


# James Monaco

PhD Candidate at University of Colorado Boulder  
Department of Aerospace Engineering & Sciences  
Focused on Remote Sensing, Earth & Space Science

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## EDUCATION

**University of Colorado Boulder**, Smead Aerospace Engineering & Sciences Boulder, CO  
*PhD Candidate*, Focused on Remote Sensing and Earth Sciences *Started August 2021*

**Dartmouth College**, Thayer School of Engineering, GPA: 3.85 Hanover, NH  
*Bachelor of Engineering*, Focused on electrical engineering *Graduated June 2021*

**Hobart and William Smith (HWS) Colleges**, GPA: 3.90 Geneva, NY  
*Bachelor of Science in Physics and Chemistry*, Summa Cum Laude *Graduated May 2020*  
Minor: Environmental Studies

### Honors and Awards:

- Phi Beta Kappa member (HWS, 2020)
- Tau Beta Pi member (Dartmouth, 2021)
- Hobart Trustees Scholar recipient (HWS)
- Dean's Citizenship award (HWS, 2020)
- First Year Writing Prize Nominee (HWS, 2016)
- Dartmouth Society of Engineers Prize (Dartmouth, 2021)
- Henry David Thoreau Scholarship recipient
- The Sutherland Prize in Natural Sciences (HWS, 2020)
- The Ralph Hadley Bullard Prize in Chemistry (HWS, 2020)

## RESEARCH EXPERIENCE

**MAXWELL: University Nanosat Program** CU Boulder, Aerospace Dept.  
*Developed the Ground Station for Satellite Communications* *Started August 2021*

- Developed a ground station to communicate with the satellite while in orbit
- Worked across subsystems, including the communications (COMMs) and command and data-handling (C&DH) teams
- Modified and tested GNU Radio scripts for satellite communication (uplink and downlink)
- Configured telemetry and control software to interface with high-frequency communication systems

**Automated Transient Weather Satellite Interception: Satellite and RF Systems** Independent Project  
*Used a software-defined radio and Raspberry Pi to capture overhead weather satellite signals* *Summer, 2020*

- With a partner, wrote Bash and Python scripts to automate the capture and processing of signals, manage conflicts with multiple simultaneous satellites, manage directories for data daily, and to automatically upload data to a cloud service
- Designed and 3D printed an assembly to make this project portable, durable, stand-alone, and cheap
- Learned radio-frequency basics such as transmission lines, signal modulation/encoding, and antenna design
- Documented the work done, cumulating in an article on the novel contributions made so others can replicate our work

**Solid-Phase Anti-Cancer Organic Synthesis** HWS Chem. Dept.  
*Synthesized a novel chemotherapeutic compound* *Spring, 2020*

- Learned and practiced organic synthesis techniques
- Worked in a small lab group to complete a multi-step synthesis of analog of FK228, a known anti-cancer compound
- Used spectral techniques to confirm the success of the synthesis
- Wrote an introduction to the project to practice scientific writing and gain a better understanding of the synthesis

## LEADERSHIP EXPERIENCE

**Hobart and William Smith Engineering Club** Geneva, NY  
*Co-President* *Spring 2017 – Spring 2020*

- Designed and taught curriculum for club members to learn core engineering skills
- Oversaw logistics, budgeting, and timetables of projects
- Led projects that incorporated skills such as CAD work, circuit design and debugging, and microcontroller programming for groups of 6-20 students

## SKILLS AND INTERESTS

Skills: OrCad/PSPICE design and simulation, VHDL, Verilog, Python, Matlab, Maple, Java, Bash scripting, Arduino, excel, machining, welding (MIG and TIG), CNC fabrication, 3D printing, Solidworks 2019, soldering, circuit building

Interests: Hiking, backpacking, dinghy sailing and racing, playing the bass and drums