Ramansh Sharma

CONTACT INFORMATION

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RESEARCH INTERESTS

Neural operator architectures (DeepONet, FNO, Kernels) for interpretable, scalable, and adaptive operator learning and physics-informed learning for scientific machine learning applications.

EDUCATION

University of Utah, Salt Lake City, Utah USA, **2023-2028** (expected)

Ph.D. in Computing
Advisor: Varun Shankar
GPA: 3.8/4

SRM University, Chennai, Tamil Nadu India, **2019-2023**

Bachelors of Technology, Computer Science and Engineering
GPA: 9.7/10 (3.9/4)

HONORS AND AWARDS

- Graduated first class with distinction from SRM University, 2023
- NeurIPS Scholar Award, 2022
- NeurIPS Travel Award, 2022

ACADEMIC EXPERIENCE

University of Utah, Salt Lake City, UT USA

Graduate Student **August, 2023 - Present**
Ongoing Ph.D. research on operator learning methods for scientific machine learning applications.

Teaching Assistant **August, 2024 - December 2024**
CS 4230/6230 (Parallel and High-Performance Computing)

PUBLICATIONS

Google Scholar - `https://scholar.google.com/citations?hl=en&user=lUmqHckAAAAJ`

1. **Ramansh Sharma**, Matthew Lowery, Houman Owhadi, and Varun Shankar. Fluids You Can Trust: Property-Preserving Operator Learning for Incompressible Flows (**Preprint**).
2. **Ramansh Sharma** and Varun Shankar. Ensemble and Mixture-of-Experts DeepONets For Operator Learning (**TMLR, 2025**).
3. **Ramansh Sharma** and Varun Shankar. Accelerated Training of Physics Informed Neural Networks (PINNs) using Meshless Discretizations (**NeurIPS, 2022**).
4. Jordi Planas, Daniel F. Quevedo, Galina Naydenova, **Ramansh Sharma**, Cristina Taylor, Kathleen Buckingham, and Rong Fang. Beyond modeling: NLP Pipeline for efficient environmental policy analysis (**KDD, 2021**).

SERVICE

Vice-President of Graduate Student Advisory Committee. **August, 2024 - August 2025**

REVIEWING EXPERIENCE

1. Neural Information Processing Systems (**NeurIPS**), 2026 - present.
2. Transactions on Machine Learning Research (**TMLR**), 2026 - present.

Professional Experience

Kahlert School of Computing, University of Utah

Research Assistant **August, 2023 - Present**

Working on interpretable, scalable, and adaptive operator learning methods for a variety of scientific machine learning applications.

Los Alamos National Laboratory

Graduate Student **May, 2025 - August 2025**

Worked on developing a scale-bridging framework that connects fine-scale pore-level flow physics (Stokes equations) to coarse-scale models (Darcy and Brinkman equations) using numerical solvers and machine learning. By combining inverse modeling, differentiable solvers, and data-driven parameter learning, it aims to efficiently predict macroscopic flow behavior from microscopic structures in porous media.

Approximate Bayesian Inference team, RIKEN

Remote Collaborator **October, 2021 - June, 2023**

Research focusing on **curriculum learning** and its advantages over independent and identically distributed (**i.i.d.**) training. Implemented and executed comprehensive experiments with memorability metrics such as **residual** and **leverage scores**. Presented technical reports with the methodology and results to the team.

World Resources Institute

Machine Learning Engineer **February, 2021 - September, 2021**

Identifying economic and financial incentives for forest and landscape restoration using Natural Language Processing. Implemented custom **early stopping** features for **sentence transformers**. Led the experiments and discussion around the reproducibility issue in policy instrument **binary** and **multiclass classification** with **Sentence-BERT**. Presented our team's paper, *Beyond modeling: NLP Pipeline for efficient environmental Policy Analysis*, at ACM's annual KDD conference at the Fragile Earth workshop.

Omdena

Platform Engineer **January, 2021 - September, 2021**

Developed Airtable scripts in Javascript to index, modify, and maintain the community database. Developed an end-to-end system for community engagement and participation by integrating GitHub, Slack, and Airtable APIs together. Designed the first of its kind AI-4-good Python library, OmdenaLore, with more than 35000 lines of code.

Data Scientist **October, 2020 - December, 2020**

Worked for a silicon valley startup, connecting volunteer opportunities with prospective volunteers in a timebanking system. Designed multiple recommender models for volunteers and project administrators based on skills and interests.

Machine Learning Engineer **August, 2020 - September, 2020**

Analyzed the environmental, geographic, geospatial, and socio-economic factors that contributed to illegal dumpsites around the world. Led the ML team through modeling, iterating, and refining classifiers to predict illegal dumpsites based on environmental, geographic, geospatial, and socio-economic factors factors such as population, population density, distance to roads, venue categories, and distance to venue categories.

Graduate Coursework

1. Graduate Algorithms
2. High Dimensional Data Analysis
3. Scientific Computing I
4. Scientific Computing II

5. Probabilistic Machine Learning
6. High Performance & Parallel Computing

Computer Skills

- Languages: Python (**8** years experience), Matlab (Octave), C++, Java, Javascript.
- Parallel Programming: CUDA, MPI, OpenMP.
- Machine Learning: PyTorch, Jax, Haiku, NNX, Optax, CuPy, TensorFlow.
- Technologies: Weights&Biases, Flask, Heroku, Docker, FastAPI.
- Scientific Visualization: Paraview.