

Raphaël Morsomme

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Education

Academic interest: statistics, Bayesian inference, Markov Chain Monte Carlo, data augmentation, conformal prediction, stochastic epidemic models, dynamic models.

2019 – present: **Ph.D. candidate in statistical science**,
Duke University Department of Statistical Science.
Supervisor: Prof. Jason Xu.
Thesis: Efficient block MCMC sampler for high-dimensional latent data.

2014 – 2018: **Double B.S. degree in *Liberal Arts and Sciences***,
University College Maastricht, The Netherlands; University College Freiburg, Germany.
Honors program, *Summa cum Laude*

Publications

Morsomme, R., & Xu, J. (2022). Uniformly Ergodic Data-Augmented MCMC for Fitting the General Stochastic Epidemic Model to Incidence Data. arXiv preprint arXiv:2201.09722.

Morsomme, R., & Smirnov, E. (2020). Valid Prediction Intervals for Course Grades with Conformal Prediction. In 2020 19th IEEE International Conference on Machine Learning and Applications (ICMLA) (pp. 936-941). IEEE.

Morsomme, R., & Smirnov, E. (2019). Conformal Prediction for Students' Grades in a Course Recommender System. *Conformal and Probabilistic Prediction and Applications* (pp. 196-213).

Morsomme, R., & Alferez, S. V. (2019). Content-based course recommender system for liberal arts education. In *Proceedings of The 12th International Conference on Educational Data Mining (EDM 2019)* (Vol. 748, p. 753).

Morsomme, R. (2018). Embryonic and mitochondrial modeling in the context of *in-vitro* fertilization. Bachelor Thesis, Maastricht University, Department of Clinical Genetics.

Morsomme, R. (2017). Financial instability forecasting based on an anomaly analysis of soft content. Bachelor Thesis, Freiburg University, Information System Research Institute.

Awards

2022: Outstanding Mentor of Undergraduate Research Award,
Duke University Department of Statistical Science.

2022: Full scholarship, Summer Institute in Statistics and Modeling in Infectious Diseases,
University of Washington.

2021: Young Investigator Award,
ASA Section on Statistics in Epidemiology.

Teaching and Mentoring

Teaching assistant

- 2022: STA310 Generalized Linear Models (Ph.d.),
Duke University.
- 2021: STA723 Case Studies in Bayesian Statistics (Ph.D.),
Duke University.
- 2020: STA540 Case Studies in Statistical and Data Science (masters),
Duke University.
- 2019: STA440 Case Studies in the Practice of Statistics (undergraduate),
Duke University.
- 2017: Introduction to Statistics and Data Analysis,
Freiburg University.

Instructor of record

- 2022: STA101 Data Analysis and Statistical Inference,
Duke University.
- 2021: STA101 Data Analysis and Statistical Inference,
Duke University.

Tutoring and mentoring

- 2021: Academic tutor ,
SPIRE Fellows Program, Duke University.
- 2020 – 2021: Research mentor,
Lumiere Research Scholar Program.

Outreach

- 2021: Judge for the ASA DataFest.
- 2018 – present: Biannual workshop: Introduction to R,
Maastricht University College.

Professional Experience

- 2022: Statistical consultant,
MetLife Investment Management, New York.
Task: implement an efficient Bayesian forecasting model for multivariate time series.
- 2020: Programming consultant,
Children's Environmental Health Initiative, Rice University.
Task: review code for a spatial analysis of racial and political disparity

- 2019: Statistical Consultant,
Future Earth, Paris.
Task: implement a topic model to analysis open-ended answers of a survey.
- 2018 – 2019: Junior Data Scientist,
University College Maastricht.
Task: topic modeling of course content, conformal prediction of grade and development
of a course recommender system for Liberal Arts students.
- 2017: Research Assistant,
the Information System Research Institute, Freiburg.
Task: develop a trading decision support system based on a sentiment analysis of
financial news.

Programming skills

Proficiency in **R**, **MATLAB**, **LaTeX**, **Git**.

Working Knowledge of Python, SAS, SQL, Tableau, Weka.

Volunteering and interests

- 2016 – present: Run marathons.
- 2015: Represented Belgium at the final of the *Euromath Cup* – 3rd place.
- 2014 – 2019: Red Cross volunteer.
- 2005: International finalist of the *Championship of Math & Logic Games*.