Stuti Pathak

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EDUCATION

University of Antwerp	2022 - 2026
Ph.D. in Applied Engineering	
Indian Institute of Technology (IIT) Indore	2019 - 2021
M.Sc. in Physics, CPI 9.68/10	
University of Delhi (DU)	2015 - 2018
B.Sc.(H) in Physics, CPI 8.216/10	

INTERESTS

Point Cloud Processing, Graph Representation Learning, Network Science, Bayesian Machine Learning

PROJECTS AND PUBLICATIONS

GP-PCS: One-shot Feature-Preserving Point Cloud Simplification (arXiv)   May 2022 - Aug 2023
With Thomas M. McDonald, University of Manchester and Prof. Rudi Penne, UAntwerp

Proposed a novel simplification method which preserves both the salient structural features and the overall shape of a point cloud without any prior surface reconstruction step. This method employs Gaussian processes suitable for functions defined on Riemannian manifolds.

Machine Learning Assisted System Identification of a Composite Plate (code)   Nov 2020 - Aug 2021
With Dr. Ankhi Roy, IIT Indore and Dr. Rajendra Machavaram, IIT Kharagpur

The mechanical properties characteristic of any composite plate were identified in frequency as well as time domain using two types of neural networks: Multi-Layer Perceptron (MLP) and Radial Basis Function Network (RBFN).

Predicting Structure from Dynamics using Neural Networks (code)   Sept 2020 - Oct 2020
With Prof. Sarika Jalan, IIT Indore

Predicted the structure of an unknown dynamical system given its time series data. A neural network was trained to perform binary classification for two classes of networks: scale free networks and Erdős–Rényi random networks.

Rumour Analysis using Twitter Mention Network (code)   April 2020 - Aug 2020
With Prof. Sarika Jalan, IIT Indore

Natural Language Processing (NLP) techniques were used to pre-process and tokenize tweets written in Devanagari script, crawled for words related to COVID-19. Analysed how rumours spread through social media platforms and compared the results for two countries: India and South Korea.

Water-Level Controller using Microprocessor 8085   Feb 2017 - April 2017
With Dr. Parul Yadav, University of Delhi

The controller built prevented overflowing of water tanks, hence minimized wastage of water.

TECHNICAL SKILLS

Languages: Python, MATLAB, Scilab
Data Handling & Machine Learning: PyTorch, scikit-learn, NumPy, SciPy, pandas, Matplotlib, seaborn
Miscellaneous: MeshLab, CloudCompare, Open3D, PyTorch Geometric, NetworkX, GPyTorch, LaTeX

Achievements

- Organized UAntwerp's biannual Network on Gaussian Processes seminar where Prof. Dr. Stephen Roberts from University of Oxford presented his work on exoplanets. (details)   2023

- Gave an in-person talk on Understanding the Significance, Processing and Analysis of Point Clouds at Network on Gaussian Processes seminar held at UAntwerp. (details)   2022

- Secured the highest CPI among all the graduating students of the 2021 M.Sc. Physics batch of IIT Indore.   2021

- Secured All India Ranks of 358, 351 and 30 in Indian Institute of Technology Joint Admission test for Masters (IIT JAM) Physics, Joint Entrance Screening Test (JEST) Physics and Delhi University Entrance Test (DUET) Physics respectively.   2019, 2019, 2018

- Awarded Indian Council of Agricultural Research (ICAR) merit scholarships for outstanding success in the Indian Certificate of Secondary Education (ICSE) board examinations as well as the Indian School Certificate (ISC) board examinations.   2013, 2015

Schools and Courses

- **Gaussian Process and Uncertainty Quantification Summer School 2022** in-person summer school conducted by University of Sheffield. (certificate)   2022

- **Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization** online course conducted by DeepLearning.AI. (certificate)   2021

- **Neural Networks and Deep Learning** online course conducted by DeepLearning.AI. (certificate)   2021

- **Machine Learning** online course conducted by Stanford University. (certificate)   2019

- **Google AI, Explore ML Beginner Track** in-person course conducted by IIT Indore. (certificate)   2019

- **From the Big Bang to Dark Energy** online course conducted by The University of Tokyo. (certificate)   2016