Prabhat Lankireddy

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Education

Indian Institute of Technology Bombay **Aug. 2022 – May 2025**
M.S. (by Research) in Data Science and Artificial Intelligence (C-MInDS) | 9.06/10 CPI *Mumbai, MH, India*

Indian Institute of Technology Tirupati **Aug. 2018 – May 2022**
Bachelor of Technology in Electrical Engineering | 9.01/10 CGPA *Tirupati, AP, India*

Research Experience

Analysis of the effect of machine learning algorithms over user preferences **Jun. 2023 – Present**
Guides: Prof. D. Manjunath, Prof. Jayakrishnan Nair *IIT Bombay*

- Developed a model of interaction between a contextual bandit recommendation system and its users and analyzed the long term effect of such systems over user preferences using stochastic approximation and dynamical systems theory.

Lightweight neural network design for TBI classification **Sep. 2021 – Sep. 2022**
Guide: Prof. Subrahmanyam Gorthi *IIT Tirupati*

- Proposed a compute efficient architecture for the detection and identification of various kinds of Intercranial Hemorrhages using CT Images for use in clinical settings with low compute resources.

Robust Face Authentication on Smartphones **June 2024 – Aug. 2024**
Guides: Mr. Swapnil Pote, Mr. Jayprasad Hegde *National Payments Corporation of India (NPCI)*

- Proposed a face authentication algorithm for smartphones that uses active screen illumination to protect against 2D image attacks, replay attacks, and deepfake attacks.

Data subset selection for classification tasks **Feb. 2023 – May. 2023**
Guide: Prof. Ganesh Ramakrishnan *IIT Bombay*

- Developed a data subset selection algorithm for L2-regularized classification tasks that was inspired by SELCON, a subset selection algorithm developed for regression tasks.
- This research project was done as part of the "Optimization for Machine Learning" course offered by Prof. Ganesh Ramakrishnan.

Studying the Lambert W function **Jun. 2020 – Aug. 2023**
Guides: Dr. Ken Roberts, Dr. Aude Maignan, Dr. S. R. Valluri, Dr. P. C. Deshmukh *IIT Tirupati & Western University*

- Studied the application of Lambert W like functions, namely the LogWright function and the Offset Log function in obtaining the I-V characteristics of a solar cell and analysing the Dirac equation applied to Graphene Nanoribbons.
- In collaboration with Western University (Unviversity of Western Ontario), Canada.

Studying Evolution in Markets **Dec. 2023 – Mar. 2024**
Guides: Prof. John Miller, Prof. Alan Kirman *Santa Fe Institute (SFI)*

- Extended the work of Kirman and Vriend on Marseille's fish market to study the effect of information exchange within buyer and seller groups on market prices over time using Agent Based Models.
- This research project was part of the Complexity Global School (2023) organized by the Santa Fe Institute, USA.

Publications

- (Submitted) **Lankireddy, P.**, Nair, J., & Manjunath, D. (2024). "When Online Algorithms Influence the Environment: A Dynamical Systems Analysis of the Unintended Consequences".
- **Lankireddy, P.**, Sindhura, C., & Gorthi, S. (2022). "A New Lightweight Architecture and a Class Imbalance Aware Loss Function for Multi-label Classification of Intracranial Hemorrhages". In *International Workshop on Machine Learning in Medical Imaging.* (pp. 397-405). Cham: Springer Nature Switzerland.
- **Lankireddy, P.**, Jeevanandam, S., Chaudhary, A., Deshmukh, P. C., Roberts, K., & Valluri, S. R. (2023). "Solar Cells, Lambert W and the LogWright functions". *arXiv preprint arXiv:2307.08099*.
- Maignan, A., **Reddy, L. P.**, Jeevanandam, S., Deshmukh, P. C., Roberts, K., Jisrawi, N., & Valluri, S. R. (2022). "The electronic properties of Graphene Nanoribbons and the Offset Logarithm function". *Materials Today: Proceedings, 54*, 7-13.

Work Experience

Teaching Assistant **Aug. 2023 – Present**

Center for Machine Intelligence and Data Science (C-MInDS), IIT Bombay *Mumbai, MH, India*

- TA for *DS203 Programming for Data Science.*
- TA for *DS303 Introduction to Machine Learning.*
- TA for *DS601 Learning and Inference in Higher Dimensions.*

Data Science Intern **Jun 2024 – July 2024**

National Payments Corporation of India (NPCI) *Mumbai, MH, India*

- Conducted research on the problem of robust face authentication in the presence of adversarial images such as deepfakes and developed an algorithm for the same.

System Administrator **Aug. 2022 – Aug. 2023**

Center for Machine Intelligence and Data Science (C-MInDS), IIT Bombay *Mumbai, MH, India*

Volunteering and Extra-curriculars

- Coordinator of the student-run "C-MInDS Machine Learning Reading Group" at IIT Bombay (Feb. 2024 – Present).
- Mentored 1^{st} year Masters students via the Institute Student Companion Programme (ISCP) (Aug. 2023 – May. 2024).
- Attended the Complexity Global School (2023) organized by the Santa Fe Institute, New Mexico, USA (Dec. 2023).
- Co-founder and Chief Editor of Udaan, the student-run campus magazine of IIT Tirupati (Jan. 2021 – May 2022).
- Served as the Literary Affairs Secretary, student representative of all literary activities, at IIT Tirupati (2021 – 2022).

Achievements

- Recipient of the Governor's medal at IIT Tirupati (Batch of 2022).
- Qualified for KVPY merit fellowship (2017).