Alex Ritchie

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Innovative and technical Machine Learning (ML) expert pursuing opportunities to utilize strong leadership, technical, teamwork, and communication skills to solve complex problems and provide insight from data. Key accomplishments:

- Architected and developed Natural Language Processing (NLP) solutions at Amazon that have generated substantial business value
- Led technical efforts and managed several successful research projects with publications at top ML conferences

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Work Experience

Non-Von - Artificial Intelligence Engineer   *July 2023 - Present*
- Lead research and development of bio-inspired ML algorithms in co-design of neuromorphic hardware
- Leverage latest results from neuroscience and ML to create new models and refine system design
- Developer focused on model training, efficient inference, approximation algorithms, optimization, and firmware

Amazon - Applied Scientist Intern (Alexa Speech)   *Summer 2021*
- Led development of a Transformer architecture for speaker identification
- Performed design, implementation, training, and analysis as solo developer on the project
- Delivered a percentage point increase in intra-home speaker ID accuracy via reduction of false positives

ExxonMobil - Electrical Field Engineer Intern   *Summer 2017*
- Led the upgrade and redesign of the control system for a key terminal of a major US pipeline
- Delivered system design, control logic, and oversaw on-site installation

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Education

University of Michigan   *2017 - Present*
- **Ph.D.** in **Electrical and Computer Engineering (ML Track)**
  Expected Completion December 2025
- **MS** in **Electrical and Computer Engineering (ML Track)**
  GPA: 3.82

Georgia Institute of Technology   *2014 - 2016*
- **BS** in **Electrical Engineering**, *highest honors*
  GPA: 3.87

Skills

Skill Areas: Generative AI, NLP, Computer Vision, Statistical Modeling, Data Analysis, Optimization
Methods/Models: LLMs / Transformers, Prompt Engineering, RAG, Diffusion Models, Classical ML, Ensemble Methods
Programming: Python, C++, Bash, Julia, R, Matlab
Python Libraries: PyTorch, Pandas, Keras, Transformers, NLTK, LangChain, Scikit-Learn, SciPy, NumPy
Tools/Data: Git, SVN, SQL, Linux, Tableau, Excel
Cloud (AWS): Sagemaker, Rekognition, DynamoDB, Glue, Kinesis
Professional: Communication, Problem Solving, Collaboration, Time Management, Decision Making, Critical Thinking

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Selected Publications

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, 2023*

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

Visit My Github and Personal Website to Learn More
aritchie9590.github.io | github.com/aritchie9590