

# Avesta Ahmadi

Computational Scientist

## About me

- Experienced computational Modelling specialist (5+ years), consistently making a meaningful impact in various work environments as a researcher and engineer, specifically related to clean energy production.
- Aiming at making a positive impact in the energy sector and transition to clean energy by employing innovative and advanced analytical tools to enhance understanding of energy systems via evidence-based research.

## I believe that:


- knowledge-sharing promotes creativity in team environment,
- respect and open communication leads to a healthy work environment,
- there is as much learning in mentoring as in studying,
- continuous learning leads to consistent growth.


## Areas of specialization

- Mathematical and Inverse Modelling, Machine Learning, Predictive Modelling, Advanced Statistical Analysis, and Supervised and Unsupervised Learning.
- Proficient in Battery Modelling techniques such as microscale modelling, DFN and SPM.
- Proficient in preparing scientific, technical, and non-technical reports with a proven record of technical writing.
- Experienced with Data Visualization and Exploratory Analysis tools such as Matplotlib, and familiar with Tableau.
- Time-Series Forecasting by physical Modelling or Deep Learning, including different architects of Neural Networks such as DNN, RNN, CNN, and LSTM.
- Proficient in programming languages such as Python, MATLAB, and COMSOL.


## Extra Curricular


- President of SIAM Chapter - McMaster University - volunteer work - organizing seminars.
- Graduate Ambassador for CSE Program - volunteer work - promoting CSE school


 LinkedIn

 Personal Webpage

 Github

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## PROFESSIONAL EXPERIENCE

### Senior Data Quality Specialist

COHERE INC.

01/25 – Present

 Ontario, CA

- Oversaw the work of an army of annotators to ensure high-quality data generation for LLM models; provided continuous feedback and guidance to improve annotation accuracy and consistency; trained new annotators; provided ongoing guidance and mentorship to annotation teams.
- Audited, ranked, and corrected machine learning data to improve LLM model training accuracy and consistency; identified and recommended opportunities for workflow and quality optimizations; reviewed and edited human-annotated data across multiple projects; delivered detailed feedback to cross-functional teams on recurring trends and quality issues;
- *Technical Skills: Prompt Engineering, Slack, Annotation Auditing, Designing Human Evaluation Tasks.*

### Data/Modelling Scientist

GENERAL MOTORS INC. & MCMASTER UNIVERSITY

09/18 – 09/24

 Ontario, CA

- Conducted advanced research on Modelling processes of Li-ion cells, employing scientific computing and predictive Modelling to address data-intensive challenges in clean energy management, supporting the objectives of enhancing energy system efficiency and reliability. [1, 2, 3]
- Leveraged Modelling, learning, and optimization techniques to learn an optimal dynamical model for an energy system from electrochemical data.
- Led complex problem-solving initiatives, producing innovative solutions that translated into robust models of inefficiency in the system, supported by extensive simulation and data analysis.
- *Technical Skills: Data-Driven Learning, Inverse Modelling, Bayesian Inference, Optimization, Numerical Modelling, MATLAB, Statistical Modelling, DFN & SPM Model, Physical Modelling, Forecasting.*

### Algorithm Engineer & Researcher

PULSENICS INC.

02/22 – 01/23

 Ontario, CA

- Leveraged model discovery and system identification techniques utilizing large amounts of data, to model time-series data by finding an optimal form of dynamics governing the system, focused on interpretable and scalable predictive models. [1]
- Enhanced estimation of the state of the system (SoC/SOH) using a feedback loop and filtering techniques (Kalman Filtering) to quantify the confidence in estimations, applicable to prediction and control of LFP batteries, by utilizing look-up tables of cell voltage versus SoC in relaxation mode, equivalent circuit modelling, Electrochemical Impedance Spectroscopy data, and optimization and calibration techniques.
- Spearheaded a data science initiative by voluntarily engaging in a research project to support the company's evolving needs (which culminated in a chapter of my Ph.D. dissertation), engaged with a partner organization to address their needs, articulated complex analytical concepts to internal and external stakeholders, and prepared high-quality deliverables of research progress efficiently.
- *Technical Skills: ML, Sparse Regression, Filtering, Equivalent Circuit Modelling, Time-series Modelling, Nonlinear Dynamics, Dimensionality Reduction, Principle Component Analysis (PCA), Python, Pandas, Numpy, Scipy, Sklearn.*

### Research & Teaching Assistant

MCMASTER UNIVERSITY

09/18 – 08/20

 Ontario, CA

- Worked on projects such as optimizing the pseudo-energy of a system to find lattice structure via Integer Programming and heuristics techniques, and univariate time-series forecasting based on classical and deep learning models. [1]
- *Technical Skills: Deep learning, TensorFlow, Keras, Integer Programming, Evaluation Metrics.*

### Senior Wireline Field Engineer


SCHLUMBERGER

07/16 – 07/18


 Iran

- Enhanced the revenue of the company by successfully leading more than 30 Wireline jobs and delivering high-quality data to clients (net value of \$100,000 to \$700,000 each).
- Planned and organized Wireline procedures, led a Wireline crew, and effectively communicated with clients to ensure seamless execution and high-quality data delivery.

## EDUCATION

Ph.D. **Computational Sci. & Eng.**  
McMaster University   
2020-2024

M.Sc. **Computational Sci. & Eng.**  
McMaster University   
2018-2020

B.Sc. **Chemical Engineering**  
Sharif University   
2010-2015

## PUBLICATIONS

- |      |   |
|------|---|
| 2022 | Data-Driven Optimal Closures for Mean-Cluster Models: Beyond the Classical Pair Approximation DOI.                                  |
| 2024 | Data-Driven Approach to Learning Optimal Forms of Constitutive Relations in Models Describing Lithium Plating in Battery Cells DOI. |