CORNELIUS FRITZ

Ph.D. Student

corneliusfritz.github.io

Ludwigstraße. 33 ⋄ 80539 Munich, Germany

EDUCATION

LMU Munich — 2019 - present
Ph.D. in Statistics

LMU Munich — 2016 - 2018
M.Sc. in Statistics

Universidad Complutense de Madrid, Madrid — 2018
M.Sc. in Statistics, Visiting Student

LMU Munich — 2013 - 2017
B.S. in Statistics with a minor in Sociology

WORK EXPERIENCE

Department of Statistics, LMU Munich — 2019 - today
Research Assistant — *Munich, Germany*

- My research mainly revolves around analyzing dynamic networks to answer questions posed within substantive sciences, such as Political Science and Sociology, through novel data analysis techniques that combine statistical and machine learning thinking.
- I am also an active member of the CODAG (COVID-19 Data Analysis Group), where I am researching the interplay of mobility patterns and COVID-19 infections as well as supporting other projects.
- As part of a larger group in the statistics department, I helped organize workshops and conferences such as the DAGSTAT 2019, COSTNET 2020, and COSTNET COVID-19 Conference.
- My position is partially funded by the DFG project DFG Project "International Arms Trade: A Network Approach" and the Munich Center for Machine Learning (MCML).

Department of Statistics, LMU Munich — 2018 - 2019
Tutor — *Munich, Germany*

- I worked as a tutor for the bachelor class on *"generalized regression models"* in the winter semesters in 2018 and 2019

Department of Statistics, LMU Munich — 2016 - 2018
Graduate Assistant — *Munich, Germany*

- I worked as a graduate assistant for Constance Schmaling for the Data Science masters program supported by the Elite Network of Bavaria.
- In particular, I helped in planning and carrying out a scientific workshop in collaboration with the Center of Advanced Studies named *"What's New in Networks?"*

- On the side, I planned and programmed the website of the department of statistics in its current form (`www.en.statistik.uni-muenchen.de`) as well as most web-pages for the separate chairs and research groups.

Department of Statistics, LMU Munich   2015 - 2016
Undergraduate Assistant   *Munich, Germany*

- My initial job was to program Shiny applications in R to provide interactive tools that should be used in different bachelor courses (such as descriptive statistics, linear models, and generalized regression models)

TEACHING EXPERIENCE

- Research Seminar for graduate students on *Statistical Analysis of Social Networks* (2021, Lecturer and Supervisor)
- Research Seminar for graduate students on *Complex Networks: Community Detection and Dynamics*(2020, Lecturer and Supervisor)
- *Statistical Inference 2* for graduate students (2020 and 2021, Teaching Assitant)
- *Statistical Inference 1* for graduate students (2019 and 2020, Teaching Assitant)
- *Introduction to statistical software* for bachelor students (2019, Lecturer)
- *Generalized Regression Models* for bachelor students (2018 and 2019, Tutor)

LANGUAGE SKILS

German	Native
English	Fluent
Spanish	Intermediate

RESEARCH

General Research Interests

- Dynamic and Static Social Network Analysis
- Optimization and its statistical Properties
- General Statistical Modelling

Publications

[1] Cornelius Fritz et al. "Challenges in Interpreting Epidemiological Surveillance Data - Experiences from Germany". In: *Journal of Computational and Graphical Statistics (to appear)* (2022).

[2] Cornelius Fritz, Emilio Dorigatti, and David Rügamer. "Combining Graph Neural Networks and Spatio-temporal Disease Models to Predict COVID-19 Cases in Germany". In: *Scientific Reports* 3930.12 (2022), pp. 1–18. DOI: 10.1038/s41598-022-07757-5.

[3] Ursula Berger, Cornelius Fritz, and Göran Kauermann. "Eine statistische Analyse des Effekts von verpflichtenden Tests an Schulen mit Präsenzunterricht im Vergleich zum Distanzunterricht". In: *Das Gesundheitswesen (in press)* (2022).

[4] Cornelius Fritz and Göran Kauermann. "On the Interplay of Regional Mobility, Social Connectedness, and the Spread of COVID-19 in Germany". In: *Journal of the Royal Statistical Society. Series A (Statistics in Society)* 185.1 (2022). DOI: 10.1111/rssa.12753.

[5] Cornelius Fritz, Marius Mehrl, Paul W. Thurner, and Göran Kauermann. "The Role of Governmental Weapons Procurements in Forecasting Monthly Fatalities in Intrastate Conflicts: A Semiparametric Hierarchical Hurdle Model". In: *International Interactions* (Online First) (2021). DOI: 10.1080/03050629.2022.1993210.

[6] Cornelius Fritz, Paul W. Thurner, and Göran Kauermann. "Separable and Semiparametric Network-based Counting Processes applied to the International Combat Aircraft Trades". In: *Network Science* 9.3 (2021), pp. 291–311. DOI: 10.1017/nws.2021.9.

[7] Sandra A. Baumann, Cornelius Fritz, and Ralf S. Mueller. "Food antigen-specific IgE in dogs with suspected food hypersensitivity". In: *Tierarztliche Praxis. Ausgabe K, Kleintiere/Heimtiere* 48.6 (2020), pp. 395–402. DOI: 10.1055/A-1274-9210/ID/R12749210-0044.

[8] Cornelius Fritz, Michael Lebacher, and Göran Kauermann. "Tempus Volat, Hora Fugit: A survey of Tie-oriented Dynamic Network Models in Discrete and Continuous Time". In: *Statistica Neerlandica* 74.3 (2020), pp. 275–299. DOI: 10.1111/stan.12198.

Under Review

[9] Cornelius Fritz, Marius Mehrl, Paul W. Thurner, and Göran Kauermann. "Exponential Random Graph Models for Dynamic Signed Networks: An Application to International Relations". In: *arXiv* (2022). eprint: 2205.13411 (cs.SI).

[10] Cornelius Fritz, Giacomo De Nicola, Sevag Kevorg, Dietmar Harhoff, and Göran Kauermann. "Modelling the large and dynamically growing bipartite network of German patents and inventors". In: *arXiv* (2022). eprint: 2201.09744 (stat.AP).

[11] Cornelius Fritz, Giacomo De Nicola, Martje Rave, Maximilian Weigert, Ursula Berger, Helmut Küchenhoff, and Göran Kauermann. "Statistical modelling of COVID-19 data: Putting Generalised Additive Models to work". In: *Statistical Modelling* (conditionally accepted) (2022). arXiv: 2201.02182 [stat.AP].

[12] David Rügamer et al. "deepregression: a Flexible Neural Network Framework for Semi-Structured Deep Distributional Regression". In: *Journal of Statistical Software* (conditionally accepted) (2022). arXiv: 2104.02705 [stat.ML].

[13] Cornelius Fritz, Marius Mehrl, Paul W. Thurner, and Göran Kauermann. "All that Glitters is not Gold: Relational Events Models with Spurious Events". In: *arXiv* (2021). eprint: `2109.10348` (stat.ME).

In Preperation

[14] David Rügamer, Maximilian Schneider, Cornelius Fritz, Chris Kolb, Marius Mehrl, Paul Thurner, Bernd Bischl, Göran Kauermann, and Christian L. Müller. "Learning Sparse Parametric Distribution Models using the Hadamard Product Parameterization". In: *Prepatation* (2022+).

[15] Giacomo De Nicola, Cornelius Fritz, Marius Mehrl, and Göran Kauermann. "Statistical Network Data Analysis in Economics". In: *Prepatation* (2022+).

[16] Cornelius Fritz and Göran Kauermann. "People change: Relational event models with latent vertex dynamics". In: *Prepatation* (2022+).

Talks

- **29.03.2022**: All that Glitters is not Gold: Relational Events Models with Spurious Events. *DAG-STAT 2022 Hamburg*
- **26.11.2021 (Online)**: Networks $\neq$ Networks. *Center for Advanced Studies LMU: AI and Uncertainty*
- **8.10.2020 (Online)**: The Role of Governmental Weapons Procurements in Forecasting Monthly Fatalities in Intrastate Conflicts: A Semiparametric Hierarchical Hurdle Model. *ViEWS Workshop*
- **24.-25.9.2020 (Online)**: Tempus Volat, Hora Fugit - A Survey of Tie-Oriented Dynamic Network Models in Discrete and Continuous Time. *COSTNET 2020*
- **10.6.2020 (Online)**: Regional Mobility, Social Connectedness,and the Spread of COVID-19 in Germany. *COSTNET COVID-19 Conference*
- **13.-17.9.2020 (Online)**: A Counting Processes-based Model for the Analysis of the International Arms Trade Network from 1950 to 2017. *Sunbelt Virtual Conference*
- **9.-11.10.2019 (Bilbao, ES)**: A Counting Processes-based Model for the Analysis of the International Arms Trade Network from 1950 to 2017. *COSTNET19 Conference*
- **9.-11.9.2019 (Zurich, CH)**: A Counting Processes-based Model for the Analysis of the International Arms Trade Network from 1950 to 2017. *EUSN2019 - Europen Conference on Social Networks*
- **6.-7.9.2019 (Zurich, CH)**: Tempus Volat, Hora Fugit - A Survey of Tie-Oriented Dynamic Network Models in Discrete and Continuous Time. *Satellite meeting on Relational Event Model: EUSN2019 - Europen Conference on Social Networks*

Last updated: June 1, 2022