Rishi Hazra

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Google Scholar

Education

- **Ph.D. in Machine Reasoning**, 2021–Present
  Örebro University & WASP, Sweden
  Research Topic: Reasoning & Decision Making with LLMs
  Supervisor: Luc De Raedt
- **M.Tech in Artificial Intelligence**, 2017–2019
  Indian Institute of Science, Bangalore, India
  Grade: 8.10/10
  Research Topic: Active Learning in Sequence Tagging
  Supervisor: Ambedkar Dukkipati
- **B.Tech in Electrical Engineering**, 2013–2017
  Birsa Institute of Technology, India
  Grade: 8.03/10
  Supervisor: Pankaj Kumar Rai

Research & Professional Experience

- **Research Science Intern**, August 2024 – February 2025
  FAIR (Meta), London, UK
  Topics: Language Grounding in Images, Multiagent Evolutionary Frameworks
- **Research Science Intern**, July 2022 – December 2022
  Meta Reality Labs Research, Redmond, USA
  Topic: Vision and Language-based Task Tracking
- **Data Scientist**, April 2020 – September 2020
  Amazon Alexa-AI, Bangalore, India
  Topic: NLU Metrics in Alexa
- **Research Associate**, June 2019 – March 2020
  Statistics and Machine Learning Group, Indian Institute of Science, Bangalore
  Topic: Multi-Agent Reinforcement Learning

Publications

1. **SAT Solving using Multi-agent Evolutionary Search with Large Language Models**,
   R Hazra, D Nathani, Y Bachrach
   under review
2. **LEXICON 1.0: a Simulator for Constrained Decision Making with Natural Language**,
   R Hazra, PZD Martires, L De Raedt
   under review
3. **LLM-Driven Adaptability or Pre-programmed Efficiency? A Comparative Study for Short Interactions**,
   T Schreiter, JV Rüppel, R Hazra, A Rudenko, M Magnusson, AJ Lilienthal
   under review
4. **REvolve: Reward Evolution with Large Language Models using Human Feedback**,
   R Hazra*, A Sygkounas*, A Persson, A Loutfi, PZD Martires (* equal contribution)
   under review [website][pdf]
5. **Can Large Language Models Reason? A Characterization via 3-SAT Phase Transitions**,
   R Hazra, G Venturato, PZD Martires, L De Raedt
   under review [pdf]
6. **Bidirectional Intent Communication: A Role for Large Foundation Models**,
   T Schreiter*, R Hazra*, JV Ruppel, A Rudenko (* equal contribution)
   Workshop at the 33nd IEEE International Conference on Robot and Human Interactive Communication (IEEE RO-MAN 2024) [pdf]

7. **SayCanPay: Heuristic Planning with Large Language Models using Learnable Domain Knowledge**,
   R Hazra, PZD Martires, L De Raedt
   Association for the Advancement of Artificial Intelligence (AAAI 2024) [website][pdf] [code]
8. **EgoTV: Egocentric Task Verification from Natural Language Task Descriptions**,
   R Hazra, B Chen, A Rai, N Kamra, R Desai
   International Conference on Computer Vision (ICCV 2023) [website] [pdf] [code]
9. **Deep Explainable Relational Reinforcement Learning: A Neuro-Symbolic Approach**,
   R Hazra, L De Raedt
   European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD 2023) [pdf]
10. **Active^2 Learning: Actively reducing redundancies in Active Learning methods for Sequence Tagging and Machine Translation**,
    R Hazra, P Dutta, S Gupta, MA Qaathir, and A Dukkipati
    Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT 2021) [pdf][code][video][poster]
11. **Networked Multi-Agent Reinforcement Learning with Emergent Communication**
    S Gupta*, R Hazra*, and A Dukkipati (* Equal Contribution)
    International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2020) [pdf] [video]
12. **Infinite use of finite means: Zero-Shot Generalization using Compositional Emergent Protocols**
    R Hazra*, S Dixit*, and S Sen (* Equal Contribution)
    Visually Grounded Interaction and Language Workshop (NAACL-HLT 2021) [pdf] [demos] [poster]
13. **gComm: An environment for investigating generalization in Grounded Language Acquisition**
    R Hazra and S Dixit,
    Visually Grounded Interaction and Language Workshop (NAACL-HLT 2021) [pdf] [code] [poster]

Mentorship

Master Thesis

- Jens V Rüppel, TU Chemnitz, 2024-2025
  (Co-supervisor: Tim Schreiter)

Skills

Python, PyTorch, MATLAB, C++

Achievements

Top Reviewer	NeurIPS 2022, NeurIPS 2024 (Top 8%)
Guinness World Record	Most users to complete a remote 10 km in 24 hours [record][certificate]
Kaggle	2^{nd} Rank in secondary track of (PASSNYC)
GATE 2017	All India Rank 133 (top 0.001%)
Undergrad	Best Outgoing Project Award jointly from BIT Sindri & IIT (ISM) Dhanbad
Undergrad	Best Academics Award for excellent academic performance
High School	Principal's Award for all-round academic performance

Courses/Workshops

Basic	Machine Learning, Game Theory, Practical Data Science
Advanced	Natural Language Understanding, Reinforcement Learning, Graphical Models & Bayesian Learning
Undergrad	Signal Processing, Control Systems, Digital Electronics, Network Theory
Workshops	Workshop on Neural Systems (Pratiksha Trust, IISc), Robovision (Robotics and Computer Applications Institute, USA)

Community Service

- NeurIPS 2022-24, ICML 2023-24, ICLR 2024, KR 2024, EACL 2023: Reviewer

- AAMAS 2022: Program Committee member and Session Chair
- PRAYAAS India (NGO providing free and high quality education to underprivileged children living in slums and villages): Active member of PRAYAAS India (from 2013-2016), where I taught mathematics to middle school children.
- Tarumitra (Friend of Trees) Club: Student President of Tarumitra for three consecutive years (2011-2013), during which, I led numerous plantation drives and awareness programs.