Kshitij Parwani

kshitijparwani.mat18@iitbhu.ac.in +91-6354571733 P-Kshitij

About

- A curious, driven and perseverant pre-final year student at IIT-BHU majoring in Mathematics and Computing.
- Interested in doing impactful research in Theoretical and Applied aspects of Machine Learning.
- Working experience in Deep Learning, NLP, Computational Methods with theoretical understanding.

Education

2018 – 2023 (Expected)
Indian Institute of Technology, Varanasi(IIT-BHU)
Integrated Dual Degree in Mathematics and Computing
Cumulative Performance Index - ***9.47/10***

2016 – 2018
Kota, India
Disha Delphi Public School
Higher Secondary Education
Cumulative Percentage - ***93%***

Publications

Adversarial Sampling for Solving Differential Equations with Neural Networks
NeurIPS 2021 Workshop on Symbiosis of Deep Learning and Differential Equations
Kshitij Parwani, Pavlos Protopapas

Convolution Neural Network based lossy compression of hyperspectral images
Signal Processing: Image Communication, Volume 95, 2021, (Elsevier)
Yaman Dua, Ravi Shankar Singh, **Kshitij Parwani**, Smit Lunagariya, Vinod Kumar

Research work

05/2021 – present
Neural network based importance sampling approach for solving differential equations
Working under Dr. Pavlos Protopapas in the StellarDNN lab at IACS, Harvard on developing a novel sampling method using neural networks to solve differential equations.

07/2020 – 11/2020
Fuzzy Support Vector Regression (SVR) for fuzzy points' dataset
- Worked under Dr. Debdas Ghosh (IIT-BHU) to build a Support Vector Regression model for fuzzy datasets using Extension principle(Zadeh 1975)
- Outperformed existing SVR models on several datasets when using RBF kernel (paper upcoming).

09/2019 – 12/2019
Exploratory Project on Generative Modelling (Project Report Link)
An exploratory project to explore the various types of generative models. Led to successful study and implementation of 6 generative models (including 2 GANs) and comparison of results.

Projects

Reproducing BioBERT paper results for Named Entity Recognition task
[Github link]
- Transfer learning a pre-trained BERT model on Biomedical datasets for the NER task using PyTorch and HuggingFace(transformers).
- Achieved near-paper level performance.

Twitter BERT Visualizer
[Github link]
- Tackled the problem of creating a visualization of the public opinion surrounding a topic.
- Retrieve tweets of a certain hashtag, get BERT Embeddings and visualise using T-SNE methods.

Awards

Silver Medal
InterIIT Tech Meet-21: Automated Sentiment, Brand Identification and Headline Generation Challenge
Our team (6 people) was awared the **Silver medal** among teams from **18 IITs**. *[Github repo]*

Work Experience

09/2019 – 03/2020
Varanasi, India

Melopond Music Station Pvt Ltd
Project Intern
Successfully built a feature extraction and clustering pipeline for songs using deep learning models and rule-based approaches. Also contributed significantly to the web server and API design.

Teaching Experience

11/2020 – 12/2020

Teaching Assistant for AI-2: Convolutional Neural Networks by univ.ai
Live online course taught by Dr. Pavlos Protopapas (Scientific Program Director, IACS, Harvard). Involved in course activities like taking practical lab sessions, answering student questions, homework grading.

09/2020 – 10/2020

Teaching Assistant for AI-1: Fundamentals of Machine Learning by univ.ai
Live online course taught by Dr. Pavlos Protopapas (Scientific Program Director, IACS, Harvard). Involved in course activities like taking practical lab sessions, answering student questions, homework grading.

Skillset

Programming Languages:
C, *C++*, *Python*

Python libraries and frameworks:
Numpy, Pandas, Matplotlib, Pytorch, Tensorflow, Keras, Scikit-learn, Librosa

Other Technologies:
Linux, *Git*, *Latex*

Areas of Interest:
Deep Learning, *Theoretical Machine Learning*, *NLP*, *Data Science*, *Generative Models*