# Roya Yunjie He

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## Education

2022 – 2026 **Ph.D. Computer Science** at University of Stuttgart, Germany
Supervisor and advisor: Prof. Dr. Steffen Staab and Dr. Daniel Hernández
Thesis title: *Towards Explainability, Expressiveness and Scalability in Query Answer Prediction over Incomplete Graph Databases*

2020 – 2021 **M.Sc. Computer Science** at University College London, UK.
Major: Computational Statistics and Machine Learning
Grade: Distinction (82.0/100.0)
Thesis title: *Graph Attention with Hierarchies for Multi-hop Question Answering*.

2017 – 2020 **B.Sc. Economics and Statistics** at University College London, UK.
Grade: First Class Honours (78.0/100.0)
Core Modules: Advanced Linear Algebra, Calculus, R, Python, Stochastic System, Statistical Inference, Probability and Statistics

## Research & Work Experiences

April 2023 – Now **Doctoral Researcher at Bosch Center for Artificial Intelligence,** Germany.
– Supervised by Prof. Dr. Evgeny Kharlamov, my research is oriented towards enabling reliable decision-making within data-imperfect environments at Bosch.
– Developed novel neural-symbolic AI techniques to enhance reasoning capabilities over Bosch's manufacturing and product knowledge graphs.
– Key Achievement: Generated foundational intellectual property, resulting in two filed patents based on the research outcomes.

Jun 2021 – Oct 2021 **Research Internship at Huawei Noah's Ark Lab - NLP group,** London, UK.
– Supervised by Dr. Philip Gorinski and Prof. Dr. Pontus Stenetorp, I investigated the influence of hierarchical Graph Neural Network structures on multi-hop machine reading comprehension task.
– Designed and developed two novel architectural enhancements to an existing Hierarchical Graph Network (HGN) model to significantly improve its performance in processing complex, multi-step queries.

Jun 2020 – Aug 2020 **Data Analyst Intern Internship at Huatai Technology,** China.
– HUATAI, a fast-growing data tech startup, commits to provide data-driven professional business suggestions to clients. I worked as part of the big data team to perform exploratory and statistical analysis to reveal trends, understand user behaviors and draw insightful conclusions on the performance of products.

Jun 2019 – Sep 2019 **Research Assistant at Alan Turing Institute** London, UK.
– Supervised by Dr. Franz Király, I contributed to the design and the implementation of Bayesian machine learning toolboxes, MLRpro and Distr6.

## Selected Research Publications

1. B. Xiong, M. Nayyeri, M. Jin, **Y. He**, M. Cochez, S. Pan, and S. Staab, "Geometric relational embeddings: Progress and prospects," English, in *Handbook on Neurosymbolic AI and Knowledge Graphs* (Frontiers in Artificial Intelligence and Applications), P. Hitzler, A. Dalal, M. Mahdavinejad, and S. Norouzi, Eds., Frontiers in Artificial Intelligence and Applications. Netherlands: IOS Press, 2025, pp. 213–229, ISBN: 9781643685786. DOI: 10.3233/FAIA250208.
2. **Y. He**, B. Xiong, D. Hernández, Y. Zhu, E. Kharlamov, and S. Staab, "DAGE: DAG query answering via relational combinator with logical constraints," in *WWW*, ACM, 2025, pp. 2514–2529.
3. Y. Zhu, N. Potyka, J. Pan, B. Xiong, **Y. He**, E. Kharlamov, and S. Staab, "Conformalized answer set prediction for knowledge graph embedding," in *NAACL (Long Papers)*, Association for Computational Linguistics, 2025, pp. 731–750.
4. N. Potyka, Y. Zhu, **Y. He**, E. Kharlamov, and S. Staab, "Robust knowledge extraction from large language models using social choice theory," in *AAMAS*, International Foundation for Autonomous Agents and Multiagent Systems / ACM, 2024, pp. 1593–1601.
5. **Y. He**, D. Hernández, M. Nayyeri, B. Xiong, Y. Zhu, E. Kharlamov, and S. Staab, "Generating sroi$^-$ ontologies via knowledge graph query embedding learning," in *ECAI*, ser. Frontiers in Artificial Intelligence and Applications, vol. 392, IOS Press, 2024, pp. 4279–4286.
6. Y. Zhu, N. Potyka, M. Nayyeri, B. Xiong, **Y. He**, E. Kharlamov, and S. Staab, "Predictive multiplicity of knowledge graph embeddings in link prediction," in *EMNLP (Findings)*, Association for Computational Linguistics, 2024, pp. 334–354.
7. **Y. He**, P. J. Gorinski, I. Staliunaite, and P. Stenetorp, "Graph attention with hierarchies for multi-hop question answering," *CoRR*, vol. abs/2301.11792, 2023.
8. **Y. He**, M. Nayyeri, B. Xiong, Y. Zhu, E. Kharlamov, and S. Staab, "Can pattern learning enhance complex logical query answering?" In *ISWC (Posters/Demos/Industry)*, ser. CEUR Workshop Proceedings, vol. 3632, CEUR-WS.org, 2023.
9. B. Zhou, Z. Tan, Z. Zheng, D. Zhou, **Y. He**, Y. Zhu, M. Yahya, T. Tran, D. Stepanova, M. H. Gad-Elrab, and E. Kharlamov, "Neuro-symbolic AI at bosch: Data foundation, insights, and deployment," in *ISWC (Posters/Demos/Industry)*, ser. CEUR Workshop Proceedings, vol. 3254, CEUR-WS.org, 2022.

## Miscellaneous Experience

### Awards and Achievements

2021 **Dean's List for outstanding academic performance**, University College London.

2020 **Silver Medal, ASHARE Energy Prediction**, Kaggle.

### Community Services

2025 **Review 4 papers for AAAI 2026**

**Review 1 paper for ISWC 2025**

2024 **Review 4 papers for WWW 2025**

**Review 4 papers for COLING 2025**.

2023 **Review 1 paper for ACL 2023**.