Leah M. Fulmer

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Summary

Versatile, adaptive software developer, research scientist, and program organizer with a background in astronomy. Seeking to apply computational skills toward a passion for natural health, while remaining unattached to the fruits.

Education

Codecademy January 2024 - Present
Business Intelligence Data Analyst Career Path Madison, WI

University of Washington September 2018 - June 2021
Master of Science in Astronomy Seattle, WA

University of Wisconsin-Madison September 2013 - May 2017
Bachelor of Science in Astronomy-Physics & Spanish Madison, WI

University of Chile & Pontifical Catholic University of Chile February 2016 - August 2016
Council on International Educational Exchange Study Abroad Santiago, Chile

Academic Distinction, Honors in the Major, Departmental Prize in Astronomy, 3.82/4.00 Cumulative GPA

Professional Experience

BadgerBots Robotics Corporation May 2022 - December 2023
Community Engagement Program Organizer, Assistant Educator Madison, WI
Advisors: Johanna Taylor & Janelle Greene

- Lead all communication, coordination, and growth initiatives related to the BadgerBots Community Engagement Program, making robotics education accessible to students of underrepresented backgrounds.
- Connected with community partners at neighborhood centers, libraries, schools, museums, and advocacy organizations to create a program that served the greater Madison area with both breadth and depth.
- Designed season schedule of weekly and monthly partner programming, bimonthly "pop-ups", and parallel learning initiatives with other after school educators, combining educational curricula and service networks.
- Secured funding from both public grants and individual donations to support program activities.
- Managed program budget and presented fiscal activity internally and externally through seasonal reports.
- Served as Assistant Educator during all educational instances, working with the Education Innovator to deliver a quality educational experience; completed administrative tasks for each educational instance.

National Optical Astronomy Observatory, now NSF's NOIRLab October 2017 - July 2018
Data Reduction Specialist Tucson, AZ
Advisors: Dr. Stephanie Juneau, Dr. Knut Olsen, & Dr. Mark Dickinson

- Processed and cleaned ("reduced") data from the ESO VLT Visible Imaging Multi-Object Spectrograph and Multi-Unit Spectroscopic Explorer using a boutique reduction pipeline software.
- Produced a catalog of redshift measurements for our population of ∼400 galaxies, laying the groundwork for studies of the galaxies' local environments and large-scale changes in the cosmic star formation rate.
- Contributed to foundational expansions of the Astro Data Lab, a webspace that empowers astronomers to host, query, connect, explore, visualize, and analyze data from all NOIR observational facilities.
- Performed initial development for a new spectral viewer and analysis tool hosted by the Astro Data Lab.
- Synthesized public-facing scientific and technical tutorials to highlight the functionality of the Astro Data Lab's existing tools; tutorials written as Jupyter Notebooks directly querying the Astro Data Lab's archive.

Research Experience

University of Washington September 2018 - June 2021
NSF Graduate Research Fellow Seattle, WA
Advisors: Prof. Daniela Huppenkothen and Prof. Mario Juric

- Explored automatic classification of time series data using machine learning techniques; placed particular focus on anomaly detection to efficiently access valuable data products from among billions of observations.

University of Wisconsin-Madison January 2014 - January 2020
Undergraduate Research Assistant Madison, WI
Advisor: Professor John (Jay) Gallagher, III

September 2016 - January 2020:

- Lead a photometric study of massive stars within the Small Magellanic Cloud Wing, revealing an erratic, popcorn-like mode of star formation despite an apparent lack of gaseous resources from which to form stars.

January 2014 - October 2016:

- Lead an analysis of the galaxy NGC 5523, constraining the timescales and masses of potential non-disruptive mergers between it and former companions, thus discovering a probable history of "isolation by annexation".

Space Telescope Science Institute June 2017 - August 2017
Space Astronomy Summer Program Intern Baltimore, MD
Advisor: Dr. Mark Giuliano

- Created a dynamic visualization tool for the efficient analysis of Hubble Space Telescope and James Webb Space Telescope scheduling constraints, to ultimately streamline the process of space-based data acquisition.
- Collaborated closely with telescope schedulers (users) and quickly adapted the tool to match their feedback.

University of Chile March 2016 - September 2016
Undergraduate Research Assistant Santiago, Chile
Advisor: Professor Monica Rubio

- Analyzed CO emission data from the Atacama Large Millimeter Array and Atacama Pathfinder Experiment to characterize physical properties (mass, temperature) of molecular clouds within the Magellanic Bridge.

Yale University June 2015 - July 2016
Dorrit Hoffleit Undergraduate Research Scholar New Haven, CT
Advisor: Professor Jeffrey (Jeff) Kenney

- Joined and tidied ultraviolet-through-infrared photometric data for 50 galaxies within the Virgo Cluster.
- Modeled the observational data with theoretical spectral energy distributions and derived physical properties from these models, revealing a common stage of neutral gas accretion among infalling cluster galaxies.

Publications

[1] *Testing massive star evolution, star-formation history, and feedback at low metallicity: Photometric analysis of OB stars in the SMC Wing* **Fulmer, Leah M.**; Gallagher, J. S.; Hamann, W. -R.; Oskinova, L. M.; Ramachandran, V., 2020, A&A, 633, A164. Reproduce analysis using Jupyter Notebooks: Link to GitHub.

[2] *The NOAO Data Lab: Design, Capabilities, and Community Development* Fitzpatrick, M.; Olsen, K.; Eychaner, G.; **Fulmer, Leah M.**; Huang, L.; Juneau, S.; Nidever, D.; Nikutta, R.; Scott, A., 2019, ASPC, 523, 233F.

[3] *Testing massive star evolution, star formation history, and feedback at low metallicity: Spectroscopic analysis of OB stars in the SMC Wing* Ramachandran, V.; Hamann, W. -R.; Oskinova, L. M.; Gallagher, J. S.; Hainich, R.; Shenar, T.; Sander, A. A. C.; Todt, H.; **Fulmer, Leah M.**, 2019, A&A, 625, 104.

[4] *NGC 5523: An isolated product of soft galaxy mergers?* **Fulmer, Leah M.**; Gallagher, J. S.; Kotulla, R., 2017, A&A, 598, 119.

Honors, Awards, & Societies

- Madison Community Grant (awarded to BadgerBots Robotics) : *Madison Community Foundation* 2023
- Technology Education Grant (awarded to BadgerBots Robotics) : *Technology Education Foundation* 2023
- NSF Graduate Research Fellowship : *National Science Foundation* 2020
- Achievement Rewards for College Scientists Fellowship : *ARCS Foundation, Inc.* 2018
- AAS Education and Professional Development Mini-Grant : *American Astronomical Society* 2018
- Chambliss Astronomy Achievement Award Honorable Mention : *American Astronomical Society* 2018
- Doherty Award for Excellence in Astronomy : *UW-Madison Department of Astronomy* 2017
- Iron Cross Society : *Recognizing significant leadership and service at UW-Madison* 2016
- Phi Beta Kappa : *Alpha Chapter of Wisconsin* 2016
- Jay C. Halls Scholarship : *UW-Madison College of Letters & Science* 2016
- Hilldale Undergraduate Research Fellowship : *UW-Madison* 2016
- WSGC Undergraduate Research Fellowship : *Wisconsin Space Grant Consortium* 2016
- WSGC Undergraduate Scholarship : *Wisconsin Space Grant Consortium* 2016
- Fay Ajzenberg-Selove Award : *UW-Madison Department of Physics* 2016

Talks, Workshops, & Community Service

- AAS Site Visit Team 2019 - 2023
  Selected Member : American Astronomical Society : Ithaca, NY
- "Networking in Astronomy" 2019
  Selected Talk : .Astronomy11 : Toronto, Canada : Link
- Know Your Power Special Session 2019
  Workshop : Space Telescope Science Institute; 233rd AAS Meeting : Baltimore, MD; Seattle, WA
- AstroSites: How to Build & Publish a Professional Website 2019
  Selected Workshop & Published Webpage : 233rd AAS Meeting : Seattle, WA : Link
- "How Astronomy's Most Intriguing Discoveries Happen by Accident" 2019
  Talk : Astronomy on Tap : Seattle, WA : Link
- "Data-Driven Astronomy in the 2020s and Beyond" 2018
  Talk : Space Drafts; Astronomy on Tap : Tucson, AZ; Seattle, WA : Link
- "Getting Started with the NOAO Data Lab" 2018
  Selected Unconference Session : Python in Astronomy Conference : New York, NY
- "Seeking Out Mentors and Surviving Disappointment" 2018
  Podcast Interview : Get This Girl A Job Podcast : Tucson, AZ : Link
- La Serena School for Data Science 2017
  Selected Participant : Interdisciplinary Summer School : La Serena, Chile
- "A Dynamic Visualization Tool for the Analysis of SPIKE Scheduling Constraints" 2017
  Talk : Space Telescope Science Institute Summer Symposium : Baltimore, MD : Link (55:15)

Skills

Software Development & Data Analysis:
Python (advanced: numpy, matplotlib, pandas, Jupyter; intermedidate: seaborn, astropy, scipy, scikit-learn); HTML/CSS/JavaScript, SQL, LISP, IDL, Tableau, Class, CASA, IRAF (apphot, ellipse, galfit), Magphys; data collection/cleaning, joining multiple data sources, data analysis (tabular, photometric, spectroscopic).

Communication & Collaboration:
GitHub (git), academic publication, public speaking, poster presentation, collaboration with users, networking; communication with diverse stakeholders, program coordination, grant writing, fiscal responsibility, education.

Natural Healing:
Spiritual practice, meditation, hatha yoga / posture therapy, vision improvement, fertility awareness, sobriety.

World Languages:
Spanish (advanced: speaking, reading, writing).