Alexander Clark Cairns

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EDUCATION

Florida State University — Tallahassee, FL
Masters of Science, Mechanical Engineering — May 2023–August 2025
Thesis: Design and Analysis of TEG-PCM Energy Harvesting: A Layered Optimization Approach — GPA: 3.71

Florida State University — Tallahassee, FL
Bachelor of Science, Mechanical Engineering — May 2023
GPA: 3.48

WORK EXPERIENCE

Cummings Scientific, LLC — Tallahassee, FL
Mechanical Engineer/Accident Reconstructionist — September 2025–Present
- Created mathematical and physics-based models of multi-body dynamic systems
- Produced graphical depictions of car accident damage
- Performed failure analysis on incident objects

Florida State University Center for Advanced Power Systems — Tallahassee, FL
Graduate Research Assistant — May 2023–July 2025
- Performed FEA simulations of thermal fluids energy transfer and validated against literature results
- Designed Mechanical Systems for energy harvesting
- Optimized control design of energy system to determine ideal system dynamics

Intel Corporation — Hillsboro, OR
Fabrication Intern — June 2022–August 2022
- Developed over thirty CAD Models for FAB Site toolsets, designed to be true to life for augmented reality integration
- Produced augmented reality training materials using Microsoft Guides
- Gained experience in silicon wafer development and semiconductor manufacturing
- Applied video editing techniques to capture proper use of fabrication machinery

National High Magnetic Field Laboratory — Tallahassee, FL
Laboratory Technician — August 2021–January 2023
- Prepared a variety of materials for use in testing, designed an ideal method for sample preparation
- Evaluated samples using microscopy to ensure quality of sample preparation
- Utilized machine learning to characterize sample results, improved training quality

PROJECT EXPERIENCE

Florida State University — Tallahassee, FL
Electromagnetic Motor Project — August 2022–May 2023
- Produced CAD designs for motor parts.
- Utilized Topology Optimization to create novel designs
- Used FEA to analyze the forces acting on the motor
- Developed lattice structure to minimize inertia
- Created structures tailored to additive manufacturing

TECHNICAL SKILLS

Software: SOLIDWORKS, CREO 3/PRO E, COMSOL FEA, ANSYS FEA, AutoCAD, 3DS Max, Microsoft Office Suite, LaTeX
Programming: C, C++, R, Python, MATLAB
Laboratory Skills: Additive Manufacturing, sample mounting and polishing, microscopy, GD&T