# Jack Reid

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• *Résumé current as of April 4, 2023*

## Skills

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|---|---|
| **Earth Observation Data Analysis** | land use/cover, synthetic aperture radar, machine learning |
| **Modeling** | Complex systems, discrete event, agent-based, system dynamics |
| **Economy & Policy Analysis** | Microeconomics, ecosystem services, policy frameworks |
| **Decision Support Systems** | Remote observation, GIS, econometric, public health |
| **Aerospace Systems Engineering** | Satellite design, systems architecture, requirements writing |
| **Coding** | Python, Javascript, MATLAB, Bash, Google Earth Engine |

## Education

**Massachusetts Institute of Technology** ..... 2018-Present
PhD in Media Arts & Sciences
Expected Graduation: June 2023 GPA: 5.0/5.0

**Massachusetts Institute of Technology** ..... 2015-2018
Master of Science in Technology & Policy; Master of Science in Aerospace Engineering
Graduation: May 2018 GPA: 4.9/5.0

**Texas A&M University** ..... 2011-2015
Bachelor of Science in Mechanical Engineering; Bachelor of Art in Philosophy
Honors Minor in Mathematics
Graduation: May 2015 GPA: 3.98/4.0

## Research & Employment

**MIT Space Enabled, *Graduate Researcher*** ..... 08/2018 - Present
Developing integrated, multidomain, sociotechnical system models, standards, and libraries to improve the ability of various groups to use remote observation data for public health and sustainable development purposes and to design new remote observation platforms to better suit their needs.

**RAND Corporation, *Summer Associate*** ..... 05/2018 - 08/2018
Built a generalized early warning modeling framework as part of a project to identify potential countermeasures to attacks on the US homeland by hypersonic cruise missiles

**MIT Systems Engineering Research Initiative, *Graduate Researcher*** .. 08/2015 - 05/2018
Research on various systems engineering topics, primarily for the defense sector, on model integration, complexity, emergent behavior, and the non-technical and policy issues that surround them.
Resulted in masters thesis on potential changes and improvements to the US defense acquisition process.

**RAND Corporation, *Summer Associate*** ..... 05/2017 - 08/2017
Conducted technology forecasting, agent-based modeling, and analysis of alternatives to support military acquisition decisions, particularly with regard to aerial intelligence, reconnaissance, and surveillance.

**MIT/SUTD Fellowship, *University Lecturer and Researcher*** ..... 01/2016 - 05/2016
Lectured to classes of 30-45 at the Singapore University of Technology and Design on optimization, numerical methods, and differential equations. Also wrote and graded homework, exams, and projects.

**Sandia National Laboratories, *Environmental Testing Researcher*** ..... 06/2015 - 08/2015
Worked on shock and vibration simulation, development of improved shock and vibration testing methods and analysis algorithms, as well as control system malfunction diagnosis and repair.

**TAMU PEDL,** ***Undergraduate Researcher*** ..... 01/2013 - 05/2015

Conducted research in the Plasma Engineering Diagnostics Laboratory to make non-thermal, atmospheric pressure plasmas more practical for the deposition of thin films and medical applications such as mitigating the tactile painfulness of using argon as a working fluid on human skin, designing and machining an insulated handle for a portable dielectric barrier discharge jet, and machining and testing a nonthermal plasma grating that sterilizes bioaerosals.

**TAMU Qatar,** ***Peer Tutor & Test-Prep Instructor*** ..... 01/2014 - 05/2014

Worked as a peer writing tutor for fellow engineering students.
Taught a weekly preparatory class for the science section of the ACT to Qatari high school students.
Assisted in the instruction of a GRE-prep course for fellow engineering students and members of the community.

**Flint Hills Resources Corpus Christi Refinery,** ***Plant Engineering Intern*** ..... 05/2013 - 08/2013

Served as a project manager for various engineering tasks in scale up to $300,000 including instrumentation, pump, valve, and pipe installation and upgrade. This included hot tap experience.
Learned about regulations and compliance with such authorities as OSHA, TCEQ, and EPA.
Did design work involving heat exchangers, two-phase process, piping, and gas sample collection.

**TAMU AggiE-Challenge,** ***Undergraduate Researcher*** ..... 08/2012 - 05/2013

Worked as part of an interdisciplinary team of undergraduate engineers working to develop a biomechanical model of the human arm that predicts movement based on electromyography signals for use in powered prostheses and exoskeletons.
Developed a kinematic dynamic model of the human arm based on anatomical data.

**TAMU Nuclear Heat Transfer Systems Lab,** ***Undergraduate Researcher*** ..... 01/2012 - 05/2012

Conducted research on two-phase, steam-water, counter-current flow limitation experiments and modeling for better understanding of reactor failure scenarios and improved reactor design under Dr. Karen Vierow and Mr. Wes Cullum at the Nuclear Heat Transfer Systems Lab.
Assisted Mr. Cullum in running and problem-solving of flooding initialization condition experiment and ran my own tests towards determining the behavior of the fluid interaction boundary post-flooding.

**TAMU AggieSat Lab,** ***Team Member*** ..... 09/2011 - 12/2012

The AggieSat Lab student organization designs and launches satellites under the LONESTAR program towards developing and improving an automated dual-satellite rendezvous system.
Worked as part of the Structure, Mechanical, Thermal, Radiation Subsystem where I designed and modeled structural components; ran static, vibration, and thermal simulations on the overall structure; and attended a Critical Design Review at NASA's Johnson Space Center.

## Scientific Publications & Presentations

J. Reid, *Using Earth Observation-Informed Modeling to Inform Sustainable Development Decision-Making.* MIT Doctoral Dissertation. May, 2023

J. Reid and D. Wood, "Systems engineering applied to urban planning and development: A review and research agenda." *Systems Engineering*, September, 2022.

S. Jung, E. Joiner, J. Reid, and D. Wood, "Gaps in Mangrove Forest Data and Valuation Methods Limit Understanding of Socioeconomic Benefits." *Review of Environmental Economics and Policy*, [In Review].

J. Reid, et al., "The Environment-Vulnerability-Decision-Technology Framework: A Process for Developing Multi-Disciplinary Decision Support Systems for Sustainable Development Applications." 2022 International Astronautical Congress, Paris, France..

J. Reid, et al., "International Collaboration Aimed at Identifying Relevant Social, Policy, and Environmental Factors in the Progression of SARS-CoV2/COVID-19 in Six Metropolitan Areas." 2021 AGU Fall

Meeting, New Orleans, LA..

J. Reid, et al., "Vida Decision Support System: An International, Collaborative Project for COVID-19 Management with Integrated Modeling." 2021 International Astronautical Congress, Dubai, UAE. [Available online: https://dspace.mit.edu/handle/1721.1/138106].

J. Reid et al., "The Vida Decision Support System: An Integrated Modeling Framework to Inform and Monitor Regional COVID-19 Responses." 2020 AGU Fall Meeting, Virtual Poster.

J. Reid, D. Wood, "Decision Support Model and Visualization for Assessing Environmental Phenomena, Ecosystem Services, Policy Consequences, and Satellite Design Using Earth Observation Data." 2020 AIAA ASCEND, Virtual [Available online: https://dspace.mit.edu/handle/1721.1/128378].

J. Reid, D. Wood, "Interactive Model for Assessing Mangrove Health, Ecosystem Services, Policy Consequences, and Satellite Design in Rio de Janeiro Using Earth Observation Data." *2020 International Astronautical Congress*, Virtual [Available online: https://dspace.mit.edu/handle/1721.1/129598].

J. Reid, C. Zeng, D. Wood, "Combining Social, Environmental, and Design Models to Support the Sustainable Development Goals." 2019 IEEE Aerospace Conference, Big Sky, MT [Available online: https://ieeexplore.ieee.org/document/8741623].

J. Reid, D. Rhodes, "Assessing Vulnerabilities in Model-Centric Acquisition Programs Using Cause-Effect Mapping." 2018 Acquisition Research Symposium, Monterey, CA.

J. Reid, D. Rhodes, "Applying Cause-Effect Mapping to Assess Cybersecurity Vulnerabilities in Model-Centric Acquisition Program Environments." 2018 Acquisition Research Symposium, Monterey, CA.

J. Reid, D. Rhodes, "Classifying Emergent Behavior to Reveal Design Decisions." 2017 Conference on Systems Engineering Research, Redondo Beach, CA.

J. Reid, D. Rhodes, "Digital System Models: An investigation of the non-technical challenges and research needs." 2016 Conference on Systems Engineering Research, Huntsville, AL.

J. Reid, "Development of a Single-Input Multiple-Output Optimization Method for Matching Shock Response Spectrums with a Set of Decaying Sines." 2015 Sandia National Labs Student Intern Symposium, Albuquerque, NM.

J. Reid, "Minimizing Magnitude of Current Spikes Resulting from Argon Non-Thermal Plasma Dielectric Barrier Discharge Jets." *Texas A&M Honors Research Fellows and Undergraduate Research Scholars Thesis*, May 2015. [Available online: http://oaktrust.tamu.edu/handle/1969.1/3367].

W. Cullum, J. Reid, and K. Vierow, "Water Inlet Subcooling Effects on Flooding with Steam and Water in a Large Diameter Vertical Tube." *Nuclear Engineering & Design Journal*, vol. 273, pp.110 - 118, July 2014..

Team Presentation, "(Poster) Human Arm Model Project." 2013 TAMU Engineering Expo, College Station, TX.

J. Reid, "(Poster) Invisible Jungle: An Experiment in Microbiology Education." 2012 North Texas Life Sciences Research Symposium, Denton, TX.

J. Eckelbarger, J. Reid, "Invisible Jungle: Microbiology Radio." 2012 American Society for Microbiology Texas Branch Spring Meeting, New Braunfels, TX.

J. Reid, "Invisible Jungle." 2012 TAMU Student Research Week, College Station, TX.

## Extracurricular & Service Activities

**MIT Graduate Student Council,** ***Various Leadership Roles*** ..... 2018 - 2022

As External Affairs Board Chair, lead MIT graduate students' advocacy and public outreach activities, including legislative advocacy at the local, state, and federal levels.

As University Liaison, represented MIT to other universities, including at conferences and legislative action days organized by the National Association of Professional and Graduate Students.

Particular accomplishments include helping to organize the Graduate Research & Development Caucus in the US House of Representatives and founding the Boston Federation of Graduate Student Governments.

**MIT Science Policy Review,** ***Associate Editor*** ..... 2019 - 2020
Provided feedback to authors and managed the peer review process for a researcher-run publication founded in 2019 whose primary purpose is to publish accessible and authoritative science policy reviews authored by members of the broader MIT community for dissemination to the wider public.

**Science Policy Initiative,** ***Various Leadership Roles*** ..... 2015 - 2020
MIT graduate organization dedicated to educating students on the role science plays in policy-making, the effects of policy on the scientific community, and how to engage in policy advocacy.
As President, lead the organization through several changes, including commissioning a history documentation effort and expanding the science policy bootcamp.
As Special Events Coordinator, planned numerous activities including a full lecture series on innovation policy issues, faculty panels, student panels, and faculty lunch discussions.
As Congressional Visit Days Co-Chair, organized a multi-day trip to Washington DC where MIT students met with numerous Congressional offices as part of the broader STEM on the Hill event hosted by the Science-Engineering-Technology Working Group.
As Bootcamp Chair, organized two science policy bootcamps (one in person and one virtual) designed to introduce participants to the 'nuts and bolts' of science policy making.

**MIT Open Access Task Force,** ***Graduate Student Representative*** ..... 2017 - 2020
Served as the representative of graduate student interests on a task force dedicated to reforming and advancing MIT's open access policies

**MIT Committee on the Library System,** ***Graduate Student Representative*** ..... 09/2016 - Present
Served as one of two representatives of graduate student interests in the setting of MIT library policy, budget, and proprieties.

**Addir Interfaith Program,** ***Fellow*** ..... 09/2016 - 05/2017
Participated in weekly reading and discussion groups made up of MIT students from a wide variety of faith-backgrounds, as well as occasional retreats and dinners.

**Engineers Without Borders TAMU Chapter,** ***Local Project Lead*** ..... 10/2011 - 05/2014
University chapter of an international non-governmental organization primarily dedicated to international service and development work. The local chapter also performs local community improvement projects.
As a local project lead, was in charge of design and construction of a playground at Friend's Congregational Church which was completed in April of 2014.

**Invisible Jungle: TAMU Microbiology Radio Show,** ***Mentor & Presenter*** ..... 09/2011 - 05/2015
One of three student mentors running the program, a weekly four-minute microbiology news radio show.
Wrote, edited, and recorded scripts; presented Invisible Jungle at conferences; and interviewed A&M professors.

**TAMU Undergraduate Research Ambassador** ..... 05/2014 - 05/2015
Served in an outreach program to current and prospective A&M students with the goal to increase participation in undergraduate research as well as identify and resolve inefficiencies in the undergraduate research system.

**TAMU Mechanical Engineering Spain Study Abroad Experience** ..... 05/2014 - 08/2014
Summer term abroad program at various locations in central Spain, including Toledo, Ciudad Real, and the University of Castilla-La Mancha.
Coursework included two upper-level mechanical engineering courses integrated with trips to construction sites.

**Texas A&M University at Qatar Study Abroad Experience** ..... 01/2014 - 05/2014

Semester abroad at A&M's Qatar campus, including engineering classes, paid work tutoring peers, attendance at various seminars including a TEDx event, and visiting local and regional cultural and historical sites.

## Other Publications & Appearances

J. Reid, "The moral equivalent of war: a new metaphor for space resource utilization." *The Space Review*, 2022. https://www.thespacereview.com/article/4345/1

"How To Keep Your Satellite Pointing At Earth." *The Mapscaping Podcast*, 2022. https://mapscaping.com/podcast/how-to-keep-your-satellite-pointing-at-earth/

R. Bellisle et al., *Space Policy Considerations*, MIT Space Policy Research Group, 2021. https://www.media.mit.edu/posts/mit-space-policy-compendium/1

J. Reid, *Earth Observation Art*, 2021-2022. https://jackbreid.com/pages/eo_art.html

"Episode 87 - Existential Engineer." *The Engineering Commons Podcast*, 2015. https://theengineeringcommons.com/episode-87-existential-engineer/

J. Reid, "Silence." *Best Writing: Building Words, Building Worlds*, Texas A&M University at Qatar, 2014.