Diksha Bhandari

db141097@gmail.com https://www.linkedin.com/in/diksha-bhandari/
Berlin, Germany +4917674984419 14/10/1997

EDUCATION

Ph.D. candidate in Mathematics 09/2021 – present | Potsdam, Germany
University of Potsdam
- Expected date of graduation-30.08.2025
- Supervised by Prof. Dr. Sebastian Reich

Research exchange 06/2023 – 07/2023 | Cambridge, UK
University of Cambridge
Research visit to the Isaac Newton Institute for Mathematics as part of the Data-Driven Engineering programme.

M.Sc Mathematics 07/2018 – 07/2020 | Nagpur, India
Visvesvaraya National Institute of Technology

B.Sc (Honours) Mathematics 07/2015 – 07/2018 | Delhi, India
Indraprastha College for Women, University of Delhi

WORK EXPERIENCE

Doctoral researcher 09/2021 – present
University of Potsdam, SFB1294
- Designed robust, scalable learning algorithms for high-dimensional AI models with applications in computer vision models and NLP.
- Developed Bayesian techniques to enhance decision-making under uncertainty, contributing to risk-informed AI systems.

Lecturer, Theory of machine learning 10/2024 – 03/2025 | Potsdam, Germany
WiSe 2024-25, University of Potsdam
- Designed and delivered a Master's-level course covering theoretical foundations and implementation of statistical machine learning algorithms.
- Facilitated practical lectures using Python and industry-standard ML libraries.

SME and academic writer 08/2020 – 06/2021 | Delhi, India
Paperpedia Pvt. Ltd.
Produce written works including reports, essays, and articles on mathematical topics.

PROJECTS

Generalized Bayesian inference for generative models present
- Developed robust gradient-free inference methods for generative models and simulation-based systems, improving computational efficieny by 80%.

Ensemble Kalman filter for human language comprehension 01/2022 – 04/2025
- Developed Bayesian algorithms for training deep learning models of language comprehension.
- Improved predictive uncertainty in NLP models under ambiguous conditions by 30%, with reduced training cost.

Affine invariant ensemble transform methods to improve predictive uncertainty in neural networks 09/2021 – 08/2023
- Designed and implemented ensemble Kalman filter-based Bayesian inference to deep neural networks for image classification tasks, focusing on robust prediction under data variability.
- Improved predictive uncertainty estimation in neural networks, enhancing reliability on detecting out-of-distribution (OOD) samples.

Some Newton-type iterative methods for regularization of nonlinear ill-posed operator equations 07/2019 – 07/2020
Derived order optimal error estimate for a modified Newton-type method to obtain an approximate solution of non-linear ill-posed problems.

INTERNSHIPS

Summer Intern, NISER 06/2019 – 07/2019 | Bhubaneswar, India
Summer Outreach Program in Mathematics

SKILLS

Python ●●●●○

Deep learning frameworks ●●●●○
Tensorflow, Keras, Pytorch

Version control ●●●○○
Git, GitLab

Business tools ●●●○○
Excel, PowerPoint

Data & analytics ●●●●○
Numpy, Pandas, Matplotlib, Scikit-learn, Seaborn, SQL

Computing platforms ●●●●○
VS Code, Jupyter Notebooks

Others ●●●○○
OpenCV, MATLAB, C, Fortran90, Linux, R

CONFERENCES AND WORKSHOPS

Amazon StatML Workshop 2024 04/2024 | Berlin, Germany

International Symposium on Data Assimilation 10/2023 | Bologna, Italy
ISDA 2023

Modern Approaches in SPDEs & Data Assimilation 07/2023 | Sibiu, Romania

The mathematical foundations of data-driven engineering 01/2023 | Cambridge, UK
Issac Newton Institute for Mathematical Sciences, University of Cambridge

CERTIFICATES

Linear Algebra for Machine Learning and Data Science
Coursera

Calculus for Machine Learning and Data Science
Cousera

Natural Language Processing with Probabilistic Models
Coursera

Natural Language Processing in TensorFlow
Coursera

Python Programming- A Practical Approach
ICT Academy, IIT Kanpur

PUBLICATIONS

Affine invariant ensemble transform methods to improve predictive uncertainty in neural networks
Foundations of Data Science. doi: 10.3934/fods.2024040

Ensemble Kalman filter for uncertainty in human language comprehension

REFERENCES

Prof. Dr. Sebastian Reich, University of Potsdam
sebastian.reich@uni-potsdam.de