Ana Badea

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EDUCATION

Cornell University, Ithaca, NY **Expected May 2027**
Bachelor of Science in **Mechanical Engineering** | GPA: 3.7
Relevant Coursework: Fluid Dynamics, System Dynamics, Mechanics of Materials, Intro. to Aeronautics, Dynamics, Oscillations Waves and Quantum Physics, Mechanical Design

EXPERIENCE

Cornell Mars Rover, AstroTech Mechanical Subteam Lead **October 2023-Present**
- Lead an interdisciplinary team of 10+ engineers, physicists, biologists, and chemists to develop an on-rover life-detection lab for the University Rover Challenge.
- Currently designing a bead beating cell lysis system to break cell walls and increase effectiveness of biological tests.
- Oversaw all 3D printing operations**,** including assembly, maintenance, and use of printers for component fabrication.
- Designed a soil collection end effector, in-situ heating element for controlled chemical testing, and actuators for the new wheel and gearbox integration of the drives subsystem.
- Developed a dual-camera mount for soil monitoring and rock observation and integrated a limit switch to prevent overexertion of the soil collection system.

Northstar Medical Radioisotopes, Mechanical Systems Engineering Intern **June-August 2025**
- Designed and prototyped a manual Actinium 225 vial filling system to ensure zero product loss during automated filling system downtime.
- Planned layout of filling glove box, determining viability of autoclave placement and ensuring coexistence of manual and automatic filling systems.
- Produced standardized assembly documentation (exploded views, drawings, instructions) and organized workflow stations for Ac-225 stirring hot plates, enabling consistent repeatable builds.

Duke Quantitative Imaging and Analysis Lab, Research Assistant **May-August 2024**
- Co-author of SPIE conference paper: A. J. Allphin, A. M. Badea, D. Clark, C. T. Badea, "*A perfusion phantom for dynamic micro-CT imaging*," Proc. SPIE 13405, Medical Imaging 2025: Physics of Medical Imaging, 134051A (8 April 2025); https://doi.org/10.1117/12.3047282
- Created a dynamic phantom for microCT that simulated drug perfusion through biological tissue.
- Developed 5+ iterations of phantom using Fusion 360 and DFMA principles, while optimizing for 3D printing.
- Conducted testing, including colored water and iodine CT scan tests to evaluate phantom performance.

Cornell Organic Robotics Lab, Research Assistant **February-May 2024**
- Integrated cameras and sensors with Arduino Uno and Mini for an agricultural robot to monitor plant health via imaging roots and intaking CO2 and humidity data.
- Evaluated and selected optimal imaging hardware to improve surveillance clarity and ease of integration.

SKILLS

- **CAD**: Solidworks, Autodesk Inventor, Autodesk Fusion 360
- **Design:** DFMA, GD&T
- **Programming & Control**: Python, Matlab, Arduino, JavaScript, HTML/CSS
- **Fabrication & Manufacturing**: 3D Printing, Welding, Lathe, Manual Milling, Woodwork
- **Documentation & Communication**: Technical Drawings, Assembly Instructions, Engineering Documentation, MS Office, Confluence