Connor Geiman

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Education

University of Washington, Seattle, Washington — Sep. 2017 – Jun. 2021
Bachelor of Science, Mechanical Engineering: Mechatronics — GPA: 3.82/4.00 (Cum Laude, Dean's List)
Advisor: Joseph Garbini — Thesis: *Feedback control of a closed ecological system for carbon capture*

Professional Experience

Cofounder — Jan. 2024 - Present
Exploration Technology Group — *San Francisco, California*

- Working with the US Air Force to develop and build new concepts for air-to-air refueling
- Developing technologies to further exploration on Earth, in air, in oceans, and in space

Mission Manager & Systems Engineer — Sep. 2021 - Nov. 2023
Orbit Fab, Inc. — *Boulder, Colorado*

- Managed $5M DoD funded satellite mission and led engineering of its payload
- As an intern, created a new way to produce rocket propellant from water in-situ [15]
- Responsible for spaceflight hardware, including propellant system flight testing and satellite construction
- Advocated for ISRU and sustainability within the space industry with 11 papers and presentations at international conferences [1–4, 6–12]

Cofounder — Mar. 2019 - Feb. 2021
BioArchos Company — *Seattle, Washington*

- Invented, built, and tested a system that uses *Chlorella vulgaris* algae and physicochemical processes to sequester atmospheric CO_2 and reduce building energy use, reversing climate change and increasing urban environmental sustainability
- Raised government funding for product prototype and placed in top 25% at two business competitions

Systems Engineering Intern — Jun. 2020 - Aug. 2020
Honeywell Aerospace — *Phoenix, Arizona*

- Developed next generation carbon dioxide removal system CDRILS to replace International Space Station environmental control and life support CDRA

Research Experience

University of Washington College of the Environment — Jan. 2021 – Mar. 2021
Invertebrate Paleontology — *Seattle, Washington*
Student
PI & Instructor: Peter Ward

- Performed the first δ15N and δ13C isotope analysis of nautilid genus *Allonautilus*
- Found *Allonautilus* trophic level and behavior likely differ from genus *Nautilus*, and may be more sensitive to changing ocean conditions

University of Washington Department of Mechanical Engineering — Jan. 2020 – Jun. 2020
Undergraduate Thesis — *Seattle, Washington*
Undergraduate Thesis Team Lead
PI: Joseph Garbini

- Assembled and led 5-person project team to develop feedback control for failure mode mitigation in closed ecological systems
- Created new method to save energy in biological life support systems, resulting in 70% lower energy use [5]

University of Washington College of the Environment — May 2018 – Jun. 2020
Kinematics and Impacts Lab — *Seattle, Washington*
Undergraduate Research Assistant & Lab Manager
PI: Robert Winglee

- Recovered geological samples in the field during supersonic rocket impactor testing
- Designed, built, and tested sample retrieval systems to investigate composition and geologic history of icy moons [14]

Paul G. Allen School of Computer Science & Engineering — Apr. 2018 – Oct. 2019
Personal Robotics Lab — *Seattle, Washington*
Undergraduate Research Assistant
PI: Siddhartha Srinivasa

- Designed and manufactured fingertip sensors with rich tactile force feedback for assistive robotic feeding [13]
- Participated in laboratory studies on human-systems interaction

Publications

Conference Papers

[1] **Geiman, Connor**, Z. Burkhardt, A. O'Leary, K. Case, J. Bultitude, G. Kendall-Bell, E. Spessert, and D. Faber, "A Shuttle and Depot Architecture for Reliable and Cost-Effective Refueling Operations in All Orbits," presented at the 73rd International Astronautical Congress, Paris, France, Sep. 2022.

[2] A. O'Leary, C. Calibeo, Z. Burkhardt, **Geiman, Connor**, E. Spessert, J. McIntyre, J. Bultitude, and D. Faber, "An Examination of Incentives for Information Sharing to Accomplish Transparent Space Activities and Responsible Conjunction Avoidance," presented at the 73rd International Astronautical Congress, Paris, France, Sep. 2022.

[3] **Geiman, Connor**, J. Bultitude, D. Faber, Z. Burkhardt, G. Kendall-Bell, A. O'Leary, A. Deuitch, and E. Spessert, "Small Body Ascent Enabled by In Space Resource Derived and Produced Hydrogen Peroxide," presented at the 72nd International Astronautical Congress, Dubai, UAE, Oct. 2021.

[4] J. Bultitude, Z. Burkhardt, D. Faber, J. Schiel, J. Cho, **Geiman, Connor**, L. Fettes, and A. Deuitch, "First Flight of RAFTI Orbital Refueling Interface," presented at the 72nd International Astronautical Congress, Dubai, UAE, Oct. 2021.

[5] **Geiman, Connor**, F. Taub, and J. Garbini, "Improving Algae Photobioreactor Energy Efficiency Through Active Irradiance Control for Dynamic Carbon Dioxide Fixation," presented at the 50th International Conference on Environmental Systems, **University of Washington Library Research Award for Undergraduates Grand Prize winner**, Jul. 2021.

Presentations

[6] **Geiman, Connor**, "Orbit Fab Podracer mission: An on-orbit testbed proving out the building blocks of sustainable orbital refueling," presented at the Clean Space Industry Days (Noordwijk, Netherlands), Oct. 2023.

[7] **Geiman, Connor**, "Building the lunar storable propellant supply chain," presented at the Luxembourg Space Resources Week, Apr. 2023.

[8] **Geiman, Connor**, "Highlighting the Need for In-Situ-Derived Propellants for Cislunar and Near-Earth Applications," presented at the Lunar Surface Innovation Consortium Spring Meeting, May 2022.

[9] **Geiman, Connor**, A. O'Leary, C. Calibeo, J. Bultitude, and D. Faber, "A Flexible System for In-Situ Propellant Production," presented at the Luxembourg Space Resources Week, Apr. 2022.

[10] **Geiman, Connor**, "Creating Environmental and Economic Sustainability In Space Through Commercial Satellite Refueling," presented at the Clean Space Industry Days (Noordwijk, Netherlands), Oct. 2021.

[11] **Geiman, Connor**, "High-Test Peroxide Production System for In-Situ Propellant Manufacture from Extraterrestrially Mined Water," presented at the 21st Space Resources Roundtable, Jun. 2021.

[12] **Geiman, Connor**, D. Faber, J. Bultitude, Z. Burkhardt, and A. O'leary, "In-Situ Propellant Architecture for Near-Term Lunar Missions," presented at the Luxembourg Space Resources Week, Apr. 2021.

[13] **Geiman, Connor**, "Assistive Feeding Using Fingertip Tactile Sensors with Rich Haptic Feedback," presented at the University of Washington Robotics Symposium, Jun. 2019.

[14] **Geiman, Connor** and K. Aragon, "Designing a Reliable Asteroid Sample Retrieval System," presented at the University of Washington Undergraduate Research Symposium, May 2019.

Grants Won

United States Space Force 2023
AFWERX SBIR Direct-to-Phase-II $1,700,000
Title: *Development and On-Orbit Commissioning of Critical Systems for Proximity Operations and Future In-Space Refueling*
Technical lead and coauthor

International Space Station National Laboratory 2022
Technology Advancement and Applied Research Leveraging the ISS National Lab $2,000,000 est.
Title: *Furphy II: Investigation of Free-Flying Proximity Operations, Grappling, and Water Transfer Inside the International Space Station*
Technical lead and primary author

National Science Foundation 2020
Innovation Corps (I-Corps) $1,250
Title: *BioArchos Decentralized Carbon Capture*
Technical lead and coauthor

Washington Research Foundation 2019
Washington Research Foundation Fellowship $5,000
Title: *BioArchos Decentralized Carbon Capture*
Technical colead and coauthor

Patents

[15] **Geiman, Connor**, D. Faber, and J. Bultitude, "Production of high-test peroxide for space missions, and associated systems and methods," U.S. Patent Appl. 17/956,636, Sep. 2022. [Online]. Available: `https://patentcenter.uspto.gov/applications/17956636`.

Awards & Honors

- Tau Beta Pi Engineering Honor Society Member, 2018 – present
- Graduated with Cum Laude Honors, University of Washington, 2021
- University of Washington Library Research Award for Undergraduates Grand Prize, 2021 [5]
- Dean's List, 2017 – 2021
- Kelly McGee Endowed Scholarship in Mechanical Engineering, 2018 – 2019

Technical Skills

- **Computational:** Python, Matlab, RStudio, C, Git, OnShape, Solidworks, Adobe Suite, Microsoft Suite
- **Laboratory & Field Work:** cleanroom procedures, rapid prototyping, systematic literature review, *C. vulgaris* culture, spectrophotometry, aerial sample search and recovery, underwater search and recovery
- **Certifications:** PADI Rescue Diver, PADI Drysuit Diver, PADI Deep Diver, PADI Enriched Air (Nitrox), Emergency First Responder (First Aid and CPR), FAA Private Pilot Certificate (70 flight hours in Cessna 172 and Diamond DA-20)
- **Languages:** English (native), Spanish (self-assessed: CEFR B1), French (self-assessed: CEFR B1)

Selected Coursework

- Advanced Multivariable Calculus
- Automatic Control
- Data Structures and Algorithms
- Differential Equations
- Electromagnetism
- Embedded Computing
- Fluid Mechanics
- Fundamentals of Materials Science
- General Chemistry
- Heat Transfer
- Instrumentation
- Linear Algebra
- Statistical Methods in Engineering and Science
- System Dynamics Analysis and Design
- Thermodynamics
- Vector Calculus

Teaching & Service Experience

- Made the best cheese in the world, L'Etivaz AOP, on an organic farm in Switzerland, 2024
- Space startup mentor for University of Colorado Boulder undergraduate research student organization, 2023
- Intern mentor for Orbit Fab, 2023
- Space startup mentor for UC Berkeley NewSpace Entrepreneurship DeCal course, 2021
- Service and volunteering event organizer for Reformed University Fellowship student organization of over 100 members, 2018 – 2021
- Public speaking tutor in University of Washington Department of Communication, 2019
- Volunteer at largest University of Washington Engineering outreach event Engineering Discovery Days, 2018 – 2019