

GABRIEL CLARA

CONTACT DATA

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EDUCATION

Present started 09/2021	DOCTORATE, Mathematics Universiteit Twente Thesis (provisional): <i>Statistical Theory of Randomized Gradient Descent</i> Supervisors: Johannes Schmidt-Hieber and Sophie Langer
08/2021 started 09/2018	MASTER OF SCIENCE, Mathematics Vrije Universiteit Amsterdam Thesis: <i>Sparse Variational Inference and Bayesian High-Dimensional Regression</i> Supervisor: Botond Szabó Honors: Cum Laude (highest distinction)
05/2018 started 09/2014	BACHELOR OF SCIENCE, Mathematics University of Massachusetts Amherst

RESEARCH INTERESTS

My current work focuses on the theoretical analysis of machine learning methods, in particular gradient descent training with added algorithmic noise. Typically, the problems involve non-asymptotic analysis of such algorithms and their statistical optimality. Previously, I worked on Bayesian variational inference.

Apart from my main research topics, I am interested in applications of differential and metric geometry, optimal transport, and functional analysis in probability and statistics. I keep up to date with relevant developments and try to find connections between these fields in my own work.

Keywords | randomized gradient descent, algorithmic regularization
information geometry, Bayesian statistics, high-dimensional inference

PUBLICATIONS

PREPRINTS

- [1] **Gabriel Clara**, Sophie Langer, and Johannes Schmidt-Hieber. *Dropout Regularization Versus ℓ_2 -Penalization in the Linear Model*. 2023. arXiv: [2306.10529](https://arxiv.org/abs/2306.10529) [[math.ST](#)].

CONFERENCE PROCEEDINGS

- [2] Kolyan Ray, Botond Szabó, and **Gabriel Clara**. “Spike and slab variational Bayes for high dimensional logistic regression”. In: *Advances in Neural Information Processing Systems (NeurIPS)* 33 (2020).

SOFTWARE PACKAGES

- [3] **Gabriel Clara**, Botond Szabo, and Kolyan Ray. *sparsevb: Spike-and-Slab Variational Bayes for Linear and Logistic Regression*. R package version 0.1.0. 2021. URL: <https://CRAN.R-project.org/package=sparsevb>.

TALKS & PRESENTATIONS

- 03/2024 | 15TH WORKSHOP ON STOCHASTIC MODELS, STATISTICS AND THEIR APPLICATIONS
Contributed Talk; Delft University of Technology, The Netherlands
- 11/2023 | 51ST MEETING OF THE DUTCH PROBABILITY AND STATISTICS COMMUNITY
Poster Presentation; Lunteren, The Netherlands
- 11/2023 | AI & MATHEMATICS PHD NETWORKING EVENT
Contributed Talk; Dutch Research Council (NWO) Utrecht, The Netherlands
- 10/2023 | SEMINAR OF STATISTICS & OPERATIONS RESEARCH
Invited Talk (On-Line); National and Kapodistrian University, Athens, Greece
- 09/2023 | MATHEMATICS OF DATA SCIENCE SEMINAR
Invited Talk; Universiteit Twente, Enschede, The Netherlands
- 08/2023 | 10TH INTERNATIONAL CONGRESS ON INDUSTRIAL AND APPLIED MATHEMATICS
Invited Mini-Symposium Talk; Waseda University, Tokyo, Japan
- 07/2023 | ÉCOLE D'ÉTÉ DE PROBABILITÉS DE SAINT-FLOUR
Contributed Talk; Saint Flour, France

PROFESSIONAL SERVICE

Journal Referee	Bernoulli Information and Inference Journal of Statistical Planning and Inference	Supervision	1 Bachelor thesis in Mathematics
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TEACHING EXPERIENCE

05/2017 | TEACHING ASSISTANT, Calculus I & II
started 09/2016 | University of Massachusetts Amherst

Present | TUTORIAL ASSISTANT, Various Mathematics Courses
started 09/2021 | Universiteit Twente

SKILLS

Programming | R (advanced)
LaTeX (advanced)
C++ (intermediate)
Python (intermediate)
MATLAB (intermediate)
Java (basic)

Languages | German (native)
English (fluent)
Italian (intermediate)
French (basic)

Computing | Unix terminal (advanced)