

DATA SCIENCE SUMMARY

- Experienced Machine Learning Researcher with over three years of expertise in **physics-informed algorithms**, aimed at improving complex fluids design while minimizing expenses and time spent on experimentation.
- Secured a **\$30k grant** for the Society of Rheology (SoR) through the American Institute of Physics (AIP) 2023 Venture Grant program, funding the feasibility study of a **Large Language Model using advanced NLP tokenization** on the SoR website.
- Proficient in public speaking and adept at presenting complex machine learning concepts at technical conferences, effectively engaging a varied audience.

SKILLS

Languages	Python, R, SQL, Bash, MATLAB, C#
Frameworks & Tools	TensorFlow, TensorRT, Keras, PyTorch, Sklearn, SciPy, Pandas, Matplotlib, NumPy, JAX, Git, SQLite
Quantitative Research	Mathematical Modeling and Optimization, Fractional Calculus, Statistics, Partial Differential Equations (PDEs), Computational Methods
Technical Skills	Machine Learning, Deep Learning, Generative AI, Transformers, Attention Mechanism, Natural Language Processing, Neural Operators, Convolutional Neural Networks, Computer Vision, Supervised & Unsupervised Learning, PCA, Data Visualization, Data Analysis, HPC, CUDA, \LaTeX
Soft Skills	Leadership, Writing, Public Speaking, Time Management, Communication, Teamwork, Problem Solving, Critical Thinking

TECHNICAL EXPERIENCE

Graduate Researcher, Northeastern University, Boston, MA	May 2021 — Present
<ul style="list-style-type: none">Implementing Transformers and Neural Operators in modeling complex fluids for both forward and inverse problems, aiming to significantly reduce computation times compared to PINNs.Developing physics-inspired machine learning algorithms for complex fluids design and discovery.Proposed a universal surrogate model to solve fractional partial integro-differential equations, reducing relative L2 error from 0.048% to 0.019%, surpassing competitive frameworks.Developed a multi-fidelity platform for Johnson & Johnson’s Baby Shampoo, achieving up to a 91% reduction in experimental costs by minimizing the need for high-fidelity data.Launched an automated physics-informed platform for selecting constitutive models and parameters, cutting over 12 months from constitutive model R&D.Deployed a research group website using a CI/CD environment (GitHub Actions).Guided two Ph.D. students in physics-informed machine learning, contributing to two research papers in the field within a year.	
Graduate Researcher, K. N. Toosi University of Technology, Tehran, Iran	Sept. 2018 — Feb. 2020
<ul style="list-style-type: none">Conducted in-depth numerical analysis on micromixing through the application of ferrohydrodynamics.Solved a system of five coupled nonlinear PDEs using a FEM software package (COMSOL) to improve the multiphysics mixing in biological diagnostics by 24%.Increased the mixing efficiency of ferrofluid to 98% using numerical and data-driven approaches.	

EDUCATION

Ph.D. in Applied Machine Learning in Mechanical Engineering, Northeastern University, Boston, MA	May 2021 — Present
<ul style="list-style-type: none">GPA: 3.96/4.00	
Licentiate Degree in Data Analytics, Northeastern University, Boston, MA	May 2021 — Dec. 2023
<ul style="list-style-type: none">GPA: 4.00/4.00Select Courses: Computational Statistics, Data Mining/Machine Learning, Collecting, Storing, and Retrieving Data.	
M.Sc. in Mechanical Engineering - Energy Conversion, K. N. Toosi University of Technology, Tehran, Iran	Sept. 2017 — Feb. 2020
<ul style="list-style-type: none">GPA: 4.00/4.00Honors Graduate: Ranked 3rdSelect Courses: Advanced Math, CFD.	
B.Sc. in Mechanical Engineering, K. N. Toosi University of Technology, Tehran, Iran	Sept. 2012 — Feb. 2017
<ul style="list-style-type: none">Select Courses: Optimization, Numerical Methods.	

HONORS AND REWARDS

John and Katharine Cipolla Ph.D. Merit Award	Nov. 2022
<ul style="list-style-type: none">Honored for top research publications among 2,200+ MIE grad students.	