Maria Patterson

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PROGRAM MANAGEMENT ■ DATA PRODUCT DESIGN ■ MACHINE LEARNING

EXPERIENCE

HIGH ALPHA
Machine Learning Engineer
Dec 2019 – present | ♀ Indianapolis, IN
- Leading the design of architecture for cloud-based (GCP and AWS) data analysis pipelines and developing machine learning models for early-stage B2B SaaS companies in the High Alpha venture studio portfolio.

Data Scientist
Oct 2018 – Dec 2019 | ♀ Indianapolis, IN
- Working with B2B SaaS startups in the High Alpha portfolio to augment their software products with data science.
- Machine learning and data projects include classifier models, similarity-based recommendations systems, and lead scoring for several companies, including an AI marketing platform company, a software for software management company, an intelligent people directory product, and a product-led growth company.

DATA INTENSIVE RESEARCH IN ASTROPHYSICS AND COSMOLOGY (DIRAC) INSTITUTE, UNIVERSITY OF WASHINGTON
Research Scientist III, Data Management Group, Large Synoptic Survey Telescope
Aug 2016 – Oct 2018 | ♀ Seattle, WA
- Architected a real-time data processing and analysis framework for terabytes of streaming astronomical data using Python, Kafka, Avro, Docker, and Prometheus and collaborated on system requirements documents in an Agile environment.
- Led the production deployment of said framework for the Zwicky Transient Facility's (ZTF) Survey alert stream distribution system, which processes data from one million changing objects in the sky each night and is hardened at 10x scale.

CENTER FOR DATA INTENSIVE SCIENCE, UNIVERSITY OF CHICAGO
Research Professional, Director of the Open Science Data Cloud
Mar 2014 – Jul 2016 | ♀ Chicago, IL
- Program manager for a petabyte scale "data commons", managing an on-prem cloud (OpenStack) and cloud-based data science projects and services and interfacing with systems and software engineers in a matrix organization.
- Architected a 300 TB data hub as Technical Lead for the Open Commons Consortium on the NOAA Big Data Project.
- Organized an international data science and cloud computing summer fellowship program and supervised student projects.

Research Professional
Sep 2013 – Jul 2016 | ♀ Chicago, IL
- Managed and developed analytics for an automated machine learning pipeline for real-time cloud processing and analysis of daily acquired NASA satellite image data using Python, Hadoop, Accumulo, and Storm.
- Research projects include using R for detecting spatial patterns in geo-coded medical records and modeling data storage systems to analyze hardware performance issues.

UNIVERSITY OF EDINBURGH
Visiting Fellow, Royal Observatory & School of Informatics
Jun 2013 – Aug 2013 | ♀ Edinburgh, Scotland
- Programmed a Python tool to test query speeds and compare system utilization in row-oriented vs. column-oriented SQL database implementations for a large scale astronomical dataset.

EDUCATION

NEW MEXICO STATE UNIVERSITY | PhD, Astronomy
May 2013 | ♀ Las Cruces, NM

UNIVERSITY OF CHICAGO | BA, with Honors, Physics with a specialization in Astrophysics
May 2007 | ♀ Chicago, IL

SKILLS

Industry Specific Expertise	Interpersonal	Technologies
Data science at scale • Analysis	Cross-matrix organizations	Computing languages: Python, R, SQL
Machine learning Python tools •	Public speaking • University teaching	Open source: Docker, Kafka, Avro
Production quality data engineering	Scientific writing and presentations	Clouds: AWS, Google Cloud Platform
	Public outreach • Mentoring	

PROFESSIONAL ENGAGEMENT

Speaker, "Streaming your science: Analytics for real time" — Women in Analytics 2020	Columbus, OH | Aug 2020
Speaker, "Cloud architecture for the data scientist" — Indy Cloud Conf 2020	Indianapolis, IN | Jun 2020
Speaker, "Building a newsfeed from the Universe" — Kafka Summit 2019	San Francisco, CA | Oct 2019
Panelist, Careers in Science — Field Museum's 5th Annual Chicagoland Women in Science Mixer	Chicago, IL | Oct 2019
Panelist, "Befriending failure" — Tapia Celebration of Diversity in Computing	Atlanta, GA | Sep 2017
Speaker, "Building a community fountain around your data stream" — PyData 2017	Seattle, WA | Jul 2017
Panelist, "Turning Big Data into Big Opportunities" — Tapia Celebration of Diversity in Computing	Austin, TX | Sep 2016

ADVISORY AND COMMITTEE SERVICE

Committee Member — AAS's Committee on the Status of Women in Astronomy (CSWA) Jun 2017 - present
- Charged with providing recommendations to the American Astronomical Society Board of Trustees for practical measures that can be taken to improve the status of women in astronomy and encourage entry into the field.

Sub-group committee member — CSWA Strategic Plan Oct 2019 - present
- Charged with writing a cascade model strategic plan, providing direction for the next 10 years of focus areas important to women in the astronomical community.

Sub-group committee member — CSWA Astro2020 Decadal Survey White Papers Jun 2019 - present
- Co-authored two science white papers on state of the profession to the Astro2020 Decadal Survey on Astronomy and Astrophysics organized by the National Academy of Sciences.

Planning Committee — PyData Seattle Conference Jun - Jul 2017
- Reviewed and assessed conference talk proposals from speaker applications.

Diversity Committee — PyData Seattle Conference Jul 2017
- Responsible for finding funding for and organizing the awarding of scholarships for attending the conference.

Roundtable Contributor — White House OSTP Open Data Roundtable Series Jun 2016
- Contributed to the White House Office of Science and Technology Policy and Center for Open Data Enterprise Open Data Roundtable on Public-Private Collaboration, representing the academic and not-for-profit research perspective and resulting in "The Global Impact of Open Data" report.

VOLUNTEER EXPERIENCE AND EXTRACURRICULARS

STEM gallery volunteer — The Children's Museum of Indianapolis, Beyond Spaceship Earth exhibit	Aug 2019 - present
Advisor — #BuiltByGirls WAVE Program	Jun 2019 - present
Member — American Astronomical Society's Committee on the Status of Women in Astronomy	Jun 2017 - present
Editor — AASWomen's Women in Astronomy Newsletter	Aug 2016 - present
Volunteer — UChicago Alumni Schools Committee	Aug 2009 - present
Co-Organizer — PyLadies Seattle and PyData Seattle Meetup Groups	Jan 2017 - Oct 2018
Mentor — New York Academy of Sciences NEXT Scholar Program	Mar 2017 - Aug 2017
Volunteer — PyData Seattle, Diversity Committee	Jul 2017
Panelist — "Taking the Next Step" Career Program, University of Chicago	2015, 2019
Distance Runner — 20 races including 1 marathon and 7 half marathons	athlinks.com
Amateur woodworker— Small furniture items and hand-tool woodcarving	

HONORS AND AWARDS

20th Century Fox and PepsiCo's "Search for Hidden Figures" in STEM, Hidden Figure Awardee in Professionals category	2017
Murrell Award for Professional Development and Research Accomplishment	2013
NMSU Outstanding Graduate Assistant Award (awarded twice)	2009 & 2013
Pegasus Award for Excellence in Teaching	2010

SELECT PUBLICATIONS

Findings and Recommendations from the AAS Committee on the Status of Women in Astronomy:
Advancing the Career Development of Women in Astronomy
N. Zellner, J. McBride, N. Morrison, A. Olmstead, M.T. Patterson, G. Rudnick, A. Venkatesan, H. Flewelling, D. Grinspoon, J. D. Mink, C. Richey, A. Speck, C. A. Thomas, S. E. Tuttle
Published in: Bulletin of the American Astronomical Society, Vol. 51, Issue 7, id. 170 (2019)

Findings and Recommendations from the AAS Committee on the Status of Women in Astronomy:
Towards Eliminating Harassment in Astronomy
N. Zellner, J. McBride, N. Morrison, A. Olmstead, M.T. Patterson, G. Rudnick, A. Venkatesan, H. Flewelling, D. Grinspoon, J. D. Mink, C. Richey, A. Speck, C. A. Thomas, S. E. Tuttle
Published in: Bulletin of the American Astronomical Society, Vol. 51, Issue 7, id. 169 (2019)

The Zwicky Transient Facility Alert Distribution System
M.T. Patterson, E.C. Bellm, B. Rusholme, F.J. Masci, M. Juric, K.S. Krughoff, V.Z. Golkhou, M.J. Graham, S.R. Kulkarni, G. Helou, Zwicky Transient Facility Collaboration
Published in: Publications of the Astronomical Society of the Pacific, Nov 2018, Vol. 131, Iss. 995

Detecting Spatial Patterns of Disease in Large Collections of Electronic Medical Records Using Neighbor-Based Bootstrapping
M.T. Patterson and R.L. Grossman
Published in: Big Data, Sep 2017, Vol. 5, No. 3

The Case for Data Commons: Towards Data Science as a Service
R.L. Grossman, A. Heath, M. Murphy, M.T. Patterson, W. Wells
Published in: Computing in Science Engineering special issue: Science as a Service, Sep 2016, Vol. 18, Issue 5