Rishiraj Saha Roy, Ph.D.

- **Senior Researcher (Research Group Leader)** [April 2019 - *Present*]
Max Planck Institute for Informatics, Saarbruecken, Germany

- **Post-doctoral Researcher** [November 2015 - March 2019]
Max Planck Institute for Informatics, Saarbruecken, Germany

- **Computer Scientist**, Adobe Research, Bangalore, India [April 2014 – September 2015]

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Web	: http://people.mpi-inf.mpg.de/~rsaharo/
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QA project explorer	: https://qa.mpi-inf.mpg.de/projects/

RESEARCH OVERVIEW

Current areas	Conversational question answering, explainable recommenders
General areas	Natural language processing, Information retrieval, Text mining
Specialized topics	Graph neural networks (GNN), Reinforcement learning (RL)
Research desiderata	Systems that are explainable, robust, efficient yet high-performing
Keywords	Question answering (QA), Knowledge graphs (KG), User studies, Large language models (LLM), Conversational AI (ConvAI), Explainable AI (xAI), Generative AI (GenAI)
Methods used	Sequence-to-sequence models, Group Steiner trees, Influence functions, Counterfactuals, Random walks, Learning to rank, Fagin's threshold algorithm, Integer linear programming

SELECTED PUBLICATION SUMMARY

Book	Springer '22
Conference long papers	WSDM '24, SIGIR '23, SIGIR '22, WSDM '22, CIKM '21, SIGIR '21, WWW '21, WSDM '20, CIKM '19, SIGIR '19, NAACL-HLT '19, WSDM '19, WWW '18, ICDAR '17, SIGIR '17, COLING '14, ACL '13, SIGIR '12
Conference short papers	SIGIR '21, ECIR '20, CIKM '18, IJCNLP '17, CIKM '17, EMNLP '17, ECIR '17, ECIR '16, WWW '15, SIGIR '14, WWW '13, WWW '11
Journal papers	IP&M '16, Web Semantics '15

BOOK

- **Rishiraj Saha Roy** and Avishek Anand, Question Answering for the Curated Web: Tasks and Methods in QA over Knowledge Bases and Text Collections, Springer Publishers, 2022.

SELECTED CONFERENCE LONG PAPERS

- Magdalena Kaiser, **Rishiraj Saha Roy**, and Gerhard Weikum, Robust Training for Conversational Question Answering Models with Reinforced Reformulation Generation, WSDM '24.
- Philipp Christmann, **Rishiraj Saha Roy**, and Gerhard Weikum, Explainable Conversational Question Answering over Heterogeneous Sources via Iterative Graph Neural Networks, SIGIR '23.
- Philipp Christmann, **Rishiraj Saha Roy**, and Gerhard Weikum, Conversational Question Answering on Heterogeneous Sources, SIGIR '22.
- Philipp Christmann, **Rishiraj Saha Roy**, and Gerhard Weikum, Beyond NED: Fast and Effective Search Space Reduction for Complex Question Answering over Knowledge Bases, WSDM '22.
- Zhen Jia, Soumajit Pramanik, **Rishiraj Saha Roy**, and Gerhard Weikum, Complex Temporal Question Answering on Knowledge Graphs, CIKM '21.
- Magdalena Kaiser, **Rishiraj Saha Roy**, and Gerhard Weikum, Reinforcement Learning from Reformulations in Conversational Question Answering over Knowledge Graphs, SIGIR '21.
- Azin Ghazimatin, Soumajit Pramanik, **Rishiraj Saha Roy**, and Gerhard Weikum, ELIXIR: Learning from User Feedback on Explanations to Improve Recommender Models, WWW '21.
- Azin Ghazimatin, Oana Balalau, **Rishiraj Saha Roy**, and Gerhard Weikum, PRINCE: Provider-side Interpretability with Counterfactual Explanations in Recommender Systems, WSDM '20.
- Philipp Christmann, **Rishiraj Saha Roy**, Abdalghani Abujabal, Jyotsna Singh, and Gerhard Weikum, Look before you Hop: Conversational Question Answering over Knowledge Graphs Using Judicious Context Expansion, CIKM '19.
- Xiaolu Lu, Soumajit Pramanik, **Rishiraj Saha Roy**, Abdalghani Abujabal, Yafang Wang, and Gerhard Weikum, Answering Complex Questions by Joining Multi-Document Evidence with Quasi Knowledge Graphs, SIGIR '19.
- Abdalghani Abujabal, **Rishiraj Saha Roy**, Mohamed Yahya, and Gerhard Weikum, ComQA: A Community-sourced Dataset for Complex Factoid Question Answering with Paraphrase Clusters, NAACL-HLT '19.
- Azin Ghazimatin, **Rishiraj Saha Roy**, and Gerhard Weikum, FAIRY: A Framework for Understanding Relationships between Users' Actions and their Social Feeds, WSDM '19.
- Abdalghani Abujabal, **Rishiraj Saha Roy**, Mohamed Yahya, and Gerhard Weikum, Never-Ending Learning for Open-Domain Question Answering over Knowledge Bases, WWW '18.

- **Rishiraj Saha Roy**, Abhijeet Singh, Prashant Chawla, Shubham Saxena, and Atanu R. Sinha, Automatic Assignment of Topical Icons to Documents for Faster File Navigation, ICDAR '17.
- Asia Biega, **Rishiraj Saha Roy**, and Gerhard Weikum, Privacy through Solidarity: A User-Utility-Preserving Framework to Counter Profiling, SIGIR '17.
- **Rishiraj Saha Roy**, Aishwarya Padmakumar, Guna Prasaad Jeganathan and Ponnurangam Kumaraguru, Automated Linguistic Personalization of Targeted Marketing Messages Mining User-generated Text on Social Media, CICLing '15. [**BEST PAPER AWARD**]
- **Rishiraj Saha Roy**, Rahul Katare, Niloy Ganguly and Monojit Choudhury, Automatic Discovery of Adposition Typology, COLING '14.
- Rohan Ramanath, Monojit Choudhury, Kalika Bali, and **Rishiraj Saha Roy**, Crowd Prefers the Middle Path: A New IAA Metric for Crowdsourcing Reveals Turker Biases in Query Segmentation, ACL '13.
- **Rishiraj Saha Roy**, Niloy Ganguly, Monojit Choudhury, and Srivatsan Laxman, An IR-based Evaluation Framework for Web Search Query Segmentation, SIGIR '12.
- **Rishiraj Saha Roy**, Monojit Choudhury, and Kalika Bali, Are Web Search Queries an Evolving Protolanguage?, Evolang '12. [**BEST POSTER AWARD**]

SELECTED CONFERENCE SHORT PAPERS

- Khanh Hiep Tran, Azin Ghazimatin, and **Rishiraj Saha Roy**, Counterfactual Explanations for Neural Recommenders, SIGIR '21.
- Asia J. Biega, Jana Schmidt, and **Rishiraj Saha Roy**, Towards Query Logs for Privacy Studies: On Deriving Search Queries from Questions, ECIR '20.
- Zhen Jia, Abdalghani Abujabal, **Rishiraj Saha Roy**, Jannik Strötgen, and Gerhard Weikum, TEQUILA: Temporal Question Answering over Knowledge Bases, CIKM '18.
- David Ziegler, Abdalghani Abujabal, **Rishiraj Saha Roy**, and Gerhard Weikum, Efficiency-aware Answering of Compositional Questions using Answer Type Prediction, IJCNLP '17.
- Sedigheh Eslami, Asia Biega, **Rishiraj Saha Roy**, and Gerhard Weikum, Privacy of Hidden Profiles: Utility-Preserving Profile Removal in Online Forums, CIKM '17.
- Harsh Jhamtani, **Rishiraj Saha Roy**, Niyati Chhaya and Eric Nyberg, Leveraging Site Search Logs to Identify Missing Content on Enterprise Webpages, ECIR '17.
- **Rishiraj Saha Roy**, Anusha Suresh, Niloy Ganguly, and Monojit Choudhury, Improving Document Rankings for Long Queries with Nested Query Segmentation, ECIR '16.
- **Rishiraj Saha Roy**, Ritwik Sinha, Niyati Chhaya and Shiv Saini, Probabilistic Deduplication of Anonymous Web Traffic, WWW '15.
- **Rishiraj Saha Roy**, Yogarshi Vyas, Niloy Ganguly and Monojit Choudhury, Improving Unsupervised Query Segmentation using Parts-of-Speech Sequence Information, SIGIR '14.
- **Rishiraj Saha Roy**, Anusha Suresh, Niloy Ganguly and Monojit Choudhury, Place Value: Word Position Shifts Vital to Search Dynamics, WWW '13.

- Nikita Mishra, **Rishiraj Saha Roy**, Niloy Ganguly, Srivatsan Laxman and Monojit Choudhury, Unsupervised Query Segmentation Using only Query Logs, WWW '11.

JOURNAL PAPERS

- **Rishiraj Saha Roy**, Smith Agarwal, Niloy Ganguly and Monojit Choudhury, Syntactic Complexity of Web Search Queries through the Lenses of Language Models, Networks and Users, Information Processing and Management (IP&M), Elsevier, Volume 52, Issue 5, September '16.
- **Rishiraj Saha Roy**, Rahul Katare, Niloy Ganguly, Srivatsan Laxman and Monojit Choudhury, Discovering and understanding word level user intent in Web search queries, Journal of Web Semantics (Special Issue on Semantic Search), Elsevier, Volume 30, January '15.

TUTORIALS AND DEMO PAPERS

- **Rishiraj Saha Roy** and Avishek Anand, Question Answering over Curated and Open Web Sources, SIGIR '20 **Tutorial.**
- Magdalena Kaiser, **Rishiraj Saha Roy**, and Gerhard Weikum, Conversational Question Answering over Passages by Leveraging Word Proximity Networks, SIGIR '20 Demo.
- Abdalghani Abujabal, **Rishiraj Saha Roy**, Mohamed Yahya, and Gerhard Weikum, QUINT: Interpretable Question Answering over Knowledge Bases, EMNLP '17 Demo.

PATENTS

- **Rishiraj Saha Roy**, Guna Prasaad Jeganathan, Aishwarya Padmakumar, and Ponnurangam Kumaraguru, Linguistic Personalization of Messages for Targeted Campaigns, USPTO Publication No. US20160171560A1, patent granted on 06 July 2021.
- Balaji Vasan Srinivasan, **Rishiraj Saha Roy**, Niyati Chhaya, Natwar Modani, and Harsh Jhamtani, Expanding Input Content Utilizing Previously-generated Content, USPTO Publication No. US20180060287A1, patent granted on 04 August 2020.
- **Rishiraj Saha Roy**, Abhijeet Singh, Prashant Chawla, Shubham Saxena and Atanu R. Sinha, Assigning of Topical Icons to Documents to Improve File Navigation, USPTO Publication No. US20170076151A1, patent granted on 17 July 2018.

AWARDS AND RECOGNITIONS

- **Outstanding Senior PC Member** at AAAI '21 (February 2021)
- **Outstanding Reviewer** at EMNLP '20 (December 2020)
- Selected to be among the top-80 researchers from European and Asian universities for attending the Google NLP Summit at Zürich, Switzerland (September 2017)

- **Best Paper Award** at the 16th International Conference on Intelligent Text Processing and Computational Linguistics 2015 (CICLing '15) at Cairo, Egypt (April 2015)
- ACM SIGIR Student Travel Support for attending the 35th Annual SIGIR Conference on Research and Development in Information Retrieval (SIGIR '12) at Portland, USA (August 2012)
- **Best Poster Award** at Evolang IX, Kyoto, Japan, sponsored by the John Benjamins Publishing Co. (March 2012)
- Evolang Student Grant for attending the 9th International Conference on the Evolution of Language (Evolang IX) at Kyoto, Japan (March 2012)
- **Microsoft Research India Ph.D. Fellowship** for three years (August 2011)
- NIXI Fellowship for attending the 20th International World Wide Web Conference (WWW '11) at Hyderabad, India (March 2011)

INVITED TALKS

- Invited talks on "New Directions in Conversational Question Answering" at Southwest Jiaotong University, China (16 March 2023), DRDO, India (25 January 2023), and IIT Bombay, India (14 April 2022).
- Invited talks on "Question Answering over Knowledge Graphs" at Stevens Institute of Technology, USA (08 February 2023), and IIT Delhi, India (28 December 2020).
- Invited talk on "Learning from Reformulations in Conversational Question Answering over Knowledge Graphs" at the Knowledge Graph Conference (KGC) 2022, Cornell Tech Campus, New York, USA (06 May 2022).
- Invited talk on "Reinforcement Learning from Reformulations in Conversational Question Answering" at Lowe's Companies, Inc., Atlanta, USA (30 July 2021).
- Invited talk on "Learning from User Feedback on Explanations to Improve Recommender Models" at Flipkart, Bangalore, India (29 April 2021).
- Invited talk on "Graph Methods for Complex and Conversational Question Answering over Knowledge Bases" at CEDAR (INRIA/LIX), Paris, France (26 November 2020).
- Invited talk at the WSDM 2020 Workshop on Conversational Systems for E-Commerce Recommendations and Search (ConvERSe '20) at Houston, USA (07 February 2020).
- Invited talk on "Judicious Graph Exploration in Recommendation and Question Answering Systems" at IIT Kharagpur (02 January 2020).
- Invited talks on "Complexity in Question Answering" at L3S Hannover (21 June 2019), Martin-Luther-Universität Halle-Wittenberg (21 March 2019), Microsoft Research India (10 January 2019), and IIT Kharagpur (24 December 2018).
- Invited talk on "Answer Type Prediction for Question Answering" at Adobe Research, Bangalore, India (16 December 2016).
- Invited talk on "Syntactic Complexity of Web Search Queries through the Lenses of Language Models, Networks and Users" at the 9th Satellite on Dynamics on and of Complex Networks 2016 (DOOCN '16), Amsterdam, The Netherlands (20 September 2016).

TEACHING

- **Selected Topics in Question Answering** (Seminar Course, 7 ECTS), Computer Science, Saarland University, Germany: Winter 2020
- **Question Answering Systems** (Advanced Lecture, 6 ECTS), Computer Science, Saarland University, Germany: Summer 2020
- **Information Retrieval and Data Mining** (Core Lecture, 9 ECTS), Computer Science, Saarland University, Germany: Winter 2019 (with Andrew Yates)

GRADUATE STUDENTS

- **Philipp Christmann** (2021 - Present)
- **Magdalena Kaiser** (2019 - Present)
- **Azin Ghazimatin** (2017 - 2021)

SELECTED REVIEWING SUMMARY

Conference PCs	Senior Area Chair: ACL ('23); Senior PC: AAAI ('21 - '22); PC: WSDM ('21 - '22, '24), WWW ('22), SIGIR ('19 - '21, '23), CIKM ('20 - '21), AAAI ('20), IJCAI ('21), ACL ('20 - '21), EMNLP ('17 - '21), NAACL-HLT ('19 - '21)

OTHER PROFESSIONAL ACTIVITIES

- **Publications Chair** of the ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (COMPASS) 2023, 16 - 19 August 2023, Cape Town, South Africa.
- **Publications Chair** of the ACM India Joint International Conference on Data Science and Management of Data (CoDS-COMAD) 2020, 5 - 7 January 2020, Hyderabad, India.
- **Co-organizer** of the Special Session on Information Retrieval at the 11th International Conference on Knowledge and Systems Engineering (KSE) 2019, 24 - 26 October 2019, Da Nang, Vietnam (with Md. Zia Ullah).
- **Selection committee member** for Masters' Students for the Computer Science Department at the Saarland University (2019 - 2022).
- **Co-editor** of Dynamics On and Of Complex Networks III: Machine Learning and Statistical Physics Approaches, Springer, 16 June 2019 (with Fakhteh Ghanbarnejad, Fariba Karimi, Jean-Charles Delvenne, and Bivas Mitra).
- **Co-organizer** of the 12th Workshop on Dynamics on and of Complex Networks at NetSci 2019 (DOOCN-XII), 28 May 2019, Vermont, USA (with Fakhteh Ghanbarnejad, Parantapa Bhattacharya, and Sandipan Sikdar).
- **Co-organizer** of the 6th Social Networking Workshop at COMSNETS 2019 (COMSNETS SN '19), 11 January 2019, Bangalore, India (with Saptarshi Ghosh).
- **Publications Chair** of the ACM India Joint International Conference on Data Science and Management of Data (CoDS-COMAD) 2019, 3 - 5 January 2019, Kolkata, India.

- **Co-organizer** of the 11th Workshop on Dynamics on and of Complex Networks at CCS 2018 (DOOCN-XI), 26 September 2018, Thessaloniki, Greece (with Jean-Charles Delvenne, Fakhteh Ghanbarnejad, Fariba Karimi, Bivas Mitra, and Parantapa Bhattacharya).
- **Co-organizer** of the 5th Social Networking Workshop at COMSNETS 2018 (COMSNETS SN '18), 7 January 2018, Bangalore, India (with Moumita Sinha).
- **Co-organizer** of the 10th Workshop on Dynamics on and of Complex Networks at NetSci 2017 (DOOCN-X), 19 June 2017, Indianapolis, USA (with Jean-Charles Delvenne, Fakhteh Ghanbarnejad, Fariba Karimi, and Bivas Mitra).

EDUCATIONAL BACKGROUND

- Ph.D. from Department of Computer Science and Engineering (CSE), IIT Kharagpur [December 2009 – March 2014]
- Master of Technology (M. Tech.) in Information Technology from Department of Electronics and Computer Engineering (ECE), IIT Roorkee, with CGPA = 7.98 [July 2007 – July 2009]
- Bachelor of Engineering (B. E.) in Information Technology from Department of Information Technology (IT), Jadavpur University, Kolkata, with CGPA = 8.76 [July 2003 – June 2007]
- Schooling from Bhavan's Gangabux Kanoria Vidyamandir (BGKV, also known as "Bharatiya Vidya Bhavan"), Kolkata, with CBSE Class X marks = 89.80% and CBSE Class XII marks = 89.40%) [April 1989 – June 2003]

THESES

- **PhD Thesis:** Unsupervised Approaches to Syntactic Analysis of Web Search Queries (December 2009 – March 2014, IIT Kharagpur, Kharagpur, India) (Advisors: Prof. Niloy Ganguly and Dr. Monojit Choudhury). **Microsoft Research India PhD Fellow.**
- **Masters' Thesis:** Clustering Unstructured Text Documents Using Naïve Bayesian Concept and Shape Pattern Matching (July 2008 – June 2009, IIT Roorkee, Roorkee, India) (Advisor: Prof. Durga Toshniwal)
- **Bachelors' Thesis:** Analysis and Enhancement of TCP Performance in Mobile Ad Hoc Networks (June 2006 – May 2007, Jadavpur University, Kolkata, India) (Advisor: Prof. Uttam Kumar Roy, Collaborators: Mainak Ghosh and Prajit Kumar Das)

INTERNSHIPS AND VISITS

- Internships at Microsoft Research India, Bangalore (May 2010 - July 2010, October 2011 - January 2012)
- Visits to Microsoft Research India, Bangalore (November - December 2010, March - April 2012, June - July 2013)

EXTRA-CURRICULAR ACHIEVEMENTS

- Taekwondo (2009): Obtained Blue Belt
- Excellence in Character (1999): Obtained the Best Character in School Award

REFERENCES

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