Jonas Rieger

rieger@statistik.tu-dortmund.de
https://jonasrieger.github.io/

Education

Doctoral degree *[Doktor der Naturwissenschaft]*, **Dr. rer. nat.** | ***Statistics*** — Sept. 2022
TU Dortmund University — Dortmund, Germany
- Reliability evaluation and an update algorithm for the latent Dirichlet allocation

Master of Science, M. Sc. | ***Statistics*** — Nov. 2018
TU Dortmund University — Dortmund, Germany

Bachelor of Science, B. Sc. | ***Statistics*** — Oct. 2016
TU Dortmund University — Dortmund, Germany

Previous and Current Positions

Postdoc — since Oct. 2022
TU Dortmund University — Dortmund, Germany

NLP Scientist — Oct. 2022 – Sept. 2023
Leibniz Institute for Media Research | Hans-Bredow-Institut (HBI) — Hamburg, Germany

Doctoral student — Dec. 2018 – Sept. 2022
TU Dortmund University — Dortmund, Germany

Affiliations

Leibniz Institute for Media Research | **Hans-Bredow-Institut (HBI)** — since Oct. 2023

Member of the TU Dortmund Young Academy — since June 2023

Member of DoCMA (Dortmund Center for Data-based Media Analysis) — since Dec. 2018

Funding

Research Center for Trustworthy Data Science and Security — Oct. 2023
Trustworthy performance evaluation of large language models — 21 000€

TU Dortmund Young Academy — June 2023
The era of ChatGPT: Evaluation and regulation of large language models — 5000€

Projects

NEAR — since Oct. 2023
Narrative Economics Alliance Ruhr — MERCUR

GADMO — Oct. 2022 – Sept. 2023
German-Austrian Digital Media Observatory — EU

FLACA — Oct. 2022 – Sept. 2023
Few-Shot Learning for Automated Content Analysis in Communication Science — BMBF

Project Affiliations

GADMO — since Oct. 2023
German-Austrian Digital Media Observatory — EU

FLACA — since Oct. 2023
Few-Shot Learning for Automated Content Analysis in Communication Science — BMBF

Research Interests

Methodological research

- Evaluation of topic models (i.a., quality and reliability) and other NLP systems
- Parameter-efficient fine-tuning (PEFT) for large language models in few-shot scenarios
- Model selection and parameter tuning of topic models
- Update algorithms and monitoring settings for topic models
- Detection of structural breaks, events and narratives in text corpora

Software engineering in R

- Author and maintainer of rollingLda and ldaPrototype, co-author and contributor of tosca and spINAR

Applied research

- Text corpus-based indicators
- Content analysis of texts and tweets of political parties and parliamentarians
- Argument mining in news and social media debates
- Characteristics of disinformation and fact-checks

Service to the Research Community

Reviewing

- Advances in Statistical Analysis
- Communication Methods and Measures
- Comparative European Politics
- Computational Intelligence
- Educational and Psychological Measurement
- Statistical Papers: DOI: 10.1007/s00362-019-01126-7

Conferences

- Program committee of workshop ClimateNLP at ACL 2024
- Organizing committee of Statistische Woche 2023

Invited Talks

ZPID Lecture Series — Dec. 2022
Keep rollin'! The abilities for monitoring growing corpora using RollingLDA — Trier, Germany

Contributions to Conferences and Workshops

Digital Total — Oct. 2023
Few-shot learning for automated content analysis (FLACA)
in the German media debate on arms deliveries to Ukraine — Hamburg, Germany

DiTox'23 Workshop @LDK 2023 — Sept. 2023
Debunking Disinformation with GADMO: A Topic Modeling Analysis
of a Comprehensive Corpus of German-language Fact-Checks — Vienna, Austria

Statistische Woche 2023 — Sept. 2023
Bekämpfung von Desinformation durch GADMO: Analyse eines umfassenden
deutschsprachigen Faktencheck-Korpus mithilfe von Topic Modellen — Dortmund, Germany

Statistische Woche 2023 — Sept. 2023
Scrutinizing ChatGPT against Few-Shot Learning with Adapter Extensions
and XLM-RoBERTa: A Case Study on Identifying Claims, Arguments and their Stance
in the German News Media Debate on Arms Deliveries to Ukraine — Dortmund, Germany

ECREA PolComm 2023 — Aug. 2023
Beyond "Master Frames": A Semi-automated Approach to
Studying Viewpoint Diversity of the Media Discourse — Berlin, Germany

DGPuK 2023 — May 2023
Few-shot learning for automated content analysis:
Efficient coding of arguments and claims in the debate on arms deliveries to Ukraine — Bremen, Germany

MUFin'23 Workshop @AAAI 2023 — Feb. 2023
Early Warning Systems? Building Time Consistent Perception Indicators
for Economic Uncertainty and Inflation Using Efficient Dynamic Modeling — Washington, DC, USA

SDP'22 Workshop @COLING 2022 — Oct. 2022
Finding scientific topics in contionuously growing text corpora — Gyeongju, Republic of Korea

Statistische Woche 2022 — Sept. 2022
Monitoring consistent topics in continuously growing scientific text corpora — Münster, Germany

Text2Story'22 Workshop @ECIR 2022 — Apr. 2022
Dynamic change detection in topics based on rolling LDAs — Stavanger, Norway

DAGStat 2022 — Mar. 2022
Improving the reliability of LDA results using LDAPrototype as selection criterion — Hamburg, Germany

EMNLP 2021 — Nov. 2021
RollingLDA: An Update Algorithm of Latent Dirichlet Allocation to
Construct Consistent Time Series from Textual Data — Punta Cana, Dominican Republic

EDML'20 Workshop @ECML PKDD 2020 — Sept. 2020
Assessing the Uncertainty of the Text Generating Process using Topic Models — Online

NLDB 2020 — June 2020
Improving Latent Dirichlet Allocation: On Reliability of the Novel Method LDAPrototype — Online

Statistische Woche 2019 — Sept. 2019
Quantifizierung der Stabilität der Latent Dirichlet Allocation
mithilfe von Clustering auf wiederholten Durchläufen — Trier, Germany

DGPuK 2019 — May 2019
Softwaretools für die Kommunikationsforschung — Münster, Germany

DAGStat 2019 — Mar. 2019
Measuring Stability of Replicated LDA Runs — Munich, Germany

PUBLICATIONS

Dissertation

- Rieger (2022). "Reliability evaluation and an update algorithm for the latent Dirichlet allocation". *TU Dortmund University*. DOI: 10.17877/DE290R-22949.

Peer-reviewed publications

- Rieger, Yanchenko, Ruckdeschel, von Nordheim, Kleinen-von Königslöw, Wiedemann (forthcoming). "Few-shot learning for automated content analysis: Efficient coding of arguments and claims in the debate on arms deliveries to Ukraine". Accepted for: *Studies in Communication and Media*.
- Krause, Rieger, Flossdorf, Jentsch, Beck (2023). "Visually Analyzing Topic Change Points in Temporal Text Collections". In: *Vision, Modeling, and Visualization*. DOI: 10.2312/vmv.20231231.
- Rieger, Hornig, Flossdorf, Müller, Mündges, Jentsch, Elmer (2023). "Debunking Disinformation with GADMO: A Topic Modeling Analysis of a Comprehensive Corpus of German-language Fact-Checks". In: *Proceedings of the 4th Conference on Language, Data and Knowledge*, pp. 520–531. URL: https://aclanthology.org/2023.ldk-1.56.
- Rieger, Hornig, Schmidt, Müller (2023). "Early Warning Systems? Building Time Consistent Perception Indicators for Economic Uncertainty and Inflation Using Efficient Dynamic Modeling". In: *Proceedings of the 3rd Workshop on Modelling Uncertainty in the Financial World*. URL: https://github.com/JonasRieger/mufin23/blob/master/paper.pdf.

- Bittermann, Rieger (2022). "Finding scientific topics in continuously growing text corpora". In: *Proceedings of the 3rd Workshop on Scholarly Document Processing*, pp. 7–18. URL: https://aclanthology.org/2022.sdp-1.2.
- Lange, Rieger, Benner, Jentsch (2022). "Zeitenwenden: Detecting changes in the German political discourse". In: *Proceedings of the 2nd Workshop on Computational Linguistics for Political Text Analysis*. URL: https://old.gscl.org/en/arbeitskreise/cpss/cpss-2022/workshop-proceedings-2022.
- Rieger, Lange, Flossdorf, Jentsch (2022). "Dynamic change detection in topics based on rolling LDAs". In: *Proceedings of the Text2Story'22 Workshop*. CEUR-WS. URL: http://ceur-ws.org/Vol-3117/.
- Rieger, Jentsch, Rahnenführer (2021). "RollingLDA: An Update Algorithm of Latent Dirichlet Allocation to Construct Consistent Time Series from Textual Data". In: *Findings Proceedings of the 2021 EMNLP-Conference*. ACL, pp. 2337–2347. DOI: 10.18653/v1/2021.findings-emnlp.201.
- von Nordheim, Rieger, Kleinen-von Königslöw (2021). "From the Fringes to the Core - An Analysis of Right-Wing Populists' Linking Practices in Seven EU Parliaments and Switzerland". In: *Digital Journalism*, pp. 1–19. DOI: 10.1080/21670811.2021.1970602.
- von Nordheim, Koppers, Boczek, Rieger, Jentsch, Müller, Rahnenführer (2021). Die Entwicklung von Forschungssoftware als praktische Interdisziplinarität. In: *M&K Medien & Kommunikationswissenschaft* 69, pp. 80–96. DOI: 10.5771/1615-634X-2021-1-80.
- Rieger, Jentsch, Rahnenführer (2020). "Assessing the Uncertainty of the Text Generating Process Using Topic Models". In: *Proceedings of the ECML PKDD 2020 Workshops*. Vol. 1323. CCIS. Springer, pp. 385–396. DOI: 10.1007/978-3-030-65965-3_26.
- Rieger (2020). "ldaPrototype: A method in R to get a Prototype of multiple Latent Dirichlet Allocations". In: *Journal of Open Source Software* 5.51, p. 2181. DOI: 10.21105/joss.02181.
- Rieger, Rahnenführer, Jentsch (2020). "Improving Latent Dirichlet Allocation: On Reliability of the Novel Method LDAPrototype". In: *Natural Language Processing and Information Systems*, NLDB 2020. Vol. 12089. LNCS. Springer, pp. 118–125. DOI: 10.1007/978-3-030-51310-8_11.
- von Nordheim, Rieger (2020). "Im Zerrspiegel des Populismus - Eine computergestützte Analyse der Verlinkungspraxis von Bundestagsabgeordneten auf Twitter". In: *Publizistik* 65, pp. 403–424. DOI: 10.1007/s11616-020-00591-7.

Selected non-peer reviewed publications (preprints, working papers and datasets)

- Rieger, Jentsch, Rahnenführer (2022). "LDAPrototype: A Model Selection Algorithm to Improve Reliability of Latent Dirichlet Allocation". Research Square. DOI: 10.21203/rs.3.rs-1486359/v1.
- Lange, Rieger, Jentsch (2022). "Lex2Sent: A bagging approach to unsupervised sentiment analysis". arXiv. DOI: 10.48550/arXiv.2209.13023.
- Shrub, Rieger, Müller, Jentsch (2022). "Text data rule - don't they? A study on the (additional) information of Handelsblatt data for nowcasting German GDP in comparison to established economic indicators". In: *Ruhr Economic Papers* #964. DOI: 10.4419/96973128.
- Jentsch, Mammen, Müller, Rieger, Schötz (2021). "Text mining methods for measuring the coherence of party manifestos for the German federal elections from 1990 to 2021". In: *DoCMA Working Paper* #8. DOI: 10.17877/de290r-22363.
- Rieger, von Nordheim (2021). "corona100d - German-language Twitter dataset of the first 100 days after Chancellor Merkel addressed the coronavirus outbreak on TV". In: *DoCMA Working Paper* #4. DOI: 10.17877/DE290R-21911.

Teaching Experience (at the TU Dortmund University, if not specified)

Natural Language Processing | ***Lecture (English)*** — WiSe 2023/24

Introduction to Topic Modeling | ***Seminar (English)*** — SuSe 2023
University of Bremen

Text as Data | ***Lecture (English)*** — WiSe 2022/23

Data Mining Cup | ***Seminar (English)*** — SuSe 2019 – 2024

Einführung in LaTeX | ***Compact course (German)*** — SuSe 2019 – 2022

Fallstudien I | ***Seminar (German)*** — WiSe 2021/22

Schätzen und Testen | ***Organization (German)*** — WiSe 2021/22

Nichtparametrische Verfahren | ***Exercise (German)*** — WiSe 2020/21

Text Data meets Econometrics | ***Seminar (English)*** WiSe 2020/21
Entscheidungstheorie - Statistik VI | ***Exercise (German)*** SuSe 2020
Wahrscheinlichkeitstheorie - Statistik V | ***Exercise (German)*** WiSe 2019/20
Textdatenanalyse | ***Seminar (German)*** SuSe 2019

SUPERVISED THESES

Master

- Semantic shift modelling with graph neural networks (Imene Kolli, 2024)
- Diachronic sense modeling with hierarchical word embeddings (Aymane Hachcham, 2024)
- #FrierenFürDenFrieden: Quantifizierung des Diskurses zum Thema Gas- und Energiesparen auf Twitter durch Anwendung von NLP-Methoden und Textklassifizierung durch RoBERTa (Carmen Loschke, 2023)
- Comparison of diachronic embeddings with pre-trained model embeddings for historical texts (Priyanka Madiraju, 2023)
- Text Data-based nowcasting of German GDP growth using newspaper data (Yuliya Shrub, 2022)
- Resampling strategies for unsupervised sentiment analysis using lexicon-based text embedding methods (Kai-Robin Lange, 2021)

Bachelor

- Comparison of active learning techniques for the benefit of data set generation in the field of text mining (Jannik Bloß, 2023)