

# Cole Helmer

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## EDUCATION

### Widener University

*Master of Science in Engineering*

Chester, PA

May 2026

- **Focus:** Robotics Engineering

- **GPA:** 3.78

*Bachelor of Science in Robotics Engineering*

May 2025

- **Organizations:** Vertical Flight Society Member, Division III Men's Lacrosse Team
- **Academic Accolades:** 4x Dean's List, 3x Academic Honors, 2<sup>nd</sup> Place at Widener University's AI Day Competition
- **Certifications:** Unmanned Aircraft General (UAG), FAA Part 107 Remote Pilot Certificate

## PROJECTS

### CLARO Betting LLC

*Co-Founder & Software Developer*

Chester, PA

Jan 2026 – Present

- Real-time sports arbitrage iOS app. TestFlight live, 50+ beta users, in App Store review.
- Shipped full iOS + backend stack solo across 305 commits
- Built sub-10s detection engine: REST + 2 WebSocket feeds across 22 leagues, 10 books
- Implemented consensus-outlier filtering and SHA-256 hashing on every arbitrage
- Closed the loop with deep-link bet-slip auto-fill across 5 sportsbooks
- Integrated Firebase Auth + Face ID, OneSignal push, Apple StoreKit 2 IAP

### Master Thesis Research Project: Intelligent Battery Management for Hybrid UAVs

Chester, PA

*Widener University School of Engineering / Graduate Researcher*

May 2025 – Present

- **Master's Thesis:** "Development of a Hybrid Power Generation System Controlled by an Intelligent Battery Management Unit for Extended Operation of Mobile Platforms." Defended April 2026 under Dr. Daniel Roozbahani.
- Built 45-channel cell-level voltage monitoring on 3× Arduino Mega 2560
- Designed 4-SSR-per-battery switching network with full galvanic isolation
- Developed Rolling Replenishment scheduler: +117% energy recovered, -58% switching events
- Validated via 15-test bench protocol with six BLDCs under load
- Mapped scalability path to EV-grade hardware (BMS ICs, SiC MOSFETs, CAN)

### Electric Vehicle Drive Simulation Using MATLAB & Simulink

Chester, PA

*Widener University School of Engineering / Undergraduate Researcher*

Feb 2025 – May 2025

- MATLAB/Simulink model analyzing EV motoring and regen-braking power flow.
- Modeled DC motor, PI controller, motor controller, and battery as one drivetrain
- Simulated energy flow across speed/torque profiles; validated against academic benchmarks
- Tuned PI controller for closed-loop stability and powertrain control strategy

### Image Recognition Using Convolutional Neural Networks

Chester, PA

*Widener University School of Engineering / Undergraduate Researcher*

Sept 2024 – Dec 2024

- Trained CNNs for flower classification on a ~4,000-image dataset.
- Built 3- and 4-layer CNN architectures in Python using TensorFlow/Keras
- Implemented preprocessing, augmentation, and 80/20 train/validation split
- Achieved 98% validation accuracy across multi-class classification

## VOLUNTEER EXPERIENCE

### Widener University Robotics Engineering Department

Chester, PA

*Engineering Teaching Assistant*

Feb 2025 – May 2026

### Youth Lacrosse

Lehigh Valley, PA

*Volunteer Coach*

Mar 2021 – Present

## SKILLS

**Technical Skills:** Python / C++ / AutoCAD Inventor / PLC Ladder Logic / Artificial Intelligence & Machine Learning / Kinematics / Statics & Dynamics / Data Acquisition / Visual Recognition / Signal Analysis / Object Oriented Programming

**Personal Skills:** Problem-Solving / Communication / Time Dedication & Management / Attention to Detail / Leadership