

AAMOD KHATIWADA

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RESEARCH INTERESTS

Data Discovery and Integration, Tabular Representation Learning, Knowledge Graphs, Data lake Management, Large Language Models

EDUCATION

Northeastern University, Khoury College of Computer Sciences, Boston, MA, USA *Sep 2020 - Present*

PhD Candidate, Computer Science, Current GPA: 3.939

Advised by: Dr. Renée J. Miller

Research summary: *Develop novel tools, algorithms and foundation models to add semantics to the open data tables, and use such semantics for data management, table cleansing, table discovery and table integration.*

Northeastern University, Khoury College of Computer Sciences, Boston, MA, USA *Sep 2020 - Apr 2023*

Masters in Computer Science

Tribhuvan University, Institute of Engineering (IOE), Kathmandu, Nepal

Nov 2014 - Nov 2018

Bachelor's Degree in Electronics and Communication Engineering

Distinction, Department Topper

PUBLICATIONS

1. **A. Khatiwada**, R. Shraga and R. J. Miller, “*DIALITE: Discover, Align and Integrate Open Data Tables*”, in SIGMOD-Companion, 2023. <https://doi.org/10.1145/3555041.3589732>
2. **A. Khatiwada**, G. Fan, R. Shraga, Z. Chen, W. Gatterbauer, R. J. Miller and M. Riedewald, “*SANTOS: Relationship-based Semantic Table Union Search*”, in Proc. ACM Manag. Data (PACMMOD) 1, 1, Article 9 (May 2023), 2023. <https://doi.org/10.1145/3588689>
3. **A. Khatiwada**, R. Shraga, W. Gatterbauer and R.J. Miller, “*Integrating Data Lake Tables*”, in PVLDB, 16(4):932-945, 2022. <https://doi.org/10.14778/3574245.3574274>
4. **A.Khatiwada**, S. Shirai, K. Srinivas and O. Hassanzadeh, “*Knowledge Graph Embeddings for Causal Relation Prediction*”, in Deep Learning for Knowledge Graphs Workshop (DL4KG@ISWC), 2022. <https://ceur-ws.org/Vol-3342/paper-8.pdf>
5. S. Shirai, **A.Khatiwada**, D. Bhattacharjya and O. Hassanzadeh, “*Rule-Based Link Prediction over Event-Related Causal Knowledge in Wikidata*”, in 3rd Wikidata Workshop (Wikidata@ISWC), 2022. <https://ceur-ws.org/Vol-3262/paper14.pdf>
6. O. Hassanzadeh, P. Awasthy, K. Barker, O. Bhardwaj, D. Bhattacharjya, M. Feblowitz, **A. Khatiwada**, L. Martie, S. F. Mbouadeu, J. Ni, A. Saha, S. Shirai, K. Srinivas and L. Yip, “*Knowledge-Based News Event Analysis Toolkit*”, in ISWC, 2022. <https://ceur-ws.org/Vol-3254/paper399.pdf>
7. **A. Khatiwada**, P. Kadariya, S. Agrahari and R. Dhakal, “*Big Data and Deep Learning Based Sentiment Analysis System for Sales Prediction*”, in IEEE International Conference on Innovating Technology for Humanity, Pune, 2019. pp. 1-6. <https://doi.org/10.1109/PuneCon46936.2019.9105719>

PRE-PRINTS

1. H. Kokel, **A. Khatiwada**, T. Pedapati, H. Ananthakrishnan, O. Hassanzadeh, H. Samulowitz, K. Srinivas, “*A Context-Aware Multi-Criteria Approach for Joinable Column Search*”, 2024. (under submission)
2. **A. Khatiwada**, Harsha Kokel, I. Abdelaziz, S. Chaudhury, J. Dolby, O. Hassanzadeh, Z. Huang, T. Pedapati, H. Samulowitz, K. Srinivas, “*Sketch-based Tabular Representation Learning for Identifying Relevant Tables*”, 2024. (under submission)
3. K. Pal, **A. Khatiwada**, R. Shraga and R.J. Miller, “*Generative Benchmark Creation for Table Union Search*”, 2023. <https://arxiv.org/abs/2308.03883>

4. K. Srinivas, J. Dolby, I. Abdelaziz, O. Hassanzadeh, H. Kokel, **A. Khatiwada**, T. Pedapati, S. Chaudhury, H. Samulowitz, “LakeBench: Benchmarks for Data Discovery over Data Lakes”. 2023. <https://arxiv.org/abs/2307.04217>

PATENTS

- **A. Khatiwada**, H. Kokel, G. Rossiello, U. Khurana, O. Hassanzadeh, D. Bhattacharjya, K. Srinivas, A.M. Gliozzo, and H. Samulowitz, “*Sensible Join Discovery Framework for Tabular Data Integration in Data Lakes*” (under revision)
- O. Hassanzadeh, **A. Khatiwada** and S. Shirai, “*Link Prediction Using an Ensemble of Representations and Rules*” (under revision)

SELECTED TALKS

- **A. Khatiwada**, “*Guest Lecture on Table Discovery and Integration in Data Lakes*”, in Boston University, Boston, MA, USA. Mar 2024. <https://bu-disc.github.io/CS561/>. Slides
- **A. Khatiwada** and G. Fan, “*Table Discovery and Integration in Data Lakes: Challenges and Solutions*”, in Northeast Database Day. Mar 2023. <https://northeastern-datalab.github.io/nedbdays/2023/>

EXPERIENCE

Data lab, Northeastern University, Boston, MA, USA

Sept 2020 - Present

Graduate Research Assistant

- Developed a principled way of using LLMs to generate benchmarks for tabular tasks.
- Led a group project entitled *SANTOS* on finding the unionable open data tables by detecting their semantic types.
- Developing novel techniques and algorithms to integrate open data tables and web tables in a principled way.
- Created open data benchmarks for data discovery tasks.

IBM Research, Thomas J. Watson Research Center, Yorktown Heights, NY, USA

May 2023 - Aug 2023

AI Research Scientist Intern

Mentors: Dr. Udayan Khurana, Dr. Kavitha Srinivas and Dr. Oktie Hassanzadeh

- Led a project on building large language models for data management tasks.
- Developed systematic ways of creating benchmarks to fine tune large language models for data discovery tasks.
- Developed an algorithm for searching joinable tables from the data lake.

Northeastern University, Boston, MA, USA

Sept 2022 - Dec 2022

Teaching Assistant (Khoury College of Computer Sciences)

- Contributed to the development of course materials and course projects for a graduate-level course *CS7290: Special Topics in Data Science* (<https://northeastern-datalab.github.io/cs7290.f22/>)
- Taught three lectures covering state-of-the-art systems for data discovery and management.

IBM Research, Thomas J. Watson Research Center, Yorktown Heights, NY, USA

May 2022 - Aug 2022

Exploratory Science Research Intern

Mentor: Dr. Oktie Hassanzadeh

- Led a project on detecting the causal relations in Knowledge graphs using embeddings and GNN-based models.

Tribhuvan University, Kathmandu, Nepal

Nov 2018 - Jan 2020

Teaching Assistant (Department of Electronics and Computer Engineering)

- Carried out lab classes on C programming, Digital Logic and Big Data Analytics.
- Assisted final year students to design and debug their major projects.

AWARDS AND EXTRA CURRICULAR

- SIGMOD Student Travel Award from ACM SIGMOD. (Apr 2023)
- PhD Startup Fund from Khoury College of Computer Sciences, Northeastern University, MA, USA. (Sept 2020)
- Leadership And Mentorship Program (LAMP) Scholarship from the Dean of the Whitacre College of Engineering, Texas Tech University, TX, USA. (Jan 2020)

- Awarded as **the best undergraduate student** at Electronics and Computer Department, Tribhuvan University, Nepal for three consecutive years (Sophomore, Junior and Senior). (2016, 2017, 2018)

PROFESSIONAL SERVICE

- **PC Member:** TaDA Workshop 2024 , SIGMOD Availability and Reproducibility 2023, SemTab Challenge@ISWC 2023
- **Reviewer:** SIGIR Conference 2024, SIGIR Conference 2023
- **Student Volunteer:** SIGMOD Conference 2023
- Member at Computer Science PhD Admission Committee, Northeastern University (2021 and 2024)

SKILLS

- **Programming:** SPARQL, Python, C, C++, PHP, SQL, JavaScript, Java, Solidity, Assembly Programming
- **Tools and frameworks:** Knowledge Graphs, Large language models, Hadoop MapReduce, Spark, Laravel, jQuery, D3, Tensorflow, PyTorch, L^AT_EX

GRADUATE COURSEWORK

Information Visualization (project: <https://aamodkh.github.io/theta-join-visualization>), Distributed Systems (project: <https://github.com/aamodkh/distributed-datalake-tapestry>), Principle of Scalable Database Management, Advanced Algorithm, Large Scale and Parallel Data Processing, Special Topics in Database Management