MASON S. STARR

Phone: (425) 628-8666
mason@elegantcode.com

11074 Caminito Alvarez
San Diego, CA 92126

EDUCATION

B.S. Western Washington University, Physics — June 2019
Graduated Magna Cum Laude
Minored in Mathematics and Astronomy
Emphasis on Planetary Science and Philosophy

HONORS AND AWARDS

Elwha Undergraduate Research Award — 2018
Awards committee selected one undergraduate applicant to receive full time summer research funding

Dr. Willard A. and Anne Brown Scholarship — 2017, 2018

Western Washington University Physics Departmental Scholarship — 2016

Western Washington University Scholars Award — 2015

RESEARCH EXPERIENCE

Undergraduate Research, Western Washington University — 2016-2019
Advisor: Melissa Rice (Melissa.Rice@wwu.edu)

- Analyzed image data from Mastcam instrument aboard Mars Curiosity rover
- Developed a comprehensive database of spectral endmembers in Mastcam images and the methodology with which to create it
- Lead the design and development of Mastcam Spectral Plotter (MSP): an application used to analyze and create plots from spectral data in the above database. This tool has been instrumental in recent Marslab work and has enabled multiple projects focused on Mastcam spectra.
- Wrote scripts to format and upload data to a public spectroscopy database: http://spectro.geol.wwu.edu/
- Collaborated with Mars Science Laboratory science team remotely and at conferences; created plots and shared data with requestors
- Volunteered as a data validator during the calibration of the Mastcam-Z instrument preparation for its inclusion on the Mars 2020 rover

TEACHING EXPERIENCE

Western Washington University, Bellingham WA September 2016 to June 2017
Laboratory Assistant, Physics Department

- Instructed and graded weekly laboratory sessions for three introductory courses: mechanics, optics, and electromagnetism
- Lead the learning experience of 12-30 students without supervision of professor
- Held office hours to provide individualized instruction to students based on their needs and learning style
- Prepared labs, graded homework, and supervised final exams

PUBLICATIONS

Journal Papers Accepted

Czarnecki, S., Hardgrove, C., Gasda, P. J., Gabriel, T. S. J., **Starr, M.,** Rice, M. S., Frydenvang, J., Wiens, R. C., Rapin, W., Nikiforov, S., Lisov, D., Litvak, M., Calef, F., Gengl, H., Newsom, H., Thompson, L., Nowicki, S. (2020). Identification and Description of a Silicic Volcaniclastic Layer in Gale Crater, Mars, Using Active Neutron Interrogation. Journal of Geophysical Research: Planets, 125(3). doi:10.1029/2019je006180

Journal Papers in Preparation

Rice, M.S., **Starr, M.**, Hughes, C., Seeger, C., Fraeman, A.A., Jacob, S., Buz, J., Johnson, J.R., Wellington, D. Horgan, B.H.N., Moore, N., Boyd, J., Bell III, J.F., Mastcam Spectral Variability of Rocks and Soils Across Curiosity's Traverse in Gale Crater, Mars: From Bradbury Landing to the Vera Rubin Ridge, Sols 0-2200. In preparation for submission to Journal of Geophysical Research - Planets

Rice, M.S., Dixon, D., Bell III, J.F., Johnson, J.R., Wellington, D., Cloutis, E., **Starr, M.**, Characterizing the Sulfates at Gale crater, Mars with the Mars Science Laboratory Mastcam Instrument. In preparation for submission to Icarus.

Conference Abstracts

Rice, M. S., Johnson, J. R., Bell, J. F., Maki, J. L., Barrington, M., Cisneros, E., Cloutis, E., Corlies, P., Cluff, N., Crawford, K., Dixon, D., Ehlmann, B., Hardgrove, C., Hayes, A. G., Horgan, B. N., Jacob, S., Jensen, E., Kinch, K. M., Lakdawalla, E., Lapo, K. Lemmon, M. T., Madsen, M. B., Mehall, L., Mollerup, J., Paris, K., Rojas, C., Scheller, E., Schmitz, N., Scudder, N., Seeger, C., **Starr, M.**, Tate, C., Wellington, D., Winhold, A. (2020) The Mastcam-Z Filter Set and Plans for Multispectral Imaging with Mars-2020 at Jezero Crater. 51st Lunar and Planetary Science Conference, held 16-20 March, 2020 at The Woodlands, Texas. LPI Contribution No. 2326, 2020, id.2930

Trigler, T.E., Buz, J., Edwards, C. S., Rice, M. S., **Starr, M.**, Seeger, C. (2020) Using Multispectral Images of Float Rocks to Predict Upcoming Stratigraphy at Gale Crater. 51st

Lunar and Planetary Science Conference, held 16-20 March, 2020 at The Woodlands, Texas. LPI Contribution No. 2326, 2020, id.2163

Mollerup, J., Rice, M. S., Lapo, K., Johnson, J. R., Bell, J. F., Maki, J. N., Barrington, M., Cisneros, E., Cloutis, E., Corlies, P., Cluff, N., Crawford, K., Dixon, D., Ehlmann, B., Greenberger, R., Grotzinger, J. P., Hardgrove, C., Hayes, A., Horgan, B. N., Jacob, S. Jensen, E., Kinch, k. M., Lakdawalla, E., Lemmon, M., Madsen, M. B., Mehall, L., Paris, K., Parr, G., Rojas, C., Scheller, E., Schmitz, N., Scudder, N., Seeger, C., **Starr, M.**, Tate, C., Wellington, D., Winhold, A. (2020) Characterization of Rock Targets and Color Standards with the Mastcam-Z Flight Instruments. 51st Lunar and Planetary Science Conference, held 16-20 March, 2020 at The Woodlands, Texas. LPI Contribution No. 2326, 2020, id.2998

Seeger, C., Rice, M. S., **Starr, M.**, Hughes, C. M., Frizzell, K. (2019) Mastcam Spectral Diversity Within Glen Torridon, Gale Crater, Mars. American Geophysical Union, Fall Meeting 2019, abstract #P31A-3426

Starr, M. S., Rice, M. S., Hughes, C. M., Seeger, C. H., Bell, J. F., Wellington, D. F. (2019) Methodology for the Creation and Analysis of a Comprehensive Mastcam Multispectral Database of Curiosity's Traverse. 50th Lunar and Planetary Science Conference, held 18-22 March, 2019 at The Woodlands, Texas. LPI Contribution No. 2132, id.3087

Seeger, C., Rice, M. S., **Starr, M.**, Hughes, C. M. (2019) Mastcam Spectral Characterization of Stratigraphic Units Along Curiosity's Traverse in Gale Crater, Mars. 50th Lunar and Planetary Science Conference, held 18-22 March, 2019 at The Woodlands, Texas. LPI Contribution No. 2132, id.2235

Rice, M. S., **Starr, M. S.**, Hughes, C. M., Seeger, C. H., Fraeman, A. A., Johnson, J. R., Bell, J. F., Wellington, D. F. (2019) Science Results from a Comprehensive Mastcam Spectral Database for Curiosity's Traverse. 50th Lunar and Planetary Science Conference, held 18-22 March, 2019 at The Woodlands, Texas. LPI Contribution No. 2132, id.3030

PRESENTATIONS

Starr, M. S., Rice, M. S., Hughes, C. M., Seeger, C. H., Bell, J. F., Wellington, D. F. (2019) Mars through the Curiosity Rover's Eyes: A Comprehensive Mastcam Database. Presentation, Western Washington University Scholar's Week, Bellingham, WA.

Starr, M. S., Rice, M. S., Hughes, C. M., Seeger, C. H., Bell, J. F., Wellington, D. F. (2019) Methodology for the Creation and Analysis of a Comprehensive Mastcam Multispectral Database of Curiosity's Traverse. Presentation, 50th Lunar and Planetary Science Conference, The Woodlands, TX.

Starr, M. S., Rice, M.S. (2018) Development of a Mastcam Multispectral Database and Some Initial Results. Presentation, MSL team meeting, Caltech Campus, Pasadena, CA.

Starr, M. S., Rice, M.S., Hoza K., Hughes C., Moore N., Frizzell K., Boyd J., Van Beek J., Bell III, J.F., Wellington D., Jacob S., Horgan B., Fraeman A., Johnson J., Czarnecki S,. Hardgrove C. (2018) A Comprehensive Mastcam Database. Presentation, University of British Colombia Campus, Vancouver, Canada.

RELEVANT PROFESSIONAL EXPERIENCE

Malin Space Science Systems, Missions Operations Specialist, November 2019 - Present

- Operate Mastcam multispectral imager aboard the Curiosity Mars rover on a tactical timeline
- Work with other instrument teams and rover planners to plan rover activities and meet science goals
- Develop tools and scripts to aid in tactical and strategic operations
- Collaborate with Mars Science Laboratory science team to fulfill science requests
- Ensure quality of Mastcam products during both uplink and downlink

RELEVANT SKILLS

- Fluent in Python, experience with shell scripting, Git, Wolfram Mathematica, Matlab, LaTeX, VBA, Java, and IDL
- Extensive experience with Graphical User Interface (GUI) development in Python
- Proficient in MacOS, Linux, and Windows
- Experience with 3D printing and modeling, electronics and soldering

OTHER

American Citizenship