Tathagata Basu

Curriculum Vitæ

Civil and Environmental Engineering
University of Strathclyde
Glasgow, United Kingdom
✉ tathagatabasu@protonmail.com

Current Position

Jan, 2023– **Post Doctoral Researcher**, *Department of Civil and Environmental Engineering, University of Strathclyde*, Glasgow, United Kingdom.

Experience

Oct, 2021–
Dec, 2022 **Post Doctoral Researcher**, *UMR CNRS 7253 Heudiasyc, Centre National de la Recherche Scientifique*, Compiègne, France.

Education

Nov, 2017–
Mar, 2021 **Post Graduate Research**, *Durham University*, Durham, United Kingdom.
Thesis - "High dimensional statistical modelling with limited information"

July, 2015–
May, 2017 **Masters**, *Indian Institute of Technology, Bhubaneswar*, Bhubaneswar, India.
Subjects - Mathematics

July, 2012–
May, 2015 **Bachelors**, *Ramakrishna Mission Residential College, Narendrapur*, Kolkata, India.
Subjects - Mathematics (hons), Physics, Statistics

Research Stays/Internship

Mar-Jun '19 **Von Karman Insitute of Fluid Dynamics**, Sint Genesius Rode, Belgium.

Sept-Dec '18 **National Physical Laboratory**, London, United Kingdom.

July-Sept '17 **Indian Institute of Technology**, Guwahati, India.

May-July '16 **TIFR Centre for Applicable Mathematics**, Bangalore, India.

Research Interest

○ High Dimensional Statistics
○ Bayesian Modelling
○ Regression Analysis
○ Classification Problems
○ Random Utility Models
○ Choice Modellng
○ Asymptotic Analysis

Teaching Experiences

- Lab Instructor, Computer practical for Statistical Concepts II. - Epiphany Term (2018), Durham University
- Lab Instructor, Computer practical for Statistical Concepts II. - Epiphany Term (2019), Durham University
- Course Instructor, Introduction to Bayesian Inference. - Autumn Sem (2022), UTC Compiegne

Programming Languages

Advanced	R
Intermediate	Python, MATLAB
Basic	C++

Scholarship and Awards

- Travel grant of 500 US$ by International Society for Bayesian Analysis to participate in ISBA conference (not realised), 2022
- Winton Doctoral Prize for the best PhD thesis in statistics and data sciences, Department of Mathematical Sciences, Durham University, 2021
- Marie Sklodowska-Curie Fellowship by European Commission for project UTOPIAE, 2017
- Joint CSIR-UGC NET Junior Research Fellowship, June 2016 and Dec 2016
- IIT Master Sandwich Scholarship provided by DAAD (not realised), 2016
- Jagadish Bose National Science Talent Search (JBNSTS), 2012

Memberships

- The Society for Imprecise Probabilities: Theories and Applications
- Statistical Modelling Society

Peer Review Services

- "Advances in Statistical Analysis", Springer
- "Computation Statistics and Data Analysis", Elsevier
- "Soft Computing", Springer Nature
- "ISIPTA" (2021, '23), Proceedings of Machine Learning and Research

Talks/Presentations

- "Imprecise Regularization" at WPMSIIP 2018, Oviedo, Spain
- "Robust Modelling Using Probability Box", at National Physical Laboratory, London, UK
- "An Implementation of LASSO Using Optimization Methods for Piecewise Differentiable Functions", at UQOP, Paris, France

- "Robust Statistics and its Application in Atomic Spectra", at Von Karman Institute for Fluid Dynamics, Brussels, Belgium
- "Robust Uncertainty Quantification for Measurement Problems with Limited Information", at ISIPTA, Ghent, Belgium (Poster)
- "A Cantelli-Type Inequality for Constructing Non-Parametric P-Boxes Based on Exchangeability" at ISIPTA, Ghent, Belgium
- "Sensitivity Analysis of Adaptive LASSO", at WPMSIIP 2019, Durham, UK
- "A Review of Convex Optimisation Techniques for Piecewise Differentiable Functions, at OSE5, Ljubljana, Slovenia
- "Sensitivity Analysis of Adaptive LASSO", at INDSTATS 2019, Mumbai, India (Poster)
- "High Dimensional Statistical Modelling", at Politecnico di Milano, Milan, Italy
- "Binary Credal Classification Under Sparsity Constraints", IPMU 2020, Bilbao, Spain (online)
- "Robust Bayesian Variable Selection", UQOP 2020, Brussels, Belgium (online)
- "A Probability-Box Based Approach for Measurement Problems", MSMM 2021, Turin, Italy (Poster, online)
- "Bayesian adaptive selection under prior ignorance", ISIPTA 2021, Granada, Spain (Poster, online)
- "Robust Bayesian causal inference for high dimensional problems", ISIPTA 2021, Granada, Spain (Poster, online)
- "A robust Bayesian estimation approach for the imprecise Plackett-Luce model", IPMU 2022, Milan, Italy
- "An Imprecise Label Ranking Method for Heterogeneous Data", SMPS 2022, Valladolid, Spain

Conference Papers

- "A Cantelli-Type Inequality for Constructing Non-Parametric P-Boxes Based on Exchangeability", Matthias Troffaes & Tathagata Basu, *Proceedings of the Eleventh International Symposium on Imprecise Probabilities: Theories and Applications*, PMLR 103:386-393, 2019 (Link)
- "Binary Credal Classification Under Sparsity Constraints", Tathagata Basu, Matthias Troffaes & Jochen Einbeck *Information Processing and Management of Uncertainty in Knowledge-Based Systems, Proceedings of the 18th International Conference IPMU 2020* , (Link)
- "A sensitivity analysis and error bounds for the adaptive lasso",Tathagata Basu, Jochen Einbeck & Matthias Troffaes *Proceedings of the 35th International Workshop on Statistical Modelling 2020*, Universidad del Pais Vasco, 278-281 (Link)
- "Bayesian adaptive selection under prior ignorance", Tathagata Basu, Matthias Troffaes & Jochen Einbeck *In: Vasile, M., Quagliarella, D. (eds) Advances in Uncertainty Quantification and Optimization Under Uncertainty with Aerospace Applications. UQOP 2020.*, (Link)

- "A robust Bayesian estimation approach for the imprecise Plackett-Luce model", Tathagata Basu, Sebastien Destercke & Benjamin Quost *Information Processing and Management of Uncertainty in Knowledge-Based Systems, 19th International Conference IPMU 2022*, (Link)
- "An Imprecise Label Ranking Method for Heterogeneous Data", Tathagata Basu, Sebastien Destercke & Benjamin Quost, 10th International Conference on Soft Methods in Probability and Statistics (SMPS 2022) (Link)

Journal Paper

- "A robust Bayesian analysis of variable selection under prior ignorance", Tathagata Basu, Matthias Troffaes & Jochen Einbeck, Sankhya A (2022) (Link)

Chapters in Books

- "Introduction to Imprecise Probabilities.", Daniel Krpelik & Tathagata Basu, *M. Vasile (eds) Optimization Under Uncertainty with Applications to Aerospace Engineering*, Springer, Cham 35-79, 2021 (Link)
- "Uncertainty Quantification in Lasso-Type Regularization Problems.", Tathagata Basu, Jochen Einbeck & Matthias Troffaes, *M. Vasile (eds) Optimization Under Uncertainty with Applications to Aerospace Engineering*, Springer, Cham 81-109, 2021 (Link)

In preparation

- "Robust Bayesian Causal Inference for High-dimensional Problems ", Tathagata Basu, Matthias Troffaes & Jochen Einbeck (Poster link)
- "Imprecise Placket-Luce: A robust Bayesian perspective", Tathagata Basu, Sebastien Destercke & Benjamin Quost
- "Bayesian Regression with Interval Data", Tathagata Basu (Short Preprint)