HARDIK PRABHU — CURRICULUM VITAE

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RESEARCH INTERESTS

My research interests are centred around the intersection of generative modelling, interpretability, and deep learning techniques.

EDUCATION

Chennai Mathematical Institute (CMI) <div style="float:right">**Chennai, India**</div>
Master of Science in Data Science, CGPA : 8.38/10 <div style="float:right">*Aug 2019 - May 2021*</div>

D.G Ruparel College, Mumbai University <div style="float:right">**Mumbai, India**</div>
Bachelor of Science in Mathematics, CGPA : 8.75/10 <div style="float:right">*Aug 2016 - April 2019*</div>

EXPERIENCE

Indian Institute of Science (IISc) <div style="float:right">**Bengaluru, India**</div>
Research Associate <div style="float:right">*Nov 2023 - Present*</div>

○ Currently focused on applying Deep Generative Modelling in Energy Informatics.

FLAME University <div style="float:right">**Pune, India**</div>
Research Associate <div style="float:right">*Jan 2023 - Nov 2023*</div>

○ Led projects focusing on multiple areas including Explainable AI, Generative Modelling, and Genetic Algorithms.
○ Served as a Teaching Assistant for courses related to Computational Modelling, Quantitative Methods and Machine Learning.
○ Actively mentored undergraduate students on their research projects, and guided them in the development and realization of their ideas.

CloudAEye, Inc. <div style="float:right">**Fremont, CA, USA (remote)**</div>
Machine Learning Engineer <div style="float:right">*July 2021 - Oct 2022*</div>

○ Developed and deployed advanced deep learning and machine learning solutions specializing in anomaly detection within logs and metrics produced by cloud-native applications.
○ Utilized deep learning techniques such as LSTMs, Variational Autoencoders (VAEs) and Normalizing Flows.
○ Additionally, developed a root cause localization method utilizing a PageRank-like algorithm for faults occurring in microservices interacting within intricate network architectures.
○ Conducted technical interviews to assess the proficiency of candidates applying for the ML Engineer role.

CMI Algolabs <div style="float:right">**Chennai, India**</div>
Research Intern <div style="float:right">*May 2020 - Aug 2020*</div>

○ Created a Python-based tool for a software company for mapping functionality script to software documentation by applying Latent Dirichlet Allocation, a topic modelling technique.

RESEARCH PUBLICATIONS

Refereed Conference and Workshop papers . . . .

[C.1] **Prabhu, H.**, Valadi, J.K. and Arjunan, P., Generative Adversarial Network with Soft-Dynamic TimeWarping and Parallel Reconstruction for Energy Time Series Anomaly Detection. In Proceedings of AI4TS workshop of AAAI, 2024 **(CORE Rank: A*)**

[C.2] **Prabhu, H.**, Valadi, J.K. and Arjunan, P., Explainable AI for Energy Prediction and Anomaly Detection in Smart Energy Buildings. In Proceedings of the 10th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation.(pp. 472-475).**(CORE Rank: A)**

[C.3] **Prabhu, H.** and Arjunan, P., 2022, November. eptk: energy prediction toolkit. In Proceedings of the 9th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation. (pp. 512-515).**(CORE Rank: A)**

Refereed Journal Articles . . . .

[J.1] **Prabhu, H.**, Bhosale, H., Sane, A., Dhadwal, R., Ramakrishnan, V., and Valadi, J. 2024. Protein Feature Engineering Framework for AMPylation Site Prediction. Nature Scientific Reports. **(SCI IF: 4.6, Q1)**

[J.2] **Prabhu, H.**, Sane, A., Dhadwal, R., Parlikkad, N.R. and Valadi, J.K., 2023. Interpretation of Drop Size Predictions from a Random Forest Model Using Local Interpretable Model-Agnostic Explanations (LIME) in a Rotating Disc Contactor. Industrial & Engineering Chemistry Research. **(SCI IF: 4.326, Q1)**

Book Chapters . . . .

[B.1] **Prabhu, H.**, Sane, A., Dhadwal, R., Siarry, P., Valadi, J. (2024). Metaheuristic and Evolutionary Algorithms in Explainable Artificial Intelligence. In: Valadi, J., Singh, K.P., Ojha, M., Siarry, P. (eds) Advanced Machine Learning with Evolutionary and Metaheuristic Techniques. Computational Intelligence Methods and Applications. Springer, Singapore.

TEACHING EXPERIENCE

o **Teaching Assistant, FLAME University:** Research Methodology, Quantitative Methods (Oct 2023 - Nov 2023)
Conducted classroom lectures for PhD students in social sciences, focusing on the introduction to statistics, including topics on sampling, parameter estimation, and hypothesis testing.

o **Teaching Assistant, FLAME University:** CSIT 331, Machine Learning I (Jan 2023 - May 2023)
Delivered engaging classroom lectures and interactive tutorials covering a range of topics, including fundamental introduction to statistics, comprehensive discussions on Decision Trees and Clustering Algorithms, and coding tutorials.

o **Teaching Assistant, FLAME University:** CSIT 121, Computational Modeling (Jan 2023 - May 2023)
Delivered engaging classroom lectures and interactive tutorials on optimization using gradient descent algorithm.

CERTIFICATION AND SKILLS

Custom Models, Layers, and Loss Functions with TensorFlow

Cerificate Issued by DeepLearning.AI *Jan 2022*

Custom and Distributed Training with TensorFlow
Cerificate Issued by DeepLearning.AI *August 2022*

Programming Languages: Python, R and LaTeX

Python Packages: Pytorch, Tensorflow, Scikit-learn, Numpy, Pandas, Pymoo.

Relevant Graduate Coursework: Advanced Machine Learning, Bayesian Data Analysis, Multivariate Statistics, Reinforcement Learning.

REFERENCES

○ **Dr. Pandarasamy Arjunan** (Research advisor)
  Assistant Professor, Robert Bosch Centre for Cyber-Physical Systems (RBCCPS), Indian Institute of Science, Bengaluru, India
  samy@iisc.ac.in

○ **Dr. Jayaraman Valdi** (Research Advisor)
  Distinguished Professor, Department of Computing and Data Sciences,
  FLAME University, Pune, India
  jayaraman.vk@flame.edu.in

○ **Dr. Venkatesh VinayakaRao** (Graduate Research Advisor)
  Visiting Faculty, Data Science, Chennai Mathematical Institute, Chennai, India
  venkateshv@cmi.ac.in

○ **Nazrul Islam** (Industry Mentor)
  CEO and Founder, Cloudaeye, Fremont, USA
  nazrul@cloudaeye.com