

# Jan-Ole Koslik

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## EDUCATION

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<b>Research Stay</b> University of British Columbia, Vancouver, Canada	March-April 2025
<b>PhD in Statistics</b> Bielefeld University, Bielefeld, Germany	2023 – today
<b>MSc Statistical Science</b> Bielefeld University, Bielefeld, Germany <i>Grade: 1.0; graduated first of my class</i>	2021 – 2023
<b>BSc Economics</b> (intermediate studies) Bielefeld University, Bielefeld, Germany	2020 – 2021
<b>Study Abroad</b> Budapest Business School, Budapest, Hungary	2019
<b>BA Business Administration</b> Bielefeld University of Applied Sciences, Bielefeld, Germany <i>Grade: 1.4</i>	2017 – 2020

## EMPLOYMENT

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<b>Research Associate</b> Statistics and Data Analysis Group Bielefeld University, Bielefeld, Germany	2023 – today
<b>Research Assistant</b> Statistics and Data Analysis Group Bielefeld University, Bielefeld, Germany	2022 – 2023
<b>Working Student</b> Pricing Intelligence CLAAS KGaA mbH, Harsewinkel, Germany	2021 – 2022
<b>Intern</b> Market Intelligence CLAAS KGaA mbH, Harsewinkel, Germany	2020

## PUBLICATIONS

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6. **Koslik, J.-O.**, Feldmann, C.C., Mews, S., Michels, R., Langrock, R. (2025). Inference on the state process of periodically inhomogeneous hidden Markov models for animal behavior. *The Annals of Applied Statistics* 19.4 (2025): 2724-2737.
5. Mews, S., **Koslik, J.-O.**, Langrock, R. (2025). How to build your latent Markov model: The role of time and space. *Statistical Modelling*, 0(0).
4. Bachons, R., **Koslik, J.-O.**, Michels, R., Ötting, M. (2025). PEP: a tackle value measuring the prevention of expected points. *Journal of Quantitative Analysis in Sports*, (0).
3. **Koslik, J.-O.** (2025). Hidden semi-Markov models with inhomogeneous state dwell-time distributions. *Computational Statistics & Data Analysis*, 108171.
2. Dyck, J., **Koslik, J.-O.**, Sauzet, O. (2025). EgoCor: an R package to fit exponential semi-variograms to model the local spatial correlation structure of health outcomes. *Journal of Open Research Software*, 13, 1.
1. Michels, R., **Koslik, J.-O.** (2024). On the combination of data smoothing and Markov-switching models. *Journal of the Royal Statistical Society – Series C: Applied Statistics*, qlad110.

## PREPRINTS

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- Ammann, K., Adam, T., **Koslik, J.-O.** (2026). Non-Homogeneous Markov-Switching Generalized Additive Models for Location, Scale, and Shape. Preprint, arXiv:2601.03760
- Vienken, M. N., **Koslik, J.-O.**, Langrock, R. (2025). Inference on state occupancy in covariate-driven hidden Markov models. Preprint, arXiv:2512.17496

Koslik, J.-O., Dupont, F., Auger-Méthé, M., Marcoux, M., Hussey, N., Heckman, N. (2025). Flexible unimodal density estimation in hidden Markov models. Preprint, arXiv:2511.17071

Koslik, J.-O. (2025). Tensor-product interactions in Markov-switching models. Preprint, arXiv:2507.01555

Koslik, J.-O. (2024). Efficient smoothness selection for nonparametric Markov-switching models via quasi restricted maximum likelihood. Preprint, arXiv:2411.11498

## SOFTWARE

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I have developed and participated in developing software packages for the R programming language:

- **LaMa**: Fast and convenient likelihood evaluation for latent Markov models like HMMs, HSMMs, SSMs and point processes. <https://cran.r-project.org/package=LaMa>
- **RTMBdist**: Distributions Compatible with Automatic Differentiation by RTMB. <https://cran.r-project.org/package=RTMBdist>
- **EgoCor**: Simple Presentation of Estimated Exponential Semi-Variograms. <https://cran.r-project.org/package=EgoCor>

## TEACHING

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### Workshops

*Hidden Markov Models for movement, acceleration and other ecological data — an introduction using moveHMM and momentuHMM in R*

Three-day online workshop.

September 2024

*Using hidden Markov models to uncover ecological state dynamics from biologging data*

One-day workshop in Tokyo, Japan.

March 2024

### Tutorials

Bielefeld University

2023 – today

- Mathematics (Bachelor level)
- Hidden Markov Models (Master level)
- Statistical Consulting (Master level)
- Generalised Linear Models (Master level)

Bielefeld University of Applied Sciences

2018 – 2020

- Statistics for Economists (Bachelor level)
- Mathematics for Economists (Bachelor level)

## GRANTS AND AWARDS

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**German public-private scholarship** (Deutschlandstipendium)

2019 – 2020 and 2022 – 2023

**Teaching award of the Department of Business Administration and Economics** for delivering one of the courses with the best evaluations across the department (for the course “Präsenzübung Mathematik II”, jointly with J. Dyck)

2024

**Mobility grant of the Bielefeld Graduate School in Theoretical Sciences (BGTS)**

2024

**Teaching award of the Department of Business Administration and Economics** for delivering one of the courses with the best evaluations across the department (for the course “Präsenzübung Mathematik I and II”, jointly with K. Ammann)

2025

## PRESENTATIONS

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*Efficient estimation of nonparametric Markov-switching models*

Talk at the National Centre for Statistical Ecology Meeting, University of St Andrews, Scotland, December 2025

*Fast approximate likelihood inference for indirectly observed hidden Markov models*

Talk at the Center for Statistics, Bielefeld University, Germany, December 2025

*Hidden semi-Markov models with inhomogeneous state dwell-time distributions*

Invited talk, MIAT Seminar, INRAE, Toulouse, France, November 2025

*Efficient estimation of nonparametric Markov-switching models*

Talk at the Statistical Week 2025, Wiesbaden, Germany, September 2025

*Latent Markov Models in Ecology: A Unifying Perspective*

Invited talk at the Nordic-Baltic Biometric Conference (NBBC), Oslo, Norway, June 2025

*Efficient smoothness selection for nonparametric Markov-switching models via quasi restricted maximum likelihood*

Invited talk, University of St Andrews, Scotland, February 2025

*Efficient smoothness selection for nonparametric Markov-switching models via quasi restricted maximum likelihood*

Invited talk, University of Göttingen, Germany, September 2024

*Exploring hidden dynamics: statistical inference in periodically inhomogeneous hidden Markov models for animal behaviour*

Talk at the Royal Statistical Society Conference (RSS), Brighton, UK, September 2024

*Inference on the state process of periodically inhomogeneous hidden Markov models for animal behaviour*

Talk at the International Statistical Ecology Conference (ISEC), Swansea, Wales, July 2024

*Mitigating consequences of the Markov assumption*

Poster at the 18. doctoral workshop of the Bielefeld Graduate School of Economics and Management (BiGSEM), Bielefeld University, Germany, December 2023

*Mitigating consequences of the Markov assumption*

Talk at the Center for Statistics, Bielefeld University, Germany, October 2023

## COMMUNITY INVOLVEMENT

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### Reviewer

- Journal of Computational and Graphical Statistics
- Journal of the Royal Statistical Society Series A
- Journal of the Royal Statistical Society Series C
- Computational Statistics and Data Analysis
- Methods in Ecology and Evolution
- Movement Ecology
- TEST

## SKILLS

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- **Programming:** R (including Rcpp), C++, Python
- **Tools:** LaTeX, git, SQL
- **Languages:** German, English

## VOLUNTEERING

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**Member of the student council** (Data Science & Statistical Science) 2021-2023  
Bielefeld University, Germany

**Representing the interests of student assistants** (SHK-Rat) 2022  
Bielefeld University, Germany

**Voluntary service** 2016-2017  
AWO nursery school Werther, Germany