

David Dezell Turner

Portfolio: <https://www.daviddezellturner.com/>

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EDUCATION

- **University of Colorado Boulder** Boulder, CO
PhD Student, Smead Scholar, NSF Graduate Research Fellow, GEM Fellow *Degree Expected 2027*
Astrodynamics & Satellite Navigation, Department of Aerospace Engineering Sciences
Advisor: Jay McMahon
- **Massachusetts Institute of Technology** Cambridge, MA
Bachelor of Science *May 2022*
Department of Aeronautics and Astronautics

RESEARCH EXPERIENCE

- **University of Colorado Boulder** Boulder, CO
PhD Student – Orbital Research Cluster for Celestial Applications *Aug 2022 - Present*
 - **Advisor:** Jay McMahon
 - Design customizable augmented reality tool for intuitive trajectory design
- **Massachusetts Institute of Technology** Cambridge, MA
Undergraduate Research Assistant — Engineering Systems Laboratory *Sept 2021 - Dec 2021*
 - **Advisor:** Edward Crawley
 - Analyze throughput, coverage, and overall technical performance of existing and proposed satellite constellations
- **Massachusetts Institute of Technology** Cambridge, MA
Undergraduate Research Assistant — Space Systems Laboratory *Jan 2021 - May 2021*
 - **Advisor:** Rebecca Masterson
 - Program housekeeping node of space telescope testbed using Python and ROS
 - Create SolidWorks assembly of DCT containing hundreds of parts for moment of inertia calculations
 - Design LiPo battery holder for Dynamics and Control Testbed (DCT) in SolidWorks
- **Massachusetts Institute of Technology** Cambridge, MA
Undergraduate Research Assistant — MIT Media Lab Space Exploration Initiative *Feb 2020 - May 2020*
 - **Advisor:** Joseph Paradiso
 - Research and develop proof of concept for blockchain-based shared-use CubeSat constellation
- **Massachusetts Institute of Technology** Cambridge, MA
Undergraduate Research Assistant — MIT Media Lab Space Exploration Initiative *Sept 2019 - Dec 2019*
 - **Advisor:** Joseph Paradiso
 - Help design online curriculum for course on designing and building prototypes for use in microgravity

PROFESSIONAL EXPERIENCE

- **HoloAstro, LLC** Boulder, CO
Founder & CEO *March 2025 - Present*
 - Founded HoloAstro, LLC
 - Sole developer of customizable augmented reality tool for spacecraft trajectory design
- **The Aerospace Corporation** El Segundo, CA
GEM Fellow, National Space Intern, Astrodynamics Intern *May 2023 - Aug 2023*
 - Design transfers from GEO to variety of cislunar orbits for rapid concept study
 - Add collision probability assessment to highly elliptical constellation design tool; analyze impact of varying orbital elements on constellation post-mission lifetime
 - Test cislunar trajectory design software for robustness across a range of orbit transfers
 - Document observation processing algorithm in satellite relative motion analysis software
- **The Aerospace Corporation** El Segundo, CA
GEM Fellow, Astrodynamics Intern *Jun 2022 - Aug 2022*
 - Design software to perform orbit design trade studies to support CONOPS development for AFRL mission in VLEO
 - Analyze capability of historical cislunar missions to transfer to alternate cislunar orbits
 - Improve UI for Unity-based collaborative AR and VR platform; write unit tests in Unity Test Framework
- **NASA Goddard Space Flight Center** Greenbelt, MD
Distributed Systems Missions Intern *Jan 2022 - May 2022*

- Develop and implement model of scalable crosslink network flow and crosslink routing algorithms for Distributed Systems Missions
- Design and prototype AI-powered virtual assistant to aid systems engineers in executing Distributed Systems Missions

- **The Aerospace Corporation** El Segundo, CA
Matthew Isakowitz Fellow, Astrodynamics Intern *Jun 2021 - Aug 2021*
 - Serve as Payload and Broadcast Team Lead in USSF-funded concept study designing near-term position, navigation, and timing solutions for cislunar space
 - Design and program GM- and J2-only state transition matrix calculator and orbit propagation software
 - Visualize navigation interference environment observed from a pLEO (proliferated Low Earth Orbit) platform
 - Find optimal process noise scale factors for distributed Kalman filter for orbit determination of pLEO constellations
- **Southwest Research Institute** Boulder, CO
NASA's Lucy Mission Outreach Intern *Jun 2020 - Aug 2020*
 - Write engineering and science articles for NASA Lucy website, explaining topics such as flyby sequences, terminal tracking, functions of the spacecraft's instruments, the Discovery class mission selection process, etc.
 - Extract and run calculations with position and velocity data from SPICE kernels using Python wrapper (SpiceyPy)

HONORS AND FELLOWSHIPS

- Aviation Week Network's 20 Twenties *2024*
- National Science Foundation Graduate Research Fellowship *2023 - Present*
- National Defense Science and Engineering Graduate (NDSEG) Fellowship (Selected) *2023*
- Space Workforce 2030 National Space Intern (Inaugural Class) *2023*
- Smead Scholars Program *2022 - Present*
- GEM Fellowship *2022 - Present*
- Ronald E. McNair Scholarship (MIT Institute Award) *2022*
- Matthew Isakowitz Fellowship *2021*
- Colonel Edgar S. Gorrell Memorial Fund Scholarship *2020 & 2021*

PUBLICATIONS

- **Turner, D. D.** & McMahon, J. W. (2025). *Augmented Reality Tool for Multibody Continuous-Thrust Transfer Design*. 10.13140/RG.2.2.13220.39042.
- **Turner, D. D.** & McMahon, J. W. (2024). *ASTROMECH: An Augmented Reality Interface for Intuitive Trajectory Design and Tradespace Analysis*. 10.13140/RG.2.2.23574.36169.

POSTERS

- **Turner, D. D.** (2025, May 16-18). *Enabling Intuitive Cislunar Trajectory Design Using Augmented Reality*. [Poster presentation]. Smead Symposium, Avon, CO, United States.
- **Turner, D. D.** (2023, May 19-21). *ASTROMECH: Astrodynamics Software for Tradespace Optimization and Manual Exploration using Computer-generated Holograms*. [Poster presentation]. Smead Symposium, Avon, CO, United States.

PROJECTS

- **iPNT (Inverted PNT) – The Aerospace Corporation** El Segundo, CA
Payload and Broadcast Team Lead *Jun 2021 - Aug 2021*
 - Serve as Payload and Broadcast Team Lead in USSF-funded concept study designing near-term PNT (position, navigation, and timing) solutions for cislunar space
- **MARS-Ex (Mars Asteroid Rendezvous and Sample Extraction) – MIT** Cambridge, MA
Navigation Lead, Sample Collection Team Member *Sept 2021 - May 2022*
 - Lead team designing initial CONOPS and low-thrust trajectory for sample collection mission concept to high-inclination Mars Trojan asteroid (5261 Eureka)
 - Collaborate with team to design compliant mechanism to improve regolith collection of spacecraft's sample collection mechanism
- **NASA's 2021 BIG Idea Challenge – MIT** Cambridge, MA
Proposal Co-Author *Nov 2020 - Dec 2020*

- Collaborate with distributed team of students and subject-matter experts to rapidly design lunar dust mitigation technology
- **Prototyping Our Sci-Fi Space Future – MIT Media Lab Space Exploration Initiative** Cambridge, MA
Documentarian Jun 2021 - Aug 2021
 - Help design online curriculum for course on designing and building prototypes for use in microgravity
- **NASA Proposal Writing and Evaluation Experience** Virtual
Team Principal Investigator May 2019 - Aug 2019
 - Serve as Principal Investigator of distributed team of students designing electrochromic windows for NASA's Lunar Gateway
 - **Proposal placed in Top 3** (as selected by Chief Technologist of NASA Marshall Space Flight Center)

SERVICE

- **CU Boulder Skyward Showcase** Sept 2022 - Present
 - Serve on organizing committee for annual aerospace research showcase
- **Space Workforce 2030 Media Engagements** Jan 2024 - May 2024
 - Give news interviews on behalf of Space Workforce 2030 (now Space Workforce For Tomorrow), discussing my past internships with The Aerospace Corporation and the need for increased diversity in the space industry
- **Matthew Isakowitz Fellowship Buddy Program** Mar 2022 - July 2022
 - Serve as mentor for newly selected Matthew Isakowitz Fellow
- **NASA Lucy Mission Asteroid Ambassador** July 2019 - May 2022
 - Write aerospace engineering and planetary science articles, create educational YouTube videos, and give public talks to educate public on engineering and science topics relevant to Lucy Mission and asteroid research