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 - (GPA: 3.93/4.0)

Purdue School of Engineering & Technology – Indianapolis Indianapolis, IN; May 2024
Bachelor of Science in Biomedical Engineering - (GPA: 3.77/4.0)

Butler University Indianapolis, IN; May 2024
Bachelor of Arts in Computer Science - (GPA: 3.92/4.0)

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 supervisor design constraints.
- Produced validation models, orientation zones, and motion studies to support robotic workflow automation.
- Helped deliver a proposal, including concept drawings and cost estimates, aligning designs to project constraints.

Zimmer Biomet, *Development Engineering Co-Op (RECON)* Warsaw, IN; May 2024 - August 2024

- Developed verification protocols for compliance with ASTM / ISO Standards.
- Owned modification of three Range of Motion (ROM) reports by optimizing layouts and refining worst-case scenarios to ensure full compatibility with product scope.
- Trained in Geometric Dimension & Tolerancing and intrinsically reviewed over 100 engineering drawings for verification.
- Improved anatomical knowledge through initiating involvement in sawbones, specimen harvesting, and cadaver labs.

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

- Leveraged data analytics to improve warehouse functionality and streamline processes across two different warehouses.
- Increased weight check success rate from 75% to 90% through process optimization and key global data fixes.
- Took initiative to identify inefficiencies, propose solutions to peers, and drive implementation of process improvements.

PROJECTS

Vision-Controlled 5-DoF Robotic Arm, *Northwestern University* Evanston, IL; Fall 2025

- Programmed a 5-DoF robotic arm to autonomously identify and retrieve an object.
- Implemented object detection with vision control using a RealSense camera and OpenCV.
- Gained hands-on experience with Linux and real-time robotics control using a ROS 2 API.

CNN Efficiency in Mobile Architecture, *Purdue University* West Lafayette, IN; Spring 2025

- Analyzed GhostNet, a lightweight CNN, to evaluate efficiency and resource usage 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 and deployed top configurations to enhance model accuracy.

Embedded Biosensor Control, *Purdue University* Indianapolis, IN; Spring 2025

- Developed a heart rate motor control device using 3–5 embedded sensors interacting with one another to isolate heart activation phases and generate desired motor control.
- Programmed in C and assembly (ASM), building experience with signal filtering to enhance accuracy and motor activation.

LEADERSHIP EXPERIENCE

- Butler University Engineering Club - **President 2022** - Represented a club of 50+ members, organizing biweekly meetings and monthly networking events.
- Sigma Nu Fraternity (Butler University) - **Housing Manager 2021** - Managed and coordinated with directors for maintenance and repairs and was point person for chef-house relations with more than 80 active members.

SKILLS

- **Programming & Version Control** - Python, C++, SQL, R, ROS 2, Git, Linux
- **Robotic Control**: Vision Control, Path Planning, Microcontrollers, Machine Learning.
- **Prototyping & Simulation** - 3D Printing, Machining (Mill & Lathe), MATLAB, CoppeliaSim, Gazebo.
- **CAD & Design** - Fusion 360, Siemens NX, GD&T.