J. Marcus Hughes

Research Computer Scientist

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Github: jmbhughes

SKILLS

- Highly-dedicated, adept scientific programmer with a background in heliophysics
- 3 years experience in science operations pipeline development
- Competent in converting design specifications and scientific papers into scientific code
- Has experience in Python, Matlab, C, C++, Java, Mathematica, IDL, Perl, and Prolog
- Understanding of database principles and SQL
- Exceptional at public speaking and communicating
- Creative, independent problem solver with a quick ability to learn new skills as needed
- Skilled in machine learning theory and application
- Passionate and accomplished in image processing

EXPERIENCE

Southwest Research Institute, Boulder, CO-
Research Computer Scientist **JUNE 2021 - PRESENT**

- Designed and implemented PUNCH data reduction pipeline

University of Colorado Boulder/NOAA, Boulder, CO-
Associate Scientist 1 **MAY 2020 - JUNE 2021**
Contracted software developer **JULY 2018 - MAY 2020**

- Developed Python reprocessing pipeline for scientific quality GOES-R EXIS EUVS data
- Refined GOES-R SUVI image segmentation algorithm to produce thematic maps
- Denoised SUVI extended coronal imaging campaign images for research publication

University of Colorado Boulder, Boulder, CO-
Graduate student researcher and teacher **AUGUST 2018 - MAY 2020**

- Taught summer Discrete Mathematics course, developed an open source curriculum
- Participated in weekly paper readings and presentations
- Completed relevant coursework: Machine Learning, Current Topics in Computer Science, Computer Graphics

EDUCATION

University of Colorado Boulder, Boulder, CO - *some graduate work in computer science*
MAY 2018 - MAY 2020

Williams College, Williamstown, MA - *BA in computer science with honors & astronomy*
AUGUST 2014 - JUNE 2018

NOTABLE PUBLICATIONS

- *Seaton, D.B., Hughes, J. M., Tadikonda, S. M., Caspi, A., DeForest, C., Krimchansky, A., Hurlburt, N. E., Seguin, R., Slater, G.,* **The Sun's Dynamic Extended Corona Observed in Extreme Ultraviolet,** Nature Astronomy, 2021, 5, 1029-1035
- *Hughes, J. M., Hsu, V., Seaton, D. B., Bain, H., Darnell, J. M., and Krista, L.,* **Real-time solar image classification: Assessing spectral, pixel-based approaches,** Journal Space Weather Space Climate, 2019, 9, A38
- *Seaton, D. B., Darnell, J. M., Hsu, V., and Hughes, J.M.,* **GOES-R Series Solar X-Ray and Ultraviolet Irradiance**, chapter in The GOES-R Series, edited by S. Goodman, T. Schmit, J. Daniels, R. Redmon, published by Elsevier, October 2019

NOTABLES

- Presented over 15 conference/seminar talks with three invited conference talks
- Reviewed for *International Conference on Learning Representations* in 2019, 2020 and *International Conference on Machine Learning* in 2020
- Participated in three hiring committees
- Undergraduate thesis research honors including Sigma Xi Society induction (2018) for novel research uniting astronomy and computer science
- Jack Kent Cooke Scholarship Recipient (2014-2018), annual $30,000 scholarship based on achievement and need
- Winner of 4 undergraduate summer internships involving scientific computing
    - 2014: Space Telescope Science Institute/Johns Hopkins
    - 2015: Swarthmore College
    - 2016: Western Kentucky University
    - 2017: Boulder Solar Alliance
- Winner of the CIRES 2020 Administrator's award for work on GOES-R constellation

REFERENCES

Available upon request