

LOGAN RAMANATHAN

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EDUCATION

Brown University

Sc.B. in Physics — GPA: 4.0/4.0

Providence, RI

Expected May 2028

Relevant coursework: Computational Physics, Gravitational Fields & Data Analysis, Electricity & Magnetism, Statistics, Linear Algebra, Multivariable Calculus, Differential Equations, Cosmochemistry, Infectious Disease Modeling

TECHNICAL SKILLS

Programming: Python (OpenCV, scikit-learn, LangChain), R, MATLAB, Arduino, Claude Code, Codex,

Test & Measurement: Oscilloscopes, multimeters, power supplies, function/signal generators, vector network analyzer (VNA); LabVIEW data acquisition; vacuum chambers, pumps, and pressure gauges; RF power & impedance matching; plasma diagnostics

Software & CAD: Fusion 360 (CAD & CAM), Siemens NX/Teamcenter, QGIS, JMARS, OpenFOAM CFD

Fabrication: Soldering, CNC/manual mills, routers, hand tools, TIG/MIG welding, 3D printers, laser cutters, GD&T

Languages: English (Native), Russian (Intermediate), Japanese (Intermediate), Tamil (Elementary)

EXPERIENCE

Stanford Plasma Physics Lab

Research Intern — Prof. Mark Cappelli

Stanford, CA

June 2026 – Aug. 2026

- Co-lead the experimental component of a DARPA-funded project to characterize inductively coupled, radio-frequency driven plasmas.
- Own the design, fabrication, and operation of an RF self-compensating Langmuir probe for measurements of plasma properties.
- Designed tunable RF chokes, movable probe tip, and data-acquisition method for measurements across frequencies and pressures.
- Cross-validate plasma measurements using optical-emission spectroscopy with collisional-radiative models and microwave interferometry; quantify diagnostic agreement and uncertainty; work with plasma theorists to develop methods for sensor-fusion.
- Redesigned and rebuilt vacuum chamber around new pump; troubleshoot plasma ignition, impedance matching, optical noise intrusion.

Head Group, Brown University — Mission Engineering (NASA Innovative Advanced Concepts)

Research Fellow — Prof. James Head & Apollo 15 Cmdr. David Scott

Providence, RI

Aug. 2025 – Present

- Analyzed Artemis lunar power consumption with Python and LROC QuickMap terrain data to size candidate grid layouts; built framework for logistics, reactor siting, redundancy, fault tolerance, and energy storage to sustain power throughout the 500-day mission concept.
- Built an electro-thermal power-transmission model in Python enabling the quantification of constraints and infrastructure demands.
- Quantified plume-surface interaction effects on mission design, identified hazards; designed landing infrastructure layout. Delivered presentation on findings and recommendations to 100+ attendees including NASA stakeholders and Artemis program engineers.

Rocket Lab

Integration & Test Engineering Intern

Long Beach, CA

June 2023 – Aug. 2023

- Designed the thermal, mechanical, and electrical systems for the camera module of the Pioneer spacecraft series in Siemens NX.
- Fabricated test harness for hardware and software validation on the hardware-in-the-loop rack ahead of vehicle integration.
- Brought sub-system from inception to design review in <6 weeks and integrated on spacecraft in <8 weeks; camera operational in LEO.
- Updated spacecraft CAD to document assembly processes and supported full-functional vehicle testing in the clean room.

Daubar Group, Brown University — Martian Geomorphology

Research Fellow — Prof. Ingrid Daubar & Dr. Aleksandra Sokolowska

Providence, RI

Oct. 2024 – Aug. 2025

- Analyzed asymmetric impact streaks by developing a database of 500+ Martian impact sites with QGIS, JMARS, and Python; built and statistically analyzed a directional-impact model linking ejecta-streak orientation to oblique-impact dynamics.

RESEARCH OUTPUT

1. **Ramanathan, L.**, & Head, J. W. (2026). ...Plume–surface interaction in Artemis lunar operations... *57th LPSC*, #1063 (oral).
2. **Ramanathan, L.**, & Head, J. W. (2026). Lunar surface power technology and architecture... *57th LPSC*, #1129 (poster).
3. Sokolowska, A., Daubar, I., **Ramanathan, L.**, et al. (2026). Origin of Martian “blast zone streaks” from small impacts. *EPSC*, #EPSC2026-1114.
4. Head, J. W., Scott, D. R., ... **Ramanathan, L.**, et al. (2026). ...Human-robotic exploration of the Moon and Mars. *57th LPSC*, #1057.
5. Sokolowska, A., Daubar, I., **Ramanathan, L.**, et al. (in prep.). Dark blast zone streaks reveal impact trajectories in new Martian craters.
6. Head, J. W., Scott, D. R., ... **Ramanathan, L.**, et al. (in prep.). Human-robotic exploration of the Moon and Mars.

ADDITIONAL

Awards: Brown Undergraduate Teaching & Research Award (2×); U.S. Invitational Young Physicists Tournament National Champion (2023); #1 nationally in Parliamentary Debate (2023–24); New York Times STEM Writing Competition International Winner (2023).

Interests: Aviation, Scuba Diving (PADI Advanced Open Water, Nitrox, Reef Restoration, Night Diver), Guitar, Golf