

# Jack P. Abrams

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## EDUCATION

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**Vanderbilt University** Nashville, TN  
*Bachelor of Engineering in Mechanical Engineering* May 2024  
*Minor in Business*  
Relevant Coursework: Mechanical Engineering Design, System Dynamics, Mechatronics,  
Accounting, Machine Analysis, Heat Transfer, Fluid Mechanics

## EXPERIENCE

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**Vanderbilt University Advanced Robotics and Control Lab** Nashville, TN  
*Undergraduate Research Assistant* Aug. 2022 – Present

- Contributing to the development of energetically passive, mechanically adaptive robots by leveraging neural Ordinary Differential Equations (ODE) in the design of high-energy-density 3D printed composite springs
- Evaluating spring design and performance through stress testing and analysis with motor control, sensor implementation, and data processing

**Florida Power & Light / NextEra Energy** Juno Beach, FL  
*Smart Grid & Innovation Team* May – Aug. 2023

- Pioneered the engineering of synthetic datasets using LIDAR technology to generate high-definition 3D scans of power equipment, resulting in improved image recognition models
- Designed and implemented a custom neural network utilizing the YOLOv8 architecture, enhancing system reliability by enabling precise fault and anomaly detection
- Innovated in digital world creation using neural radiance fields, providing sophisticated training ground for image recognition models

**FPLAir Intern / Robotics Program Project Manager** May – Aug. 2022

- Advanced the use of autonomous UAVs for distribution grid analysis safety case building with the FAA for BVLOS missions
- Spearheaded the integration of robotic technology to perform inspection missions at substations with autonomous navigation and AI-driven analytics
- Facilitated rollout of \$1.2 million fixed-wing hurricane drone to streamline restoration efforts

**Distribution Design Engineer** May – Aug. 2021

- Designed overhead and underground jobs involving power electronics that helped support distribution operations totaling over 480 hours
- Created construction prints and permits for crews to install new overhead utility equipment

**VuSat Club** Nashville, TN  
*Treasurer* Aug. 2020 – Present

- Developing, jointly with faculty, functional CubeSats to be launched into space
- Learning about the principles of spacecraft construction through designing satellite systems
- Managing expenses including working with companies to acquire aerospace-grade components

**Aerospace Engineering Summer Program, University of Colorado** Boulder, CO  
*Summer Intern* Jul. – Aug. 2019

- Designed and developed a realistic airfoil model that was tested and refined using a wind tunnel
- Developed several model rockets employing different propulsion mechanisms

## ADDITIONAL INFORMATION

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**Computer Skills:** Microsoft Office Suite, Programming (Lua, Python, JavaScript), MATLAB, SOLIDWORKS (CSWA Certified), Simulink, Autodesk Fusion 360, YOLOv8

**Achievements:** Part 107 License (Remote Pilot), Private Pilot's License, YB Six Sigma Certified, FE Exam (Mechanical)