidance behaviors using distributed heuristics and filtered velocity commands

AWARDS

American Institute for Aeronautics and Astronautics(AIAA) January 2023
- 1st place winner of the SciTech Idea Challenge

Virginia Microelectronics Consortium(VMEC) August 2021
- Gold Award winner for research presentation on photolithography toppling angles