Kevin Michael Lewis

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Professional Summary: Graduate engineering student at Purdue with a focus in Astrodynamics and Space Applications. I have a strong background in orbit analysis, programming on multiple platforms and PCB design. I'm always driven to learn more and improve my skills within engineering. I'm hardworking, self-driven and ready to begin my career in engineering.

Education:

Purdue University, West Lafayette, IN from August 2024 to present
- Master of Science in Aeronautics and Astronautics, May 2026
- GPA: 3.54 / 4.0

Northern Illinois University, Dekalb, IL from August 2020 to May 2024.
- Bachelor of Science in Mechatronics, May 2024
- Final GPA: 3.56 / 4.0 (Cum Laude)

Technical Skills:

CAD/Simulation:
- NASA - General Mission Analysis Tool (GMAT)
- Gazebo
- Simulink
- KiCad
- Autodesk Fusion 360
- Solidworks

Programming Languages:
- C / STM32 Firmware
- C++
- ROS API (see projects)
- Python
- XML / Xacro
- MATLAB

Microsoft Tools / Other:
- MS Word
- MS Excel
- MS PowerPoint
- Azure DevOps
- Git
- Git Extension

Relevant Experience:

Caterpillar Corporate Engineering Intern – Peoria, IL from May – August 2023, May – August 2024
- Close-knit software team, multiple team meetings and collaboration
- Core Motion Control - Embedded software for extra-large excavators
- MATLAB Simulation projects for bug fixes in control logic
- Software development projects throughout the internship using Python, Windows API
- Design of new software features such as automated diagnostic tools
- Real life machine software validation, CAN protocol diagnostic tools

Engineering Intern, HCC Incorporated – Mendota, IL from May 31st, 2022, to August 12th, 2022
- Worked as a design engineering intern
- Designed a novel real time feedback product using company resources
- Shadowed quality control managers
- Solidworks experience in sheet metal fabrication

College of Engineering Tutor – from August 15th, 2022, to May 15th, 2024
- Gained extensive experience in explaining technical concepts to audiences with no prior knowledge
- Collaborated with other successful engineering students daily on common problems
- Constantly revisited core math, physics, programming and engineering concepts for two years on top of classes

Research, Organizations and Leadership

- Master's Thesis - Near-asteroid irregular gravity orbit determination using data driven modeling techniques
  - 2024 – Present, Astrodynamics and Space applications project advised by Dr. Andrea Capannolo
  - Exploring data driven modeling of nonlinear dynamics in unknown perturbed environments
  - Focus on the application of modeling to optimal controllers like nonlinear model predictive controller
- Research on Magnetic Nanoparticles suspended in a fluid
  - 2023 - 2024, Formal Research group under Dr. John Shelton
  - Simulation using LAMMPS, aligning ferromagnetic nanoparticles to improve mechanical properties
  - Performed Molecular Dynamics simulations using parallel simulation techniques
- NASA Big Idea Challenge
  - Researched the viability of carbon nanotube as a suitable replacement for traditional conductive material
  - Worked with upperclassmen on researching and designing spacesuits (EMU)

- o   Lead a team of 10 through the 2023 challenge
- Robotics Club and the National Robotics Competition
  - o   Designed autonomous tracking and motion control software for Sumobot robot
  - o   Placed 2nd place overall for post-secondary Sumobot competition at the National Robotics Competition

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Academic Projects:

- **Capstone Project: Hybrid Quadrupedal Robot for Construction Application**, August 2023 – May 2024
  - o   Used Robot Operating System (ROS) and Gazebo to develop a quadrupedal and wheeled robot hybrid
  - o   Developed Inverse Kinematics for Quadruped, Gait Planning Algorithm using Bezier Curves
  - o   Developed URDF model for the robot in other tools such as Gazebo and RViz

Personal Projects:

- General-Purpose STM32 Microcontroller platform PCB (Anvil)
  - o   Second attempt at a functional PCB
  - o   Self-taught PCB design to be able to implement a programmable STM32 microcontroller
  - o   Multiple design revisions
  - o   Brought to prototype step by third-party manufacturers, awaiting assembly and programming
- 5 Volt Buck Converter PCB design
  - o   First step toward a custom autonomous mobile robot to utilizing SLAM
  - o   Self-motivated summer project to teach myself how to design circuitry and manufacture PCBs
  - o   Utilized LTSpice and KiCad to go from concept to production of 3 finished boards all through self-taught skills

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Awards/Honors

- Graduated Cum Laude from Northern Illinois University May 2024
- Deans' List every semester attended at Northern Illinois University
- Recipient of the NIU Scholars' Scholarship
- State Seal of Biliteracy, English and Spanish
- Full University Honors Student at NIU
- National Honor Society
- Illinois State Scholar