NOLAN KNIGHT

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EDUCATION

Northwestern University - Evanston, IL — Expected December 2026
Master of Science in Robotics

Purdue University - Weldon School of Biomedical Engineering - West Lafayette, IN — May 2025
Master of Science in Biomedical Engineering

Purdue School of Engineering & Technology - Indianapolis, IN — May 2024
Bachelor of Science in Biomedical Engineering

Butler University - Indianapolis, IN — May 2024
Bachelor of Arts in Computer Science

WORK EXPERIENCE

GM Diecron Inc., *CAD/Automation Manufacturing (Contract)* - Remote — May 2025 - August 2025

- Designed and modeled robotic machining layouts using Fusion 360 for aerospace manufacturing applications.
- Modeled and assembled 3D designs and milling fixtures based on engineering drawings and design constraints.
- Produced fixture assemblies, orientation zones, and motion studies to support robotic workflow automation.

Zimmer Biomet, *Development Engineering Co-Op* - Warsaw, IN — May 2024 - August 2024

- Developed verification protocols for compliance with ASTM / ISO Standards.
- Owned Range of Motion (ROM) reports by optimizing layouts and refining worst-case scenarios.
- Improved anatomical knowledge through initiating involvement in sawbones, specimen harvesting, and cadaver labs.

Roche Diagnostics, *Logistics/Operations* Intern - Indianapolis, IN — May 2023 - August 2023

- Analyzed data using PostgreSQL to improve warehouse functionality and streamline processes across warehouses.
- Identified procedural and data inconsistencies, communicating findings to leadership to drive process improvements.
- Increased weight check success rate from 75% to 90% through process optimization and key global data fixes.

PROJECTS

Franka Emika Panda Color Sorting — Fall 2025

- Programmed a Franka robotic arm in Python to autonomously identify and color-sort objects.
- Used April-Tags and ROS packages to calibrate the robot to identify workspace and object drop zones.
- Implemented object detection and color differentiation with vision control using a RealSense camera and OpenCV.
- Gained hands-on experience with Linux and real-time robotics control using ROS 2.

CNN Efficiency in Mobile Architecture — Spring 2025

- Evaluated efficiency and resource usage of GhostNet, a lightweight CNN, on ImageNet and CIFAR-10.
- Compared model accuracy, inference speed, and computational cost across channel attention in lightweight CNNs.
- Optimized hyperparameters with PyTorch and TensorFlow, deploying top configurations to enhance model accuracy.

Embedded Biosensor Control — Spring 2024

- Created a bio-activation inspired device using a MSP430 microcontroller, ECG module, and a motor driver.
- Programmed in C and assembly (ASM), building experience with signal filtering to enhance motor control.

LEADERSHIP EXPERIENCE

- Butler University Engineering Club - **President 2022**
- Sigma Nu Fraternity (Butler University) - **Housing Manager 2021**

SKILLS

- **Programming & Version Control** - Python, C, C++, R, MATLAB, SQL, ROS 2, Linux, Unit Testing, Git.
- **Software Libraries**: OpenCV, NumPy, PyTorch, TensorFlow.
- **Perception & Mapping:** Computer Vision, LiDAR, SLAM
- **Robotics Control:** Motion/Path Planning, Microcontrollers, Machine Learning
- **Simulation/Modeling**: CoppeliaSim, Gazebo, Rviz, MATLAB-Simulink
- **Manufacturing & Design:** Fusion 360, Siemens NX, GD&T, 3D Printing, CNC Machining (Mill & Lathe).