VIBHU DALAL

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EDUCATION

Master of Science, M1 Applied Mathematics Sept. 2024 – Jun. 2025
Université Paris Cité *Paris, France*

Bachelor of Science in Mathematics Dec. 2020 – Oct. 2023
Sri Aurobindo International Centre of Education *Pondicherry, India*

EXPERIENCE

Machine Learning Engineer May 2024 – Aug. 2024
Neptune Technologies LLC *Contract*

- Contributed to the development of machine learning models for stock market prediction

Research Intern Jun. 2023 – May 2024
DREAM Lab, University of Illinois Urbana-Champaign *Remote*

- Co-authored a research paper which explores the applications of Optimal Transport theory for the task of dataset distillation (submitted to *CVPR 2025)*
- Worked closely with Dr. Haohan Wang on projects aimed at improving the interpretability of convolutional neural networks

Research Intern Apr. 2023 – Apr. 2024
Dr. Min Xu's lab, Carnegie Mellon University *Remote*

- Jointly first-authored a research paper exploring novel approaches to anomaly detection in the context of laboratory automation (published in *Expert Systems with Applications)*

Machine Learning Intern Feb. 2022 - Dec. 2023
Telekinesis AI, Technische Universität Darmstadt *Remote*

- Conducted literature review of Human Pose Estimation algorithms and implemented research papers
- Set up simulation environments to simulate industrial robots using C++
- Helped develop the back-end and front-end software for controlling industrial robots using .NET and C#

PUBLICATIONS & PREPRINTS

Dataset Distillation via the Wasserstein Metric
*H. Liu, Y. Li, T. Xing, **V. Dalal**, L. Li, J. He, H. Wang*
arXiv preprint arXiv:2311.18531

Short-Time Fourier Transform for deblurring Variational Autoencoders
V. Dalal
arXiv preprint arXiv:2401.03166

Deep Video Anomaly Detection in Automated Laboratory Setting
A. Dabouei, JP. Shibu*, **V. Dalal***, C. Cao, A. MacWilliams, J. Kangas, M. Xu*
Expert Systems with Applications, 2025

Formalising Propositional Information via Implication Hypergraphs
V. Dalal
arXiv preprint arXiv:2502.00186

Selected Projects

Transfer Learning Toolkit for Large Language Models (*link*)

- Developed a toolkit by implementing 12 transfer learning techniques for pre-trained language models, consisting of fine-tuning and parameter-efficient approaches
- Packaged the toolkit into a Python library and used OpenAI's GPT2 to test it

Visual Saliency Map Translation (*link*)

- Developed a system to improve Convolutional Neural Network interpretability by generating visual saliency maps and their corresponding textual explanations

ChessGPT (*link*)

- Trained Open AI's GPT2 on a large database of chess games scraped from the internet
- Implemented a customised beam search and used a language model scorer to create a chess engine with GUI

Other projects available here.

Honors and Awards

Université Paris Cité

- Smarts-Up Excellence Scholarship

Sri Aurobindo International Centre of Education

- Winner of the **Best Student Prize**: 2023
- Winner of the **Prize for Academic Excellence** (awarded annually): 2021, 2022, 2023

Certificates

GRE General Test Oct. 2023
Verification link

332 / 340

- Quantitative Reasoning: **168 / 170**
- Verbal Reasoning: **164 / 170**
- Analytical Writing: **4 / 6**

DELF B2 Jan. 2024
Verification link

91 / 100

- Listening: **21.5 / 25** | Reading: **21.5 / 25** | Speaking: **25 / 25** | Writing: **23 / 25**

IELTS Jan. 2024
Verification link

8 / 9

- Listening: **9 / 9** | Reading: **8.5 / 9** | Speaking: **8 / 9** | Writing: **7 / 9**

Skills

Languages: English, French, Hindi
Programming: Python, C/C++, SQL, Matlab, Bash, JavaScript
Libraries and Frameworks: Pytorch, TensorFlow, NumPy, Eigen, MySQL
Computer and Software Skills: Git, Linux, LaTeX, Blender, Gazebo