

# Wordh Ul Hasan

Lecturer, Software Engineering, Math Science & Technology, University of Minnesota Crookston,  
Crookston, USA

[wordh.u.hasan@ieee.org](mailto:wordh.u.hasan@ieee.org) [Linkdin](#) [Google Scholar](#)

## RESEARCH INTERESTS

- **AI-powered Healthcare Applications:** Designing culturally sensitive systems for chronic disease management and exploring AI for dementia care support.
- **Human-Centered Technology Design:** Focusing on accessible and usable mobile apps and IoT systems for diverse populations.
- **Accessibility and Equity in Technology:** Addressing challenges faced by marginalized communities and promoting inclusive digital solutions.

## EDUCATION

*PhD* in Computer Science

January 2021 – April 2025

**North Dakota State University, USA**

Thesis: Design and evolution of conversational ai for healthcare: from structured data collection to culturally sensitive and adaptive support for chronic disease management and adrd care.

Supervisor: Dr. Juan Li

*Master of Science* in Computer Science,

January 2021 – December 2023

**North Dakota State University, USA**

Thesis: Carecompanion: A virtual assistant for enhancing quality of life in Alzheimer's disease and related dementia patients.

Supervisor: Dr. Juan Li

*Bachelor of Science* in Computer Science &  
Engineering,

August 2013 – December 2018

**North South University, Bangladesh**

Thesis: Smart Wireless Patient Monitoring System.

Supervisor: Dr. Mohammad Monirujjaman Khan

## EMPLOYMENT HISTORY

Lecturer, University of Minnesota Crookston, Crookston, USA

August 2024 – Present

- Conducting research on applications of artificial intelligence in the healthcare domain.
- Teaching web Site Development. & advanced website development. Responsible for developing course materials, delivering lectures, and assessing student performance in web development technologies.
- Teaching Database Management Systems. Duties include preparing lectures, designing assignments, and instructing students on database concepts and SQL programming.

- Teaching Software Design/Architecture, Software Requirements courses. Tasks involve creating curriculum content, leading discussions on software design patterns, and guiding students through architectural best practices.
- Teaching Software Testing, Software Requirements, Undergraduate Research & Advanced Website Development.

Consultant Software Engineer, Sense & Response Software LLC, Ohio (Remote), USA  
May 2024 – April 2025

- Utilized Large Language Models (LLMs) to enhance and streamline the software testing pipeline, improving efficiency and accuracy.
- Leveraged LLMs to automate CRUD (Create, Read, Update, Delete) code writing processes, significantly reducing development time and effort. Implemented automated deployment solutions for seamless software updates and maintenance.
- Designed, developed, and maintained cloud-based software solutions in compliance with Service Level Agreements (SLAs), ensuring high availability, scalability, and performance.
- Worked closely with cross-functional teams, including developers, QA, and DevOps, to implement innovative software solutions and ensure seamless integration within the existing infrastructure.
- Proactively identified areas for process improvement and innovation, leveraging the latest technologies and methodologies to enhance overall project outcomes.

Doctoral Graduate Teaching Assistant, North Dakota State University, Fargo, USA  
August 2022 – August 2024

- Designed and developed the undergraduate curriculum for the NDSU Computer Science Department course CSCI 336, focusing on Theoretical Computer Science. This included creating assessments such as exams and quizzes, recording video lectures, and preparing the course syllabus and materials in supervision of the Department Chairman.
- Assisted professors in lab classes for the course CSCI 455, Networking and Parallel Computation, by conducting code reviews and managing assignments.
- Participated in the grading process for multiple computer science courses, including CSCI 160 (Computer Science I), CSCI 724 (Survey of Artificial Intelligence), and CSCI 455 & 835 (Networking and Parallel Computation)

Doctoral Graduate Research Assistant, North Dakota State University, Fargo, USA  
January 2021 – Aug 2024

- Spearheaded the design and development of mobile and web applications for various research initiatives, employing suitable programming languages and frameworks to meet project specifications.
- Engineered and integrated advanced algorithms into applications, significantly enhancing their functionality and efficiency.
- Leveraged Large Language Models (LLMs), fine-tuning techniques, prompt engineering, and Retrieval-Augmented Generation (RAG) to construct intelligent systems.
- Executed comprehensive usability testing with target users to pinpoint improvement opportunities and collect valuable feedback, guiding future enhancements.
- Conducted thorough data analysis from user surveys to inform design choices, ensuring the applications' interfaces were optimized for the best user experience.

- Managed the deployment of applications across various platforms and environments, ensuring seamless operation and accessibility.
- Contributed to the research process by assisting in literature reviews and the synthesis of research findings, enriching the project's academic foundation.
- Played a key role in the documentation process by assisting in the drafting of detailed reports and research papers, highlighting project methodologies and outcomes.
- Effectively communicated research findings to both internal and external stakeholders, demonstrating the project's impact and relevance.
- Fostered a collaborative project environment, working closely with team members to achieve research objectives and milestones.

Software Engineer, Research & Development, bKash Limited, Dhaka Bangladesh  
February 2019 – December 2020

- Led the conceptualization and creation of a movie ticket purchasing application for the bKash Customer App, focusing on user experience enhancements and increased engagement.
- Architected and executed the integration of a Visa Credit Card Bill Payment system, facilitating streamlined and versatile payment options for users.
- Skillfully facilitated the integration of the bKash Payment Gateway across multiple platforms (Android, Django, WordPress, PHP), addressing the diverse requirements of various clients and ensuring flawless transaction processes.
- Conducted in-depth analyses to identify and resolve system anomalies within the bKash application, preserving platform integrity and user trust through timely recovery solutions in accordance with Service Level Agreements (SLA).
- Initiated and developed a subscription-based payment model, promoting recurring transactions and significantly improving customer loyalty and retention.
- Managed the ongoing maintenance and feature enhancement of the bKash Payment Gateway, contributing to its robust functionality and user satisfaction.
- Directed the strategic planning and design of system architectures, focusing on scalability, performance, and reliability to support growth and efficiency.
- Demonstrated expertise in diagnosing and resolving system discrepancies within the bKash application, ensuring the reliability of recovery solutions in alignment with SLA requirements and maintaining a high level of system reliability and user confidence.

## AWARDS

**Awarded Best Presenter**, 2018 2nd Borneo International Conference on Applied Mathematics and Engineering (BICAME), Balikpapan, Indonesia.

**Travel Grant Winner** from IEEE Region 10 Computer Society for IEEE R10 SYWL Congress 2018

**Awarded Best Speaker**, IEEE Day 2018, Tech Talks.

**2nd Place Living in the future Challenge-** IEEE Region 10 SYWL Congress, Bali, Indonesia, 2018

**Placed 3rd in 'Low-Cost Robot Design Challenge'** held at North South University organized by the Robotics & Automation Society, IEEE NSU Student Branch

**Awarded Best (Humanitarian) Student Volunteer-** IEEE Bangladesh Section 2017

**Awarded President Scout's Award-** Bangladesh Scouts 2009

## PUBLICATIONS

Summary: 20 Publications & 93 Citations

Google Scholar: <https://scholar.google.com/citations?user=chJrOKwAAAAJ&hl=en>

*Kimia Tuz Zaman, Wordh UI Hasan., Juan Li., & Bo Xie.* (2025). Artificial intelligence applications for older adult care: a systematic literature review. The 15th Annual Conference on Health IT and Analytics. April 26-27, 2025. Austin, Texas.

**Wordh UI Hasan, Kimia Tuz Zaman, Xin Wang, et al.** "Empowering Alzheimer's Caregivers with Conversational AI: A Novel Approach for Enhanced Communication and Personalized Support," *npj Biomed. Innov.*, 1, 3 (2024), doi: 10.1038/s44385-024-00004-8. URL: <https://www.nature.com/articles/s44385-024-00004-8>

**Wordh UI Hasan, Kimia Tuz Zaman, Mohammad Shalan, Xin Wang, Jial Li, Bo Xie, Cui Tao** "CareCompanion: A Personalized Virtual Assistant for Enhancing Support and Independence in ADRD Patients and Older Adults," 2024 International Conference on Smart Applications, Communications and Networking (SmartNets), Harrisonburg, VA, USA, 2024, pp. 1-10, doi: 10.1109/SmartNets61466.2024.10577734.

**Wordh UI Hasan, Kimia Tuz Zaman, Shadi Alian, Tiany Liang, Vikram Pandey, Jun Kong, Cui Tao and Juan Li.** "Bridging Culture And Care: A Mobile App For Diabetes Self-Care Honoring Native American Cultural Practices" *Advances in Science, Technology and Engineering Systems Journal (ASTESJ)*, Vol. 9, no. 1, pp. 104-113 (2024).

*Xin Wang, Juan Li, Tiany Liang, Wordh UI Hasan, Kimia Tuz Zaman, Yang Du, Bo Xie, Cui Tao* "Promoting Personalized Reminiscence Among Cognitively Intact Older Adults Through an AI-Driven Interactive Multimodal Photo Album: Development and Usability Study" *JMIR Aging* 2024;7:e49415 URL: <https://aging.jmir.org/2024/1/e49415>

*Maryam Amiri, Juan Li, Wordh UI Hasan* "Personalized Flexible Meal Planning for Individuals With Diet-Related Health Concerns: System Design and Feasibility Validation Study" *JMIR Form Res* 2023;7:e46434 URL: <https://formative.jmir.org/2023/1/e46434>

*Kimia Tuz Zaman, Wordh UI Hasan, Juan Li* "Exploring the Dynamics of Online Social Support for ADRD Caregivers: A Study on Online Peer Support Groups" 2023 IEEE International Conference on E-health Networking, Application & Services (HealthCom), Chongqing, China, 2023

*Xin Wang, Wordh UI Hasan, Juan Li, Rasha Hendawi, Yang Du, Bo Xie, Cui Tao* "Empowering Personalized Health Data Queries with Knowledge Graph and GPT-Enhanced Voice Assistant" 2023 International Conference on Data, Information, Knowledge and Wisdom (DIKW 2023), Melbourne, Australia, 2023

*Kimia Tuz Zaman, Wordh UI Hasan, Juan Li, Cui Tao,* "Empowering Caregivers of Alzheimer's Disease and Related Dementias (ADRD) with a GPT-Powered Voice Assistant: Leveraging Peer Insights from Social Media," 2023 IEEE Symposium on Computers and Communications (ISCC), Gammarth, Tunisia, 2023, pp. 1-7, doi: 10.1109/ISCC58397.2023.10218142.

**Wordh UI Hasan, Juan Li, Shadi Alian, Tianyi Liang, Vikram Pandey, Kimia Tuz Zaman, Jun Kong, Cui Tao** "Honoring Heritage, Managing Health: A Mobile Diabetes Self-Management App for Native Americans with Cultural Sensitivity and Local Factors," 2023 IEEE Symposium on Computers and Communications (ISCC), Gammarth, Tunisia, 2023, pp. 1-6, doi: 10.1109/ISCC58397.2023.10218192.

**Wordh UI Hasan, Kimia Tuz Zaman, Maryam Sadat Amiri Tehrani Zadeh, Juan Li,** "Eat This, Not That! – a Personalised Restaurant Menu Decoder That Helps You Pick the Right Food," 2022 IEEE

International Conference on E-health Networking, Application & Services (HealthCom), Genoa, Italy, 2022, pp. 43-48, doi: 10.1109/HealthCom54947.2022.9982770.

*Arafat Bin Hossain, Wordh Ul Hasan, Kimia Tuz Zaman, Koushik Howlader, (2023). Integrated Music Recommendation System Using Collaborative and Content Based Filtering, and Sentiment Analysis. Machine Intelligence and Emerging Technologies. MIET 2022. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 491. Springer, Cham. [https://doi.org/10.1007/978-3-031-34622-4\\_13](https://doi.org/10.1007/978-3-031-34622-4_13)*

*Kimia Tuz Zaman, Wordh Ul Hasan, Lubaba Bazlul, Tamanna Motahar, Nova Ahmed, "Exploring Challenges and Solution Approaches Regarding Wellbeing of Female Rohingya Community in Bangladesh," TENCON 2019 - 2019 IEEE Region 10 Conference (TENCON), Kochi, India, 2019, pp. 361-366, doi: 10.1109/TENCON.2019.8929413.*

*Kimia Tuz Zaman, Wordh Ul Hasan, Monsur Hillas, Abdullah Al Mahfuj Shaan, Khan Afnan Rahad, "IOT Based Question Paper Delivery Box: A Solution towards Preventing Question Paper Leakage in Public Exams of Bangladesh," 2019 IEEE International Conference on Smart Instrumentation, Measurement and Application (ICSIMA), Kuala Lumpur, Malaysia, 2019, pp. 1-5, doi: 10.1109/ICSIMA47653.2019.9057307.*

*Wordh Ul Hasan, Mohammad Sultan Khaja, Saif Ahmed, Mohammad Monirujjaman Khan, "Wireless Health Monitoring System," 2018 2nd Borneo International Conference on Applied Mathematics and Engineering (BICAME), Balikpapan, Indonesia, 2018, pp. 158-163, doi: 10.1109/BICAME45512.2018.1570510420.*

*Hasib Zunair, Wordh Ul Hasan, Kimia Tuz Zaman, Muhammad Irfanul Haque and Soumic Shekhar Aoyon, "Design and Implementation of an IoT Based Monitoring System for Inland Vessels Using Multiple Sensors Network," 2018 2nd International Conference on Smart Sensors and Application (ICSSA), Kuching, Malaysia, 2018, pp. 38-43, doi: 10.1109/ICSSA.2018.8535976.*

*Haymontee Khan, Noel Mannan, Shahnoor Chowdhury Eshan, Md. Mustafizur Rahman, K. M. Mehedi Hasan Sonet, Wordh Ul Hasan, Rashedur M. Rahman "Tourist spot recommendation system using fuzzy inference system," 2017 13th International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery (ICNC-FSKD), Guilin, China, 2017, pp. 1532-1539, doi: 10.1109/FSKD.2017.8392993.*

## SELECTED INVITED TALKS AND PRESENTATIONS

- Invited speaker at the IEEE Winnipeg Young Professionals webinar on the impact of specialized AI tools in healthcare, 2025.
- Presented paper in 2024 International Conference on Smart Applications, Communications and Networking, Harrisonburg, VA, USA, 2024
- Invited to Present my Research on Ai in Healthcare in A Session on Higher Studies and Research organized by IEEE North South University Student Branch. 2023.
- Presented papers in 2023 IEEE Symposium on Computers and Communications (ISCC), Gammarth, Tunisia, 2023
- Presented our Research work with Native Americans in Nurturing American Tribal Undergraduate Research and Education Summer Camp held at North Dakota State University. 2023

- Presented paper in 2022 IEEE International Conference on E-health Networking, Application & Services (HealthCom), Genoa, Italy, 2022
- Invited to talk in a Webinar on Systematic Literature Review for Research organized by IEEE North South University Student Branch. 2021
- Presented poster at NDSU Research Day 2021
- Presented paper in 2019 IEEE International Conference on Smart Instrumentation, Measurement and Application (ICSIMA), Kuala Lumpur, Malaysia, 2019
- Invited to talk in a seminar on Glimpse of Present Technology organized by IEEE North South University Industrial Activities Society 2019
- Invited to talk about Humanitarian Technology in Student Transition and Elevation Program organized by IEEE Bangladesh Section. 2019
- Presented paper in 2018 2nd Borneo International Conference on Applied Mathematics and Engineering (BICAME), Balikpapan, Indonesia, 2018
- Conducted Workshops on Mobile Application Development at North South University, 2018
- Conducted Workshops on Competitive Programming at North South University IEEE Student Branch, 2018
- Conducted Workshops on Embedded Systems and IOT at North South University. 2017 - 2018
- Conducted Workshops on Robotics and Automation at North South University. 2017 - 2018

#### VOLUNTEER SERVICES

- Advisor of IT Club at University of Minnesota Crookston.
- Reviewer of 26<sup>th</sup> International Conference on Computer and Information Technology (ICCIT 2023), Cox's Bazar, Bangladesh
- Reviewer of 2<sup>nd</sup> International Conference on Machine Intelligence and Emerging Technologies (MIET 2022)
- Chair, IEEE North Dakota State University, 2022 – 2024
- Humanitarian Activity Coordinator, IEEE Young Professionals Affinity Group, Bangladesh Section, 2019
- Student Activity Coordinator, IEEE Robotics & Automaton Society Bangladesh Chapter, 2019
- Chair, IEEE North South University. 2017-2018
- Event Coordinator, Educational Activities Committee, IEEE Bangladesh Section 2018
- Country Lead, IEEEExtreme Programming Contest 12.0
- Ambassador, IEEE Mobile Application Development Competition 2017
- Ambassador, IEEEExtreme Programming Contest 11.0
- Content Writer, Student Activities Committee, IEEE Bangladesh Section 2017
- Graphics Designer, Humanitarian Activities Committee, IEEE Bangladesh Section 2017
- Organizing Chair, IEEE BDS SYW Congress 2017
- Organizing Chair, IEEE Student Professional Awareness Conference 2017
- Publication Committee, IHTPC 2017
- Vice Chair, IEEE North South University. 2016-2017
- Graphics Designer, Student Activities Committee, IEEE Bangladesh Section 2016

#### ACTIVE MEMBERSHIPS

- IEEE Professional Member

- IEEE Computer Society