Akhil Rao

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Education

2019	Ph.D., Economics, University of Colorado Boulder
2016	M.A., Economics, University of Colorado Boulder
2012	B.S., Business Administration, University of California Riverside

Experience

2023–now	Research Economist, NASA Office of Technology, Policy, and Strategy
2019–now	Assistant Professor, Middlebury College
2017–2019	Graduate Part-Time Instructor, University of Colorado Boulder
2014–2016	Teaching Assistant, University of Colorado Boulder
2013–2015	Data Scientist, Red9

Research

Primary fields

Space economics; Environmental economics; Computational economics

Works in progress

[1] "Fire and labor markets" with Raphaelle G. Coulombe
draft

[2] "Close Encounters of the LEO Kind: Spillovers and Resilience in Partially-Automated Traffic Systems"
draft

[3] "Sustainability assessment of Low Earth Orbit (LEO) satellite broadband mega-constellations" with Ogutu B. Osoro, Edward J. Oughton and Andrew R. Wilson

[4] "Economic principles of space traffic control"
draft (job market paper)

[5] "International cooperation and competition in orbit-use management" with Aditya Jain
draft

Journal publications

[1] **Rao, A**., Rondina, G. "The Economics of Orbit Use: Open Access, External Cost, and Runaway Debris Growth"
Forthcoming at the Journal of the Association of Environmental and Resource Economists, 2025
DOI: 10.1086/730695

[2] Guyot, J., **Rao, A**., & Rouillon, S. (2023). Satellite constellations and orbital competition. *Proceedings of the National Academy of Sciences*, 120, 43, (2023).
DOI: 10.1073/pnas.2221343120

[3] Corrado, L., Cropper, M., & **Rao, A**, Space exploration and economic growth: New issues and horizons, *Proceedings of the National Academy of Sciences*, 120, 43, (2023).
DOI: 10.1073/pnas.2221341120

[4] Ash, T., Bento, A.M., Kaffine, D., **Rao, A**., & Bento, A.I. (2022). Disease-economy trade-offs under alternative epidemic control strategies. *Nature Communications*, 13, 3319
DOI: 10.1038/s41467-022-30642-8

[5] **Rao, A**., Burgess, M., & Kaffine, D. (2020). Orbital-use fees could more than quadruple the value of the space industry. *Proceedings of the National Academy of Sciences*, 117(23), pp.12756-12762.
DOI: 10.1016/j.compedu.2016.01.011

[6] **Rao, A**. (2020). The Economics of Orbit Use: Theory, Policy, and Measurement. *Journal of the Association of Environmental and Resource Economists*, 7(1), iii-iii. Dissertation abstract. DOI: 10.14429/djlit.32.4.2524

Conference proceedings

[1] **Rao, A**., Letizia, F. (2021). An Integrated Debris Environment Assessment Model. In *8th European Conference on Space Debris Proceedings*.

[2] Bennett, T., Cain, C., Campbell, N.S., Gemer, A.A., Marino, J., Niederwieser, T., & **Rao, A**. (2018). The CENKI Space Economic Simulator: Analytical Verification of an Agent-Based Modeling Engine. In *2018 IEEE Aerospace Conference*. IEEE.

[3] Bennett, T., Cain, C., Campbell, N.S., Gemer, A.A., Marino, J., Niederwieser, T., & **Rao, A**. (2018). The CENKI Space Economic Simulator: Demonstrating Agent-Based Modeling on Satellite Market Data. In *2018 IEEE Aerospace Conference*. IEEE.

Book chapters

[1] **Rao, A**., & Park, D. *Forthcoming*. The Economics of Space Development. In A. D'Costa (Ed.), The Oxford Handbook on the New Space Economy. Oxford.

[2] Guyot, J., **Rao, A**., & Rouillon, S. *Forthcoming*. The long-run economics of sustainable orbit use. In T. Hoerber, M. Borowitz, A. Forganni, B. Reynaud de Sousa (Ed.), The Routledge Handbook on Space Policy. Routledge.

[3] Greenblatt, J., & **Rao, A**. (2019). K-Town: A Thousand-Person Colony. In F. Crossman (Ed.), Mars Colonies: Plans for Settling the Red Planet (pp. 149–176). The Mars Society.

Non-academic writing

[1] **Rao, A**., "A new measure of space economy manufacturing plant utilization"
SIB Insights, NASA internal publication, 2024

[2] **Rao, A**., "Estimating demand for mega-constellation internet service"
SIB Insights, NASA internal publication, 2024

[3] **Rao, A**., Adilov, N., Cunningham, B., Guyot, J., Rouillon, S., & Wagner, J. (2021). Economists' Response to 86 FR 61335. Our submission.

[4] Castle-Miller, M., Anzaldúa, A., Davidson, H., Aganaba-Jeanty, T., Greenblatt, J., Hanlon, M. L. D., Matula, T. L., **Rao, A.**, Shubin, L. G. (2020). The Lunar Development Cooperative: A new idea for enabling lunar settlement. In The Space Review.

[5] **Rao, A**. (2019). Humans or Robots First? In Politico: The Agenda.

Teaching

Independent Study	2020-current	Middlebury College
Space Economics	2021-current	Middlebury College
Environmental Economics	2019-current	Middlebury College
Economic Statistics	2019-current	Middlebury College
Math Tools for Economists	2017-2018	University of Colorado Boulder
Principles of Macroeconomics	2015-2016	University of Colorado Boulder
Principles of Microeconomics	2014-2019	University of Colorado Boulder

Selected Honors and Awards

2021-2022	AERE Scholars Fellow
2020	ProQuest CGS Distinguished Dissertation Award in Social Sciences
2019	Wallace E. Oates Outstanding Doctoral Dissertation Award
2018	Sieglinde Talbott Haller Fellowship in Economics
2018	Center to Advance Research and Teaching in the Social Sciences Spring Graduate Student Award
2018	Summer Graduate School Dissertation Fellowship
2017	Reuben A. Zubrow Fellowship in Economics
2013	Coro Southern California Fellows Program in Public Affairs

Presentations

2023

[1] University of Alaska Anchorage

[2] Politecnico Di Milano Space Capacity Workshop

[3] Association of Environmental and Resource Economists Annual Meeting

[4] Oregon State University

[5] United States Air Force Academy

2022

[1] Secure World Foundation Orbital Carrying Capacity Workshop

[2] Auburn University Department of Aerospace Engineering Jack and Ann Waddey Invited Seminar

[3] George Washington University Space Policy Institute

[4] NASA Office of Technology, Policy, and Strategy

2021

[1] 8th European Conference on Space Debris

[2] IASC Commons in Space

[3] From Measurements to Understanding: ESA MASTER Modelling Workshop

2020

[1] CODER 2020 workshop

[2] Astronomics Society Workshop on the Economics and Law of Space (postponed; COVID-19)

[3] Secure World Foundation Workshop on Relevance of Economic Models to Space Debris Policy

[4] Association of Environmental and Resource Economists Virtual Conference

[5] GOSEE Conference

[6] National Space Council Lunar Polar Resources Roundtable

2019

[1] Middlebury College

[2] Institute for Defense Analyses

[3] Colorado School of Mines

2018

[1] Western Economic Association International AERE Session

[2] IEEE Aerospace Conference

[3] Pacific Council PolicyWest

2017

[1] Heartland Environmental and Resource Economics Workshop at Illinois

[2] CU Environmental and Resource Economics Workshop

Professional Activities

Conferences

- Co-organizer, IASC Commons in Space 2023 conference
- Co-organizer, IASC Commons in Space 2022 conference

- Co-organizer, IASC Commons in Space 2021 conference

Reviewing

- Climatic Change
- Journal of Environmental Economics and Management
- PNAS Nexus
- Acta Astronautica
- Space Policy
- EcoHealth
- Journal of Space Safety Engineering

Boards

- Advisory Board member, EU study on Space Traffic Management 2020-2022

College Service

- Academic advisor – 18 students ongoing as of 2022
- Thesis advisor – 1 student 2021-2022, 2 students 2019-2020