Killian Embler

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Education

- **Embry-Riddle Aeronautical University** — Daytona Beach, Florida
  Bachelor of Science - Engineering Physics; — *Fall 2024 - Present*
  Area of Concentration: *Spacecraft Instrumentation;*
  CumGPA: *4.00;*
  Expected Graduation Date: *Spring 2028*

Skills

- **Computer Aided Design**: Inventor, Fusion, Catia, SeimensNX, Finite Element Analysis, EasyEDA, and URDF Creation
- **Manufacturing**: Experience with CNC Lathes, Mills, Welding, 3D Printing, Laser Cutting, and Miscellaneous Hand and Power Tools
- **Electrical**: Experience with Wiring, Bread-Boarding, Soldering, and PCB Design
- **Programming**: C++, C, Python, Java

Experience

- **Robotics Learning Lab (Mechanical Engineering Department)** — Daytona Beach, FL
  Employed Undergraduate Researcher (Part-Time) / Project Lead — *Fall 2025 - Present*
  - Developing robot-human interactive control interfaces, with personal focus on the full lower limb exoskeleton and hip isolated exoskeleton programs
  - Undergraduate Project Lead for the hip Isolated exoskeleton, submitted grant requests and organize weekly documentation for the overseeing professor
- **Academic Advancement Center** — Daytona Beach, FL
  Physics III TA / Recitation Tutor (Part-Time) — *Fall 2025 - Spring 2026*
  - Working alongside the Physics III professor to help manage students during recitation periods and assist in enrichment and understanding of course material
- **Engineering Physics Propulsion Lab** — Daytona Beach, FL
  Undergraduate Researcher — *Fall 2024 - Present*
  - Developing externally funded research projects, with personal focus on the OpenMutt and OpenArm projects
  - Design, build and collect test data on a quadruped robot as well as a 3 degree of freedom robot arm
- **Embler Maritime** — West Palm Beach, FL
  Marine CAD and Manufacturing Consultant — *Fall 2022 - Present*
  - Designing and manufacturing wood, acrylic, and 3D printed mechanical components for local yachts (latches, electrical panel display boards, mounts)
  - Experimentally tested and selected varnishes and coats conducive to maintaining environmentally sensitive materials such as wood, leather, and PLA in a salty, high UV environment

Projects

- **LECTER - Full Lower Limb Exoskeleton**: The goal of this project is to design and construct a 10 degree of freedom lower limb exoskeleton. This exoskeleton's goal is to explore the comprehensive control problem of human robot interfaces by developing combining an affordable and complete lower limb exoskeleton with reinforcement learning trained on a high-fidelity human model. I was responsible for producing a URDF model which replicates the system's full 10 degrees of freedom, the design and manufacturing of physical components of the exoskeleton such as a multi-material footplate assembly, and the redesign of the exoskeletons wiring and power supply system to operate under battery power with the inclusion of a custom made dual E Stop system, a process which included the design of a custom PCB.
- **Hip Isolated Exoskeleton**: **Undergraduate Project Lead** The goal of this project is to design and construct a simplified hip isolated exoskeleton. This two degree of freedom exoskeleton's goal is to offer an accessible testbed for machine learning models and their impacts on human-robot control interfaces, while producing data on the efficacy of exoskeletons seeking to reduce the metabolic costs of walking for able-bodied individuals. I completely redesigned the framework provided by the LECTER exoskeleton, evaluated structural changes with FEA, added hip-width adjust-ability, produced a URDF model, and compiled an expense sheet for the project which I submitted to the university's EPIC grant program
- **OpenMutt - 3D Printed Quadruped**: The goal of this project is to design and construct a quadruped robot. This quadruped's goal is to be a completely open source platform to allow it to be used as a teaching device at a reduced price which makes allows for higher accessibility compared to market alternatives. I redesigned the electrical box / midsection of the quadruped for higher compactness, designed and 3D printed joint jigs with precise tolerances, alongside other auxiliary parts such as a LiDAR scanner mount.
- **OpenArm - 3D Printed Robotic Arm**: The goal of this project is to design and construct a 3 degree of freedom robotic arm. This arm acts as a major accessory project to the OpenMutt quadruped as it mounts to the parent project and bestows upon it a larger variety of use cases and control viability, while retaining the open source framework and low cost nature. I was responsible for designing the arm itself, the creation of its URDF for software simulation, and jointly contributed to the manufacturing and assembly necessary for its cycloidal gearboxes and structure