Ramansh Sharma

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EDUCATION

SRM IST
Undergraduate
Computer Science
2019 - 2023 | Chennai, India
CGPA: 9.74/10

LINKS

Github:// **ramanshsharma2806**
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

Dr. Gian Maria Marconi
Postdoctoral Researcher, Approximate Bayesian Inference team
gianmaria.marconi@riken.jp

LANGUAGES

English Fluent • Professional
Hindi Fluent • Professional
Spanish Beginner

EXPERIENCE

UNIVERSITY OF UTAH | Undergraduate Researcher

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

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

2. 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]**