LeetCode
Mail
Los Angeles, CA, USA

Abhimanyu Borthakur

Linkedin
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Website

Education

MS/PhD ECE, UCLA **September 2024 - Present**

- GPA: 3.96/4.0 (Updated: July 2025) [transcript]

B.Tech ECE, Manipal Institute of Technology **July 2018 - August 2022**

- CGPA: 9.24/10.0 (**3.94/4.0**) (Minor in Data Science: 10.0/10.0)
- Ranked 1st in the 7th semester with a GPA of 9.8/10
- Awarded a Certificate of Merit for being ranked 11th out of 228 finishing in the top 5%

Major Research Publications and Projects

- [*Accepted - 16 May 2025*] **A. Borthakur**, J. Hirschman, S. Carbajo, *Ultrafast Pulse Retrieval from Partial FROG Traces Using Implicit Diffusion Models*, **Optica Nonlinear Optics Topical Meeting 2025**, (Paper and code coming soon !)
- [*Published - 05 January 2024*] G. Bhatta, S. Gharat, **A. Borthakur** and A. Kumar, *Gamma-ray Blazar Classification using Machine Learning with Advanced Weight Initialization and Self-Supervised Learning Techniques*, **Monthly Notices of The Royal Astronomical Society**, (Link) (Code)
- [*Published - 23 November 2023*] S. Gharat, **A. Borthakur** and G. Bhatta, *Estimation of redshift and associated uncertainty of Fermi/LAT extra-galactic sources with Deep Learning*, **Monthly Notices of The Royal Astronomical Society**, (Link) (Code)
- [*Accepted - 31 October 2023*] S.Gharat, G.Bhatta and **A. Borthakur**, *Gamma Ray AGNs: Estimating Redshifts and Blazar Classification using Neural Networks with smart initialization and self-supervised learning*, **37th Conference on Neural Information Processing Systems (NuerIPS) @ ML4PS workshop**, (Paper #116)(Paper pdf) (Poster png)
- [*Published - 12 July 2023*] S.Gharat, B.Bose, **A. Borthakur** and R. Mazumder, *An Image Processing approach to identify solar plages observed at 393.37 nm by the Kodaikanal Solar Observatory*, **Royal Astronomical Society Techniques and Instruments**,(Link) (Code)

Research Experience

Quantum Light-Matter Co-Operative (QLMC) @ UCLA (Link) **October 2024 - Present**

Start-to-End (S2E) Modeling Framework for a high-powered laser system
Guide: Prof. Sergio Carbajo, UCLA

- Led the development of a high-fidelity digital twin for a high-powered laser system, integrating complex nonlinear optical phenomena like CPA [ref].

- Built a synthetic data pipeline generating 1M+ spectrogram–pulse pairs to train and evaluate large ML models across diverse optical simulation settings.
- Achieved $10\times$ improvement in pulse retrieval from sparse FROG spectrograms using diffusion models, outperforming state-of-the-art (SOTA) CNN and RNN baselines [ref].

University of Zielona Góra & IIT Bombay **September 2022-January 2024**

Gamma Ray AGNs: Estimating Redshifts and Blazar Classification using Neural Networks with smart initialization and self-supervised learning
Guide: Prof. Gopal Bhatta, University of Zielona Góra, Poland

- Developed a neural network to predict redshifts of active galactic nuclei — with a correlation of 0.78, outperforming previous SOTA models [ref].
- Modeled uncertainty using variational inference, enabling reliable redshift predictions even for sources lacking ground truth labels.
- Designed and deployed an algorithm to classify supermassive blackhole systems on AWS EC2, achieving 93% accuracy and 0.914 F1-score, $7\times$ faster than previous SOTA [ref].

Work Experience

Searce Inc @ Pune, Maharashtra, India **January 2022 - September 2022**

Machine Learning Engineer
Manager: Dr. Muthukumaraswamy B, Associate Director - Applied AI

- Earned the Google Cloud Professional ML Engineer Certificate within 6 months — an exam recommended for professionals with 3+ years of industry experience.
- Architected a custom OCR system to extract fields from Indian tax forms, achieving 92.1% mean average precision on test data with an average (CPU) processing time of 3.4 seconds.
- Co-led the database design pipeline for a US-based client project, deployed at scale on GCP BigQuery.

Skills

- **Languages:** C, C++, Python, Java, MATLAB, LabVIEW, R, RStudio, SQL
- **Frameworks:** OpenCV, TensorFlow, Scikit-Learn, PyTorch
- **Cloud:** GCP, AWS
- **Experiment tracking:** Weights and Biases, mlfow
- **Containerization:** Docker, Kubernetes
- **Version Control:** Git
- **Projects:** Portfolio
- **Certifications:** List of certifications
- **Courses and grades:** Transcript (BTech)
- **TOEFL:** Score report