Alexander M. Ritchie

EECS Dept., 1301 Beal Ave.
University of Michigan
Ann Arbor, MI 48109-2122

(336) 509-9669
aritch (at) umich (dot) edu
https://aritchie9590.github.io

Education

University of Michigan **(2017-Present)**

- **Ph.D.** in **Electrical and Computer Engineering (Machine Learning)**
  Advisors: Clayton Scott and Laura Balzano
- **MS** in **Electrical and Computer Engineering (Machine Learning)**
  Awarded: December 2018
  GPA: 3.82

Georgia Institute of Technology **(2014-2017)**

- **BS** in **Electrical Engineering**, *highest honors*
  Awarded: December 2016
  GPA: 3.87

Skills

Programming - Python, C++, Matlab, Julia, Bash,
Python Libraries - NumPy, Jax, SciPy, Pandas, Scikit-Learn, PyTorch, PySpark, XGBoost, NLTK, Jupyter Notebooks, Seaborn, Matplotlib
Tools/Frameworks/Data - Git, SQL, Apache Spark, Flask, Linux, Tableau, Excel
Cloud (AWS) - Sagemaker, Rekognition, DynamoDB, Glue, Kinesis
Specialty - Statistical Learning, Inference, Modeling, Deep Learning, Efficient Algorithms, Data Analysis
Personal/Professional - Autodidact, Problem Solving, Personal Communication, Listening, Accountability, Integrity, Ownership, Independence, Multitasking, Public Speaking, Technical Writing, Leadership, Conflict Resolution

Professional Experience

Veritas AI
Technical Consultant (Volunteer) - McLouth Waterfront Alliance, 2022
Applied Scientist Intern - Amazon, 2021
Graduate Student Instructor - University of Michigan, 2021 - present
Graduate Student Research Assistant - University of Michigan, 2017 - present
Summer Intern Mentor - SPADA Lab, University of Michigan, 2020
Graduate Teaching Assistant - Georgia Tech, 2017
Avionics Engineer Intern, Honda Aircraft Company, 2016
Undergraduate Teaching Assistant - Georgia Tech, 2015 - 2016
Hardware Verification Engineer Intern, IBM, 2015
Electrical Systems Engineer Intern, Honda Aircraft Company, 2015
Undergraduate Research Assistant, Georgia Institute of Technology, 2014

Selected Honors and Awards

Best Departmental Speed Oral Presentation - EECS, MSSISS 2021
Poster Award, Most Likely to Make an Impact in the Field - UM Data Science Symposium 2020
Best Reviewer, NeurIPS 2019
Best Departmental Poster - EECS, MSSISS 2019
ECE Departmental Ph.D. Fellowship - University of Michigan
Warren L. Batts Scholarship, 2016
Member - Eta Kappa Nu, 2015
Member - Phi Theta Kappa, 2013
Graduation Marshall (GTCC), 2013

Service

Co-Chair - MSSISS 2022
Reviewer - NeurIPS 2018-2020
Reviewer - ICML 2020
Reviewer - AISTATS 2018
Member - Mechanism Design for Social Good Working Group, 2020-2021
Primary Organizer - UM Statistical Machine Learning Reading Group, 2018-2020
Primary Organizer - UM Statistical Machine Learning Reading Group Workshop, 2019
UM ECE Ambassador, 2019-2021
Volunteer - Washtenaw County Jail, 2017-2019
Events Chair - Hall Council (Gatech), 2015
President - STEM Club (GTCC), 2013
Vice President - Phi Theta Kappa (GTCC), 2013
President and Founder - Chess Club (GTCC), 2012-2013

Publications and Preprints

Online Platforms and the Fair Exposure Problem Under Homophily. J Schoeffer, A Ritchie, K Naggita, F Monachou, J Finocchiaro, M Juarez. *37th AAAI Conference on Artificial Intelligence (AAAI-23)*

Supervised PCA: A Multiobjective Approach. A Ritchie, L Balzano, C Scott. *arXiv preprint arXiv:2011.05309, 2020.*

Consistent Estimation of Identifiable Nonparametric Mixture Models from Grouped Observations. A Ritchie, R Vandermeulen, C Scott - *Advances in Neural Information Processing Systems, 2020.*

Supervised Principal Component Analysis via Manifold Optimization. A Ritchie, C Scott, L Balzano, D Kessler, C Sripada - *IEEE Data Science Workshop, 2019.*

Controlled sequential shape changing components by 3D printing of shape memory polymer multimaterials. K Yu, A Ritchie, Y Mao, ML Dunn, HJ Qi - *Procedia Iutam, 2015.*

Selected Talks and Posters

Online Platforms and the Fair Exposure Problem Under Homophily. *ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization, 2022.* (Poster)

NDIGO: Consistent Estimation of Identifiable Nonparametric Mixture Models from Grouped Observations. *Michigan Student Symposium for Interdisciplinary Statistical Sciences, 2021.* (Poster - Best Departmental Speed Oral Presentation)

NDIGO: Consistent Estimation of Identifiable Nonparametric Mixture Models from Grouped Observations. *University of Michigan Data Science Symposium, 2020.* (Poster - Most Likely to Make an Impact in the Field Poster Award)

NDIGO: Consistent Estimation of Identifiable Nonparametric Mixture Models from Grouped Observations. *University of Michigan, Michigan Student Artificial Intelligence Lab, 2020.* (Talk)

Fair ML and the Domain Adaptation Problem. *Mechanism Design for Social Good Working Group, 2020.* (Talk)

Public Interest, Money, and Machine Learning: Move Fast and Break Things? *University of Michigan, Dearborn, IMSE 586 Guest Lecture, 2019.* (Talk)

Supervised Principal Component Analysis via Manifold Optimization. *Midwest Machine Learning Symposium, 2019.* (Poster)

Supervised Principal Component Analysis via Manifold Optimization. *IEEE Data Science Workshop.* 2019. (Talk)

Toward Convergence of Non-Convex Grassmannian Optimization for Supervised PCA. *University of Michigan, Statistical Machine Learning Reading Group Workshop, 2019.* (Talk)

Sketched Gauss-Newton Optimization for Deep Learning. *University of Michigan, EECS 598 Deep Learning Student Poster Session. 2019.* (Poster)

Supervised Principal Component Analysis via Manifold Optimization. *University of Michigan, Michigan Student Symposium for Interdisciplinary Statistical Sciences.* 2019. (Poster - Best Departmental Poster)

Automatic Segmentation of Tumorous Liver CT Scans. *University of Michigan, EECS 556 Image Processing Poster Competition.* 2018. (Talk - Second Place)