Ercong Nie

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Status: Jul. 2025

Research Interest

- **Multilingual NLP:** prompt-based learning for multilingual tasks [9], [24], [25], [19], [20], multilingual benchmark and evaluation [1], [7], [22], [11], cross-lingual transfer [8], [16], [18], [26].
- **Efficient NLP Methods:** parameter-efficient finetuning [3], [13], [17], data efficiency [23], [15], [27].
- **Human-Centric NLP:** mechanistic interpretability [10], [2], [4], [12], [14], human-inspired NLP [5], [27].

Education

2022 – 2025	**Ph.D. University of Munich (LMU)** at Center for Information and Language Processing (CIS), supervised by PD. Dr. Helmut Schmid and Prof. Hinrich Schütze. **Expected graduation: end of 2025**
2020 – 2022	**M.Sc. University of Munich (LMU)** Computational Linguistics and Informatics Thesis title: *Zero-Shot Learning on Low-Resource Languages by Cross-Lingual Retrieval.*
2015 – 2019	**B.A. Shanghai Jiao Tong University (SJTU)** German Linguistics and Finance Thesis title: *A Corpus-based Study of Metaphors in the Football Language.*
2018	**Exchange semester, University of Heidelberg (RKU)** German Linguistics Courses: *Language Typology, Psycholinguistics, Second Language Acquisition, etc.*

Experience

2022 – now	**Doctoral Researcher,** *Munich Center for Machine Learning (MCML)* Conducted advanced NLP research within the framework of MCML.
2024	**Visiting Researcher,** *University of Copenhagen* Research stay at Pioneer Centre for Artificial Intelligence & CopeNLU lab led by Prof. Isabelle Augenstein.
2024 – now	**Research Intern,** *Huawei Munich Research Center* Technological analysis and insights into AI computing, LLM interpretability, AI search engine, etc.
2023 – now	**Project Participant,** *Humboldt University of Berlin (HUB)* Participating in the Sonderforschungsbereich project (SFB 1412) funded by the German Research Foundation (DFG), using natural language processing technology to assist in the study of emergence and transfer of register patterns in historical German texts.
2021 – now	**Teaching Assistant,** *University of Munich (LMU)* Leading tutorials and exercises of Bachelor and Master courses covering a wide range of NLP-related topics, such as statistical methods, finite state technologies, deep learning foundations, human-centric NLP, etc.
2021 – 2022	**Working Student,** *Infineon Technologies AG* Worked at the *Supply Chain Innovation Team*, developed a document retrieval system based on sentence transformers and knowledge graph.
2021	**Research Assistant,** *University of Munich (LMU)* Assisted in the DFG project *ReMLAV: Relational Machine Learning for Argument Validation,* worked on the construction of a claim detection dataset.

Honors and Grants

2024   ◾ **BMBF Software Campus Doctoral Research Grant (115,000 EUR).** German Federal Ministry of Education and Research (BMBF), Germany.

◾ **OpenAI Researcher Access Program (5,000 USD).** OpenAI, USA.

◾ **DDSA Research Visit Grant (15,000 DKK).** Danish Data Science Academy (DDSA), Denmark.

2022   ◾ **LMU-CSC Scholarship for Doctoral Study.** University of Munich (LMU) and China Scholarship Council (CSC), Germany & China.

2019   ◾ **Outstanding Graduate.** Shanghai Jiao Tong University (SJTU), China.

Selected Publications

ACL 2025   ◾ **Bmike-53: Investigating cross-lingual knowledge editing with in-context learning** [11]
Ercong Nie*, Bo Shao*, Zifeng Ding, Mingyang Wang, Helmut Schmid, Hinrich Schütze

(Findings) ACL 2025   ◾ **Large Language Models as Neurolinguistic Subjects: Identifying Internal Representations for Form and Meaning** [10]
Linyang He, Ercong Nie, Helmut Schmid, Hinrich Schütze, Nima Mesgarani, Jonathan Brennan.

(Findings) ACL 2024   ◾ **GNNavi: Navigating the Information Flow in Large Language Models by Graph Neural Network** [17]
Shuzhou Yuan, Ercong Nie, Michael Färber, Helmut Schmid, and Hinrich Schütze

(Findings) ACL 2023   ◾ **Cross-Lingual Retrieval Augmented Prompt for Low-Resource Languages** [20]
Ercong Nie*, Sheng Liang*, Helmut Schmid, and Hinrich Schütze

(Findings) EMNLP 2023   ◾ **Unleashing the Multilingual Encoder Potential: Boosting Zero-Shot Performance via Probability Calibration** [19]
Ercong Nie, Helmut Schmid, and Hinrich Schütze

ALP 2023   ◾ **Cross-Lingual Constituency Parsing for Middle High German: A Delexicalized Approach** [26]
Ercong Nie, Helmut Schmid, and Hinrich Schütze

KONVENS 2023   ◾ **Is Prompt-Based Finetuning Always Better than Vanilla Finetuning? Insights from Cross-Lingual Language Understanding** [18]
Bolei Ma*, Ercong Nie*, Helmut Schmid, Färber Michael, and Hinrich Schütze

EACL 2024   ◾ **ToPro: Token-Level Prompt Decomposition for Cross-Lingual Sequence Labeling Tasks** [16]
Bolei Ma*, Ercong Nie*, Shuzhou Yuan, Helmut Schmid, Färber Michael, and Frauke Kreuter, Hinrich Schütze

ECML-PKDD 2024   ◾ **A Unified Data Augmentation Framework for Low-Resource Multi-Domain Dialogue Generation** [15]
Yongkang Liu*, Ercong Nie*, Shi Feng, Zheng Hua, Zifeng Ding, and Daling Wang, Yifei Zhang, Hinrich Schütze

Academic Activities

Conference PC Member	ARR 2024&2025 (ACL, EMNLP, NAACL, EACL), COLING 2025&2024, IJCNN 2025, LAW 2025, ALP 2025, SemEval 2024, BabyLM 2023, etc.
Journal Reviewer	ACM Transactions on Intelligent Systems and Technology (ACM TIST), Royal Society Open Science (RSOS), ACM Transactions on Asian and Low-Resource Language Information Processing (ACM TALLIP).
Talks	**Dec. 2024**. Invited talk on the probing of large language models at the Technical University of Dresden. **Jun. 2024**. Invited talk on the semi-automatic annotation of historical German at the Humboldt University of Berlin.
Community Members	**Committee member of NICE**, an NLP Academic Exchange Platform. **Member of AI Grid**, a German AI community connecting young AI scientists funded by the German Federal Ministry of Education and Research. **Junior member of MCML** (Munich Center for Machine Learning), one of six German national AI Competence Centers. **Member of NLP/CL communities** such as ACL, GSCL (German Society for Computational Linguistics and Language Technology)

Teaching

Tutoring

SS 23, 24, 25	**Human-centric Natural Language Processing Seminar** (Master)
WS 23, 24	**Statistical Methods in the Language Processing** (Bachelor)
WS 22, 23, 24	**Foundations of Advanced Natural Language Processing** (Master)
WS 21	**Finite State Technologies** (Master)

Student Supervision

WS 24/25	**MA Thesis**: AI Assisted Semantic Search on Domain Specific Unstructured Data (co-supervision with **Infineon**)
	MA Thesis: Multilingual Knowledge Incorporation for Large Language Models
SS 24	**MA Thesis**: Enhancing Retrieval Augmented Generation (RAG) for Domain-Specific Content (co-supervision with **Bosch**)
	Course Project: KDD CUP 24: Meta Comprehensive Retrieval-Augmented Generation Benchmark
WS 23/24	**MA Thesis**: Enhancing Reasoning and Safety: Integrating Classical Rule-Based AI with Large Language Models
	Course Project: SemEval'24 Task 1: Measuring the Semantic Textual Relatedness
	Course Project: SemEval'24 Task 8: Machine-Generated Text Detection
SS 23	**MA Thesis**: Prompt-based finetuning of multilingual models for zero-shot cross-lingual transfer
	MA Thesis: Extend the cross-lingual retrieval-augmented prompting method to new tasks and settings
	Course Project: BabyLM Challenge: Sample-efficient pretraining on a developmentally plausible corpus

Skills

Natural Languages	🔖	Chinese Mandarin (Native), English (Fluent), German (Fluent)
Programming Languages	🔖	Python (Proficient), Bash (Good), C++ (Basic), R (Basic)
Deep Learning	🔖	PyTorch, HuggingFace, Numpy, Scikit-learn, Keras,…
Tools	🔖	LaTeX, HTML, Linux, Jupyter Notebook, Git, VSCode, PyCharm, Slurm,…

Publication List

* Equal contribution, † Corresponding author.

Preprints

1. C. Chan, Y. Yim, H. Zeng, Z. Zou, X. Cheng, Z. Sun, Z. Deng, K. Chung, Y. Ao, Y. Fan, C. Jiayang, **E. Nie**, *et al.*, "Xtom: Exploring the multilingual theory of mind for large language models," *arXiv preprint arXiv:2506.02461*, Jun. 2025. 🔗 URL: https://arxiv.org/pdf/2506.02461.

2. Y. Liu, M. Wang, A. H. Kargaran, F. Körner, **E. Nie**, B. Plank, F. Yvon, and H. Schütze, "Tracing multilingual factual knowledge acquisition in pretraining," *arXiv preprint arXiv:2505.14824*, May 2025. 🔗 URL: https://arxiv.org/pdf/2505.14824.

3. Y. Liu, X. Xu, **E. Nie**, Z. Wang, S. Feng, D. Wang, Q. Li, and H. Schütze, "Look within or look beyond? a theoretical comparison between parameter-efficient and full fine-tuning," *arXiv preprint arXiv:2505.22355*, May 2025. 🔗 URL: https://arxiv.org/pdf/2505.22355.

4. **E. Nie**, H. Schmid, and H. Schütze, "Mechanistic understanding and mitigation of language confusion in english-centric large language models," *arXiv preprint arXiv:2505.16538*, May 2025. 🔗 URL: https://arxiv.org/pdf/2505.16538.

5. S. Yuan*, **E. Nie***, L. Kouba, A. Y. Kangen, H. Schmid, H. Schütze, and M. Färber, "Llm in the loop: Creating the paradehate dataset for hate speech detoxification," *arXiv preprint arXiv:2506.01484*, Jun. 2025. 🔗 URL: https://arxiv.org/pdf/2506.01484.

6. S. Yuan*, **E. Nie***, M. Tawfelis, H. Schmid, H. Schütze, and M. Färber, "Hateful person or hateful model? investigating the role of personas in hate speech detection by large language models," *arXiv preprint arXiv:2506.08593*, Jun. 2025. 🔗 URL: https://arxiv.org/pdf/2506.08593.

Journal Articles

1. L. He*, **E. Nie***, J. Brennan, H. Schmid, H. Schütze, and N. Mesgarani, "Investigating multilingual conceptual understanding of large language models with minimal pair probing," *ACM Transactions on Asian and Low- Resource Language Information Processing (Under Review)*, 2025.

2. **E. Nie**, S. Peng, H. Schmid, and H. Schütze, "Parsing middle high german: Exploring cross-lingual nlp for treebank construction in low-resource historical languages," *Digital Scholarship in the Humanities (Under Review)*, 2025.

3. **E. Nie**, S. Yuan, B. Ma, H. Schmid, M. Färber, F. Kreuter, and H. Schütze, "Decomposed prompting for multilingual sequence labeling," *Natural Language Processing (Under Review)*, 2025.

Conferences

1. L. He, **E. Nie**, H. Schmid, H. Schütze, N. Mesgarani, and J. Brennan, "Large language models as neurolinguistic subjects: Identifying internal representations for form and meaning," in *Findings of the Association for Computational Linguistics: ACL 2025*, W. Che, J. Nabende, E. Shutova, and M. T. Pilehvar, Eds., Vienna, Austria: Association for Computational Linguistics, Jul. 2025, pp. 19 284–19 302, ISBN: 979-8-89176-256-5. 🔗 URL: https://aclanthology.org/2025.findings-acl.986/.

2   **E. Nie***, B. Shao*, Z. Ding, M. Wang, H. Schmid, and H. Schütze, "Bmike-53: Investigating cross-lingual knowledge editing with in-context learning," in *Proceedings of the 63rd Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*, W. Che, J. Nabende, E. Shutova, and M. T. Pilehvar, Eds., Vienna, Austria: Association for Computational Linguistics, Jul. 2025, pp. 16 357–16 374, ISBN: 979-8-89176-251-0. 🔗 URL: https://aclanthology.org/2025.acl-long.798/.

3   M. Wang, H. Adel, L. Lange, Y. Liu, **E. Nie**, J. Strötgen, and H. Schütze, "Lost in multilinguality: Dissecting cross-lingual factual inconsistency in transformer language models," in *Proceedings of the 63rd Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*, W. Che, J. Nabende, E. Shutova, and M. T. Pilehvar, Eds., Vienna, Austria: Association for Computational Linguistics, Jul. 2025, pp. 5075–5094, ISBN: 979-8-89176-251-0. 🔗 URL: https://aclanthology.org/2025.acl-long.253/.

4   S. Yuan*, **E. Nie***, B. Ma, and M. Färber, "Why lift so heavy? slimming large language models by cutting off the layers," in *2025 International Joint Conference on Neural Networks (IJCNN)*, IEEE, Jun. 2025. 🔗 URL: https://arxiv.org/pdf/2402.11700.pdf.

5   L. He, P. Chen, **E. Nie**, Y. Li, and J. R. Brennan, "Decoding probing: Revealing internal linguistic structures in neural language models using minimal pairs," in *Proceedings of the 2024 Joint International Conference on Computational Linguistics, Language Resources and Evaluation*, Torino, Italy: ELRA Language Resources Association and International Committee on Computational Linguistics, May 2024. 🔗 URL: https://aclanthology.org/2024.lrec-main.402.pdf.

6   Y. Liu*, **E. Nie***, S. Feng, Z. Hua, Z. Ding, D. Wang, Y. Zhang, and H. Schütze, "A unified data augmentation framework for low-resource multi-domain dialogue generation," in *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases*, A. Bifet, J. Davis, T. Krilavičius, M. Kull, E. Ntoutsi, and I. Žliobaitė, Eds., Vilnus, Lithunia: Springer, Sep. 2024. 🔗 URL: https://link.springer.com/chapter/10.1007/978-3-031-70344-7_10.

7   B. Ma*, **E. Nie***, S. Yuan, H. Schmid, F. Michael, F. Kreuter, and H. Schütze, "Topro: Token-level prompt decomposition for cross-lingual sequence labeling tasks," in *Proceedings of the 18th Conference of the European Chapter of the Association for Computational Linguistics*, Malta, Malta: Association for Computational Linguistics, Mar. 2024. 🔗 URL: https://aclanthology.org/2024.eacl-long.164v2.pdf.

8   S. Yuan, **E. Nie**, M. Färber, H. Schmid, and H. Schütze, "Gnnavi: Navigating the information flow in large language models by graph neural network," in *Findings of the Association for Computational Linguistics: ACL 2024*, Bangkok, Thailand: Association for Computational Linguistics, Aug. 2024. 🔗 URL: https://aclanthology.org/2024.findings-acl.237.pdf.

9   B. Ma*, **E. Nie***, H. Schmid, and H. Schuetze, "Is prompt-based finetuning always better than vanilla finetuning? insights from cross-lingual language understanding," in *Proceedings of the 19th Conference on Natural Language Processing (KONVENS 2023)*, M. Georges, A. Herygers, A. Friedrich, and B. Roth, Eds., Ingolstadt, Germany: Association for Computational Lingustics, Sep. 2023, pp. 1–16. 🔗 URL: https://aclanthology.org/2023.konvens-main.1.

10   **E. Nie**, H. Schmid, and H. Schütze, "Unleashing the multilingual encoder potential: Boosting zero-shot performance via probability calibration," in *Findings of the Association for Computational Linguistics: EMNLP 2023*, Singapore, Singapore: Association for Computational Linguistics, Dec. 2023. 🔗 URL: https://aclanthology.org/2023.findings-emnlp.1056/.

11   **E. Nie***, S. Liang*, H. Schmid, and H. Schütze, "Cross-lingual retrieval augmented prompt for low-resource languages," in *Findings of the Association for Computational Linguistics: ACL 2023*, Toronto, Canada: Association for Computational Linguistics, Jul. 2023, pp. 8320–8340. 🔗 DOI: 10.18653/v1/2023.findings-acl.528.

Workshops

1 L. Hagström, **E. Nie**, R. Halifa, H. Schmid, R. Johansson, and A. Junge, "Language model re-rankers are steered by lexical similarities," in *Proceedings of the Seventh Fact Extraction and VERification Workshop (FEVER)*, Vienna, Austria: Association for Computational Linguistics, Jul. 2025. 🔗 URL: https://arxiv.org/pdf/2502.17036.

2 L. He*, **E. Nie***, S. S. Dindar, A. Firoozi, A. Florea, V. Nguyen, C. Puffay, R. Shimizu, H. Ye, J. Brennan, *et al.*, "Xcomps: A multilingual benchmark of conceptual minimal pairs," in *Proceedings of the 7th Workshop on Research in Computational Linguistic Typology and Multilingual NLP*, Vienna, Austria: Association for Computational Linguistics, Aug. 2025. 🔗 URL: https://arxiv.org/pdf/2502.19737.

3 H. Chen, J. Büssing, D. Rügamer, and **E. Nie**†, "Team mgtd4adl at semeval-2024 task 8: Leveraging (sentence) transformer models with contrastive learning for identifying machine-generated text," in *Proceedings of the 18th International Workshop on Semantic Evaluation (SemEval-2024)*, Mexico City, Mexico: Association for Computational Linguistics, Jun. 2024, pp. 1722–1729. 🔗 URL: https://aclanthology.org/2024.semeval-1.245.pdf.

4 X. Li, **E. Nie**, and S. Liang, "Crosslingual retrieval augmented in-context learning for bangla," in *Proceedings of the First Workshop on Bangla Language Processing*, Singapore, Singapore: Association for Computational Linguistics, Dec. 2023. 🔗 URL: https://aclanthology.org/2023.banglalp-1.15.pdf.

5 X. Li, **E. Nie**, and S. Liang, "From classification to generation: Insights into crosslingual retrieval augmented icl," in *NeurIPS 2023 Workshop on Instruction Tuning and Instruction Following*, New Orleans, Louisiana, United States, Dec. 2023. 🔗 URL: https://openreview.net/pdf?id=KLPLCXo4aD.

6 **E. Nie**, H. Schmid, and H. Schütze, "Cross-lingual constituency parsing for middle high german: A delexicalized approach," in *Proceedings of the Ancient Language Processing Workshop*, Varna, Bulgaria: INCOMA Ltd., Shoumen, Bulgaria, Sep. 2023. 🔗 URL: https://aclanthology.org/2023.alp-1.8/.

7 Z. Zhang*, H. Yang*, B. Ma*, D. Rügamer, and **E. Nie**†, "Baby's cothought: Leveraging large language models for enhanced reasoning in compact models," in *Proceedings of the Workshop on Cognitive Modeling and Computational Linguistics*, Singapore, Singapore: Association for Computational Linguistics, Dec. 2023. 🔗 URL: https://aclanthology.org/2023.conll-babylm.13/.

8 I. Ziegler, B. Ma, **E. Nie**, B. Bischl, D. Rügamer, B. Schubert, and E. Dorigatti, "What cleaves? is proteasomal cleavage prediction reaching a ceiling?" In *NeurIPS 2022 Workshop on Learning Meaningful Representations of Life*, online, Dec. 2022. 🔗 URL: https://openreview.net/forum?id=bUyk2atqXqt.

Datasets and Resources

1 J. Fleischer, L. Haden, M. Klotz, **E. Nie**, H. Schmid, G. Schnelle, L. Slawski, and L. E. Zeige, "Korpus zur erforschung von registerphänomenen bei martin luther (regil)," version 0.1, *Zenodo*, May 2025. 🔗 DOI: 10.5281/zenodo.14702151.