

A M Umayer Reza

Spatial Knowledge and AI Lab
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EDUCATION

Ph.D. in Spatial Information Science and Engineering

Expected Feb 2027

University of Maine, Orono, USA

Dissertation: Leveraging Ontologies and NER to Construct a Scalable and Trustworthy Knowledge Graph of Cellulosic Materials

Advisor: Torsten Hahmann, Ph.D.

M.S. in Computer Science

Jun 2020

American International University–Bangladesh, Dhaka, Bangladesh

Thesis: Computer Vision Based Approach for Real Time Bangla Sign Language Recognition Using TensorFlow

Advisor: A.F.M. Saifuddin Saif, Ph.D.

B.S. in Computer Science and Engineering

May 2014

American International University–Bangladesh, Dhaka, Bangladesh

Thesis (group): Waterway Image Segmentation and Water-Sky Horizontal Line Detection Using Image Processing

Advisor: Mohammad Saiedur Rahaman, Ph.D.

APPOINTMENTS

Graduate Research Assistant

09/2021–Present (Multiple appointments)

School of Computing and Information Science, University of Maine

Conduct research on **CelloGraph**, a USDA-funded knowledge graph system for extracting and organizing knowledge from cellulosic materials literature using ontologies and natural language processing.

Instructor of Record (*Future Faculty Fellows Program*)

01/2026–05/2026

School of Computing and Information Science, University of Maine

Graduate Teaching Assistant

01/2022–05/2022

School of Computing and Information Science, University of Maine

Revenue Assurance Senior Executive

02/2021–07/2021

Upay (Mobile Financial Services), Bangladesh

Lecturer of Computer Science and Engineering

02/2018–01/2021

University of Scholars, Bangladesh

Charging and Billing Specialist Engineer

08/2014–11/2016

Banglalink (Telecommunication), Bangladesh

AWARDS AND FELLOWSHIPS

- Future Faculty Fellows, University of Maine, Spring 2026
- *Summa Cum Laude* distinction for the M.S. in Computer Science, American International University – Bangladesh (AIUB), 20th Convocation, 2021

TEACHING AND MENTORING EXPERIENCE

School of Computing and Information Science, University of Maine

- Applied Natural Language Processing (COS498) Spring 2026
- Introduction to Programming I (COS120) Spring 2022

Department of Computer Science and Engineering, University of Scholars

- Structured Programming Language (CSE1201) Fall 2020, Spring 2018
- Object Oriented Programming Language (CSE2101) Fall 2018–2020, Spring 2019–2020
- Algorithm (CSE3105) Spring 2020
- Computer Networks (CSE3111) Spring 2018–2019
- System Analysis and Design (CSE3122) Fall 2018
- Database Management System (CSE3212) Fall 2019–2020, Spring 2020
- Operating Systems (CSE3231) Spring 2018
- Digital Image Processing (CSE4461) Fall 2019–2020

Project Advising and Mentoring

- Nicholas Pease, 10/2024–12/2025; Provided technical guidance during the implementation of AnNER, a named entity review tool.
- Capstone team, AY 2023–2024; Provided technical guidance on improvements to an NER (named entity recognition) annotation tool.
- Gunnar Eastman, AY 2022–2023; Provided technical guidance on output formatting during the development of Scitex, an XML converter.
- Undergraduate Project Team, 01/2019–12/2019; Advised a group of undergraduate students on their final-year project, *Autonomous Robot with Line Following and Obstacle Avoidance Features*.

PUBLICATIONS

- [1] **U. Reza**, T. Hahmann, and J. Wang. A Provenance-Aware Approach for Representing and Querying Domain Entities in Knowledge Graphs. In: *Proceedings of FOIS 2026 Satellite events co-located with the 16th International Conference on Formal Ontology in Information Systems (FOIS 2026)*, Vitória, Brazil, September 2026.
- [2] **U. Reza**, N. Pease, J. Wang, and T. Hahmann. AnNER: Supporting Efficient Entity Annotation and Review Workflows for Knowledge Graph Construction. In: *Proceedings of the 13th International Conference on Knowledge Capture (K-CAP 2025)*, Dayton, Ohio, USA, December 2025. DOI: 10.1145/3731443.3771347.

- [3] **U. Reza**, X. Zhang, and T. Hahmann. OnNER: An Ontology for Semantic Representation of Named Entities in Scholarly Publications. In: *Proceedings of the 14th International Conference on Formal Ontology in Information Systems (FOIS 2024)*, Enschede, Netherlands, July 2024. DOI: 10.3233/faia241291.
- [4] **U. Reza** and T. Hahmann. Populating and Refining an Ontology of Cellulose Materials with Terms from Scientific Publications: Extended Abstract. FOIS 2023 Early Career Symposium. In: *Proceedings of the 9th Joint Ontology Workshops (JOWO 2023) co-located with FOIS 2023*, Sherbrooke, Quebec, Canada, July 2023.
- [5] M. Rahim, M. Mukta, M. Yasar, and **U. Reza**. Model of Automated System to Prevent Road Crashes Due to Drunk & Drowsy Driving. *International Journal of Advanced Research in Computer and Communication Engineering (IJARCCE)*, 3(8), 7650-7653, 2014.

PRESENTATIONS

- [1] CelloGraph – A Knowledge Graph System for Cellulosic Materials. System prototype presented at the *Industrial Liaison Committee Meeting*, Forest Products Laboratory, USDA Forest Service, Madison, Wisconsin, USA, July 2026.
- [2] AnNER: Supporting Efficient Entity Annotation and Review Workflows for Knowledge Graph Construction. Paper presented at the *13th International Conference on Knowledge Capture (K-CAP 2025)*, Dayton, Ohio, USA, December 2025.
- [3] AnNER and OnNER: Key Components in the Trustworthy Knowledge Graph Construction Pipeline. Poster presented at the *5th U.S. Semantic Technologies Symposium (US2TS 2025)*, Dayton, Ohio, USA, December 2025.
- [4] Populating and Refining an Ontology of Cellulose Materials with Terms from Scientific Publications. Poster presented at *FOIS 2023 Early Career Symposium*, held at FOIS 2023, Sherbrooke, Quebec, Canada, April 2023.
- [5] The Scientific Publication Ontology (SciPub): Linking publications' content to the domain ontologies. Poster presented at the *University of Maine Student Symposium (UMSS 2023)*, Orono, Maine, USA, April 2023.
- [6] CelloGraph – Accelerating Knowledge Discovery for Cellulosic Materials using AI and Knowledge Graphs. Poster presented at the *Manufacturing RENEW3D Conference*, Orono, Maine, USA, May 2022.

PROFESSIONAL SERVICES

- Reviewer, International Conference on Computing Advancements (ICCA), 2024, 2026
- Subreviewer, 25th International Conference on Knowledge Engineering and Knowledge Management (EKAW), 2026
- Judge, University of Maine Student Symposium (UMSS), 2026, 2025

PROFESSIONAL AFFILIATION

- Professional Member, Association for Computing Machinery (ACM)
- Individual Member, International Association for Ontology and its Applications (IAOA)

REFERENCES

Torsten Hahmann, Ph.D.

Associate Professor of Spatial Computing
School of Computing and Information Science
University of Maine

✉ torsten.hahmann@maine.edu

Jinwu Wang, Ph.D.

Research Scientist
U.S. Department of Agriculture Forest Service
Forest Products Laboratory

✉ jinwu.wang@usda.gov

Laura Gurney, Ph.D.

Lecturer of Computer Science
School of Computing and Information Science
University of Maine

✉ laura.gurney@maine.edu

Raihan Ahmed, M.S.

Senior Lecturer of Computer Science
College of Mathematics, Computing, & Sciences
University of West Georgia

✉ rahmed@westga.edu