Derek Dietz

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EDUCATION

Northwestern University, *MS in Robotics* Dec 2026

College of William & Mary, *BS in Physics* May 2022

SKILLS

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

Tools: Git, SLAM, Linux, OpenCV, SolidWorks (CAD), 3D Printing, Computer Vision, MoveIT, tf2, I2C, UART, Gazebo, CoppeliaSim, Rviz2, Unit Testing, Path Planning, Object Tracking, Finite State Machines, Franka

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
- Presented research findings to senior and mid-level NASA staff members outlining directions for future research

PROJECTS

Sensing and retrieval using BlueROV2 (ROS2, Python,OpenCV,Gazebo) January 2026

- Developed a ROS2-based autonomy stack for underwater object retrieval using a Blue Robotics ROV
- Implemented a Python MAVROS–ArduSub interface enabling full 6-DOF velocity and actuator control
- Developed a closed-loop control node integrating vision-based detection with autonomous target retrieval

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
- Iteratively tested open loop control methods to adjust train bogies to perfectly align with the track

Robot on a string (Python,CoppeliaSim) November 2025

- Implemented a spring-damper impedance control simulation for a 6R UR5 manipulator using forward dynamics and Euler integration to model interactive end-effector motion

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