Geneva Isaacson

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Education:

Harvard University, Cambridge, MA; In progress (started August 2025)
Doctor of Philosophy in Physics, Astrophysics Instrumentation

Worcester Polytechnic Institute (WPI), Worcester, MA, May 2023
Master of Science in Aerospace Engineering, GPA: 3.69/4.0
Bachelor of Science in Physics, GPA: 3.66/4.0
Bachelor of Science in Mechanical Engineering, GPA: 3.66/4.0
Relevant Coursework: Quantum Mechanics 1, Introduction to Astronomy, Introduction to Space Systems, Calculus 1-4, Linear Algebra, Differential Equations, Linear Programming, Boundary Value Problems, Engineering Mathematics

Experience:

Triton Systems, Inc. (Remote – Chelmsford, MA)
Staff Engineer, September 2023 – June 2025

- Led the modeling and design of 3D-printed optical lenses for telescopes.
- Developed an optical ray tracing model in COMSOL to determine the effects of thermal expansion on the focal point of a telescope.
- Conducted fatigue, thermal, CFD, and structural modeling on aerospace and defense projects.
- Designed and fabricated components for scientific and industrial applications, including a new telescope mirror cell.
- Applied peridynamic modeling to analyze carbon/carbon hypersonic composite structures.
- Modeled tensile loading and unloading conditions with fatigue of functionally graded composites.
- Contributed as lead author on multiple DoD SBIR and STTR proposals for the Navy, Army, and Air Force.

Worcester Polytechnic Institute (Worcester, MA)
Laboratory Assistant, May 2023 – September 2023

- Led a project team of undergraduate students in a microfluidics laboratory to develop a new accessible, low-cost platform utilizing Taylor Dispersion.

Teaching Assistant (TA/PLA), October 2020 – May 2023

- Taught, tutored, and graded for Ordinary Differential Equations, Linear Algebra, Calculus, Statistics, Mechanics, and Electromagnetism courses (including labs).
- Proctored exams, held office hours for courses (class sizes: 20–60 students), and graded upper-level aerospace courses.

Graduate Research (Aerospace Engineering), August 2022-May 2023

- Investigated Influence of Interfacial Damage Accumulation on Heat Generation in Energetic Materials, performed peel test delamination and mechanical/thermal analysis, and presented findings at GRIE 2023.

Major Qualifying Project (Physics/Mechanical Engineering), August 2022-May 2023

- Developed accessible microfluidics platform using Taylor Dispersion.
- Analyzed molecular dispersion with fluorescein dye in microfluidics laboratory.

Independent Research Project (Physics), August 2022-January 2023

- Wave Characterization on Photonic Integrated Circuits: used network analyzer/laser system to establish experimental standards and constructed PICs.

Interdisciplinary Qualifying Project, WPI (2022-2023)

- Produced and published educational video series on force and energy exchange for physics education.

NASA Mass Space Grant Fellowship (Worcester, MA)
Graduate Researcher, May 2022 – August 2022

- Designed a method for generating mock Polymer Bonded Explosives (PBXs) developed with Polydimethylsiloxane (PDMS) and sugar crystals.
- Defined how tension, compression, and vibration of mock PDMS PBX forms volatile spots on mock explosive crystals to determine safer ways for handling.

Belcan Engineering LLC. (Remote – Windsor, CT)
Structures Intern, August 2021 – August 2022

- Analyzed aerospace electrical applications and engine component schematics.

Publications & Presentations:

- Conference presentations at COMSOL 2024 (Boston, fatigue in functional graded aerospace materials) and WPI GRIE 2023
- Publications on microfluidics and physics education; see Google Scholar profile for full list
  - Geneva Isaacson Google Scholar

Honors & Awards:

- WPI Dean's List: Fall 2019, Spring 2020, Spring 2021, Fall 2022
- WPI Graduation with Distinction
- NASA MASS Space Grant Fellowship
- Robert H Goddard Award
- Alpha Phi Omega: Distinguished Service Key, Lifetime Member

Leadership & Outreach:

- Amateur Telescope Makers of Boston, March 2023 – Present
  - assisted with public astronomy outreach events (2023–Present)
- Sigma Pi Sigma (Physics Honors Society), March 2022 – May 2023
- Alpha Phi Omega (Service Fraternity), September 2020- May 2023
- President, Membership VP, Leadership VP, Treasurer
- Alpha Phi (Social Sorority), October 2020 – May 2023
- WPI NCAA Track and Field, August 2019 – May 2023

Skills:

Certifications and Trainings:

- NASA Transform to Open Science Open Science Program (2023)
- Project Management: Planning & Scheduling, Risk Management, Agile & Scrum (UMass Lowell Corporate Education)
- Introduction to FEMAP (ATA Engineering)
- Introduction to COMSOL Multiphysics
- AIAA Technical Writing Essentials for Engineers

Computer Skills: Microsoft Office, MATLAB, SolidWorks, Python, LabVIEW, Rapid Prototyping
Simulations: COMSOL Multiphysics (Ray Optics, Computational Fluid Dynamics, Structural Mechanics, Electromagnetism, AC/DC), FEMAP NASTRAN, Simulink
Laboratory: Soldering, Thermal FLIR Cameras, Instron, Microfabrication, Microscopy, DIC