

Jack Reid

jackbreid.com • jackreid@mit.edu • jack.b.reid@gmail.com
• *Résumé current as of May 5, 2023*

Skills

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, analyses, and decision support systems advance public health and sustainable development goals for various communities. These analyses involved the user of space-based optical, hyperspectral, LIDAR, and SAR data. Specific projects included:

- For the municipality of Rio de Janeiro, monitoring of mangrove health and extent, valuation of local ecosystem services, derivation of carbon sequestration, and assessment of policy impacts on the mangroves.
- COVID-19 pandemic response for six metropolitan areas across four continents, including implementing an epidemiological simulation system, monitoring changes in human activity (as measured both by telecoms data and urban nightlights), and monitoring air quality (as measured by in-situ and space-based sensors).
- Using space-based methane detection systems to identify point sources in the Rio de Janeiro area and compare these with activity-based emissions inventories.
- Identification of flooded roads and agricultural land due to cyclone impacts in Madagascar

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.
- 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 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.

Selected 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, 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>].

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

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/>