

BISWAJIT PARIA

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RESEARCH INTERESTS Bayesian Optimization, Decision Making under Uncertainty, Time Series Forecasting using NNs, Deep Learning

EDUCATION **Carnegie Mellon University**, Pittsburgh, PA Aug 2017 - Jul 2022
M.S., Ph.D. in Machine Learning. *Advisors: Barnabás Póczos, Jeff Schneider*
Fall 21 GPA: 4.05 (A+: 4.33, A: 4.0).

Indian Institute of Technology Kharagpur, India Jul 2012 - Apr 2017
5-year Bachelors and Masters in Computer Science and Engineering
GPA 9.80/10.00, highest in class

PROFESSIONAL EXPERIENCE Software Engineer III Google, Mountain View, CA. Jul 2022 - current
Google Ads
Designing, training, and serving machine learning models for efficient and accurate predictions for Google Ads.

Summer Research Intern Google Research, Mountain View, CA. May - Oct 2020
Hierarchical Time-Series Forecasting with Abhimanyu Das, Amr Ahmed
Proposed a scalable machine learning method for forecasting of time series arranged in an hierarchy which resulted in improved forecast accuracy.

Summer Research Intern Snap Research, Los Angeles, CA. May - Aug 2018
Sparse Representations for Fast Retrieval with Ian En-Hsu Yen, Ning Xu
Proposed a machine learning approach to sparsify image embeddings resulting in upto 50× speed up in image retrieval using sparse matrix multiplication operations.

Summer Research Intern U. of Southern California, Los Angeles, CA. May - Jul 2015
Interpretability of Learned Features for Clinical Time Series with Prof. Yan Liu
Proposed a strategy to interpret features learned by a deep neural network trained on clinical time series data.

HONOURS & AWARDS Prime Minister of India Gold Medal IIT Kharagpur, 2017
Awarded to the highest ranking student of the graduating class at IIT Kharagpur.

Viterbi-India Scholar 2015
Funded summer internship at Viterbi School of Engineering, University of Southern California.

ACM ICPC World Finalist (Team *BitBees*) 2015
One of 7 teams from India at the International Collegiate Programming Competition.

Indian National Physics Olympiad (INPhO) Awardee 2012
Among the top 30 candidates in India.
Attended the Indian team selection camp for the International Physics Olympiad.

Indian National Mathematical Olympiad (INMO) Awardee 2010 - 2012
Among the top 30 candidates in India.
Attended the Indian team selection camp for the International Mathematics Olympiad.

Kishore Vaigyanik Protsahan Yojana (KVPPY) Scholar 2011
Awarded by the Dept. of Science and Technology, India for exceptional aptitude in basic sciences. Achieved the 7th rank in India.

Australian Mathematics Competition (AMC) Gold Medallist 2009
Awarded by the Australian Mathematics Trust. One of 23 medallists in the world.

PAPERS

- A. Das, W. Kong, B. Paria, R. Sen. *Dirichlet Proportions Model for Hierarchically Coherent Probabilistic Forecasting*. Uncertainty in Artificial Intelligence (UAI), 2023. [[arxiv](#), [paper](#)].
- S. Kumar, B. Paria, Y. Tsvetkov. *Gradient-Based Constrained Sampling from Language Models*. Empirical Methods in Natural Language Processing (EMNLP), 2022. [[paper](#), [arxiv](#)]
- V. Mehta, B. Paria, J. Schneider, S. Ermon, W. Neiswanger. *An Experimental Design Perspective on Model-Based Reinforcement Learning*. International Conference on Learning Representations (ICLR), 2022. Preliminary version at EcoRL Workshop @ NeurIPS, 2021. [[arxiv](#), [paper](#)]
- B. Paria, R. Sen, A. Ahmed, A. Das. *Hierarchically Regularized Deep Forecasting*. 2021. [[arxiv](#)]
- B. Paria, W. Neiswanger, R. Ghods, J. Schneider, B. Póczos. *Cost-Aware Bayesian Optimization via Information Directed Sampling*. Real World Experiment Design and Active Learning Workshop @ ICML, 2020. [[paper](#)]
- K. Kandasamy, K. R. Vysyaraju, W. Neiswanger, B. Paria, C. R. Collins, J. Schneider, B. Póczos, E. P. Xing. *Tuning Hyperparameters without Grad Students: Scalable and Robust Bayesian Optimisation with Dragonfly*. Journal of Machine Learning Research (JMLR), 2020. [[arxiv](#), [paper](#)]
- B. Paria, C.K. Yeh, I.E.H. Yen, N. Xu, P. Ravikumar, B. Póczos. *Minimizing FLOPs to Learn Efficient Sparse Representations*. International Conference on Learning Representations (ICLR), 2020. [[paper](#), [code](#)]
- B. Paria, K. Kandasamy, B. Póczos. *A Flexible Framework for Multi-Objective Bayesian Optimization using Random Scalarizations*. Uncertainty in Artificial Intelligence (UAI), 2019. [[oral presentation](#), [arxiv](#), [paper](#)]
- B. Paria, K.M. Annervaz, A. Dukkipati, A. Chatterjee, S. Podder. *A Neural Architecture Mimicking Humans End-to-End for Natural Language Inference*. 2016. [[arxiv](#)]
- A. Lahiri, B. Paria, P.K. Biswas. *Forward Stagewise Additive Model for Collaborative Multiview Boosting*. IEEE Transactions in Neural Networks and Learning Systems, 2016. [[arxiv](#), [paper](#)]

TEACHING

Teaching Assistantships:

Advanced Machine Learning
 Convex Optimization
 Deep Learning
 Machine Learning

CMU, Spring 2019
 CMU, Fall 2018
 IIT Kharagpur, Spring 2017
 IIT Kharagpur, Fall 2016

Math Olympiad Teaching

Taught number theory and combinatorics to high school students

2012 & 2013

PROGRAMMING
SKILLS

Proficient: Python, *Familiar:* C++, bash
Libraries: Tensorflow, PyTorch, numpy, sklearn, JAX

RELEVANT
COURSES

Advanced Introduction to Machine Learning
 Intermediate Statistics
 Statistical Machine Learning
 Probabilistic Graphical Models
 Advanced Statistical Theory
 Martingales

CMU, Fall 2017
 CMU, Fall 2017
 CMU, Spring 2017
 CMU, Spring 2017
 CMU, Fall 2018
 CMU, Fall 2018