

# Derek Dietz

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## EDUCATION

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

## SKILLS

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**Software:** C++, Python, C, Matlab, ROS/ROS2, SQL, MUMPS(M), 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

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**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

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**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

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**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