

# Ramansh Sharma

rsmath.github.io | sharmar@bxscience.edu

## EDUCATION

### SRM IST

#### UNDERGRADUATE

#### COMPUTER SCIENCE

2019 - 2023 | Chennai, India

CGPA: 9.72/10

## LINKS

Github:// [rsmath](#)

LinkedIn:// [ramanshsharma](#)

Twitter:// [ramanshsharma1](#)

## COURSEWORK

### UNDERGRADUATE

Transform and Boundary Value Problems

Probability and Queue Theory

Advanced Calculus and Complex Analysis

Discrete Mathematics for Engineers

Object Oriented Design and Programming

Compiler Design

## SKILLS

### PROGRAMMING

Python • Numpy • Pandas

TensorFlow • Keras • PyTorch

Matlab • Jax • CuPy

Haiku • SciPy • C++

### MACHINE LEARNING

Physics-informed Neural Network

Regression • Classification

Clustering • Transformers

Recurrent Neural Networks

Natural Language Processing

### TECHNOLOGIES

Weights & Biases • Flask

Docker • Heroku • Airtable

Git • GitHub • Cuda

## REFERENCES

#### Prof. Varun Shankar

Assistant Professor Lecturer, The University of Utah

[shankar@cs.utah.edu](mailto:shankar@cs.utah.edu)

#### Dr. Gian Maria Marconi

Postdoctoral Researcher, Approximate Bayesian Inference team

[gianmaria.marconi@riken.jp](mailto:gianmaria.marconi@riken.jp)

## LANGUAGES

English • Fluent • Professional

Hindi • Fluent • Professional

Spanish • Beginner

## EXPERIENCE

### UNIVERSITY OF UTAH | VISITING SCHOLAR

August 2021 - Present | Remote

- Working on novel methodologies to solve partial differential equations (PDE) with **physics-informed machine learning** techniques.
- Implemented **more than 15** different **physics-informed neural networks** (PINN) architectures in PyTorch with a **custom autograd backend** to solve linear and non-linear spatial and time-dependent PDEs in 2D and 3D such as Poissons's, heat, and advection-diffusion equations.
- Focusing on accelerating PINN training with traditional Scientific Computing methods such as Radial basis functions finite differences. Working on multiple papers on various extensions of our methodology.

### APPROXIMATE BAYESIAN INFERENCE TEAM | REMOTE

#### COLLABORATOR

October 2021 - Present | Remote

- Carrying out 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** in **Jax**.
- Presented a technical report summarizing the methodology, experimentation decisions, and results.

### WORLD RESOURCES INSTITUTE | MACHINE LEARNING ENGINEER

February 2021 - September 2021 | Remote

- Implemented **early stopping** feature for **sentence transformers** with complex logical flow using **baseline** and **threshold** parameters in conjunction with **moving averages** of the training and validation accuracies.
- Lead and successfully set up a collaborative **Weights & Biases** project by integrating the modeling codebase with the tool's API for automated **hyperparameter tuning** using random and **Bayesian** methods, efficiently storing experiment results, and visualizing **training** and **validation** performance on accuracy, **Weighted** and **Macro F1** scores.
- Contributed heavily in the experiments and discussion revolving around the reproducibility issue in policy instrument **binary/multiclass classification** with **Sentence-BERT**. Investigated different hyperparameter optimization strategies to mitigate **model variability**.

## PUBLICATIONS

- Ramansh Sharma** and Varun Shankar. Accelerated Training of Physics Informed Neural Networks (PINNs) using Meshless Discretizations (Accepted at NeurIPS, May 2022). [[arXiv](#)] [[GitHub](#)]
- 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 conference, August 2021). [[arXiv](#)] [[Video](#)] [[GitHub](#)]