

Hye Sun Yun

COMPUTER SCIENCE PHD CANDIDATE

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I am passionate about Natural Language Processing (NLP) and Human-Computer Interactions (HCI), mainly on applications in health. Research interests are in human-centered evaluation and applications of generative AI to meet the needs and preferences of end users.

Education

Northeastern University

PH.D. IN COMPUTER SCIENCE

- Advised by Byron Wallace and Timothy Bickmore

Boston, MA

September 2020 - Present

Wellesley College

B.A. IN COMPUTER SCIENCE AND AFRICANA STUDIES, MAGNA CUM LAUDE

Wellesley, MA

September 2013 - May 2017

Research Experience

Northeastern University, NLP Research Group

RESEARCH ASSISTANT

- Conducted research in the field of NLP and biomedical/clinical text advised by Byron Wallace.
- Worked on NLP multi-document summarization research to improve and update systematic reviews of biomedical literature to help medical professionals make better clinical and policy decisions.
- Explored ways to utilize large generative language models to assist producing medical systematic reviews through user surveys and to automate meta-analyses.

Boston, MA

May 2021 - Present

Northeastern University, Relational Agents Group

RESEARCH ASSISTANT

- Conducted research in the field of HCI and healthcare advised by Timothy Bickmore.
- Assisted in developing a research mHealth app with a conversational virtual agent to promote healthy behaviors for historically Black church members by exploring ways to increase engagement and use through notifications and storytelling.
- Developed a conversational agent system to enhance patient-reported outcomes for individual use.
- Conducted research on using large language models to generate clinical depression survey item variants and testing their validity and reliability.
- Designed and carried out cognitive interviews to better understand how non-medical individuals understand and feel about medical illustrations.

Boston, MA

September 2020 - Present

Truveta

ML/AI PHD RESEARCH INTERN

- Conducted research in the field of LLMs and clinical notes investigating quality and diversity of training data for clinical concept extraction.
- Explored methods to optimize a generalized clinical concept extraction LLM.

Bellevue, WA

May 2024 - Present

University of Houston, Computational Biomedicine Lab

REU UNDERGRADUATE RESEARCHER

- Successfully completed a 10-week research program at the University of Houston, funded by the National Science Foundation (NSF), working under the guidance of Professor Ioannis A. Kakadiaris.
- Co-authored a comprehensive literature review on anti-spoofing techniques specifically applied to face recognition in computer vision systems.
- Conducted comparative analysis to evaluate the impact of spoofing on the accuracy of various face recognition systems.

Houston, TX

June 2016 - August 2016

Publication

CONFERENCES

Automatically Extracting Numerical Results from Randomized Controlled Trials with Large Language Models

Hye Sun Yun, David Pogrebtskiy, Iain J Marshall, Byron C Wallace

Machine Learning for Healthcare Conference, 2024

Keeping Users Engaged During Repeated Interviews by a Virtual Agent: Using Large Language Models to Reliably Diversify Questions

Hye Sun Yun, Mehdi Arjmand, Phillip Sherlock, Michael Paasche-Orlow, James W. Griffith, Timothy Bickmore

Proceedings of the 24th ACM International Conference on Intelligent Virtual Agents, 2024, , Glasgow, United Kingdom,

Investigating User Perceptions of Collaborative Agenda Setting in a Virtual Health Counseling Session

Mina Fallah, Farnaz Nouraei, **Hye Sun Yun**, Timothy Bickmore

Proceedings of the 24th ACM International Conference on Intelligent Virtual Agents, 2024, , Glasgow, United Kingdom,

Appraising the Potential Uses and Harms of LLMs for Medical Systematic Reviews

Hye Sun Yun, Iain J Marshall, Thomas Trikalinos, Byron C Wallace

Proceedings of the 2023 Conference on EMNLP, 2023

Improving Multiparty Interactions with a Robot Using Large Language Models

Prasanth Murali, Ian Steenstra, **Hye Sun Yun**, Ameneh Shamekhi, Timothy Bickmore

Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems, 2023

Motivating Health Behavior Change with a Storytelling Virtual Agent

Hye Sun Yun, Matias Volonte, Timothy Bickmore

Proceedings of the 22nd ACM International Conference on Intelligent Virtual Agents, 2022, Faro, Portugal

Techno-Spiritual Engagement: Mechanisms for Improving Uptake of mHealth Apps Designed for Church Members

Hye Sun Yun, Shou Zhou, Everlyne Kimani, Stefan Olafsson, Teresa K. O’Leary, Dhaval Parmar, Jessica A. Hoffman, Stephen S. Intille, Michael K. Paasche-Orlow, Timothy W. Bickmore

Joint Proceedings of the IUI 2022 Workshops: APEX-UI, HAI-GEN, HEALTHI, HUMANIZE, TExSS, SOCIALIZE co-located with the ACM International Conference on Intelligent User Interfaces (IUI 2022), Virtual Event, Helsinki, Finland, March 21-22, 2022, 2022

JOURNALS

In a pilot study, automated real-time systematic review updates were feasible, accurate, and work-saving

Iain J. Marshall, Thomas A. Trikalinos, Frank Soboczenski, **Hye Sun Yun**, Gregory Kell, Rachel Marshall, Byron C. Wallace

Journal of Clinical Epidemiology 153 (2023) pp. 26–33. 2023

MEDIA

Church after Sunday: supporting everyday well-being through techno-spiritual health interventions

Teresa K O’Leary, Elizabeth Stowell, Darley Sackitey, **Hye Sun Yun**, David Wright, Michael Paasche-Orlow, Timothy Bickmore, Andrea G. Parker

Interactions 29.4 (2022) pp. 90–93. ACM New York, NY, USA, 2022

Presentations and Talks

RESEARCH TALKS

Cutting-Edge Connections in PhD Research: Healthcare Innovation Today

POSTER PRESENTER - “USING LARGE LANGUAGE MODELS TO RELIABLY DIVERSIFY QUESTIONS”

[Boston, MA](#)

November 17, 2023

2023 CRA-WP Grad Cohort for Women

POSTER PRESENTER - “APPRAISING THE POTENTIAL USES AND HARMS OF LLMs FOR MEDICAL SYSTEMATIC REVIEWS”

[San Francisco, CA](#)

April 21, 2023

Northeastern University, Khoury College PhD Open House

POSTER PRESENTER - “MOTIVATING HEALTH BEHAVIOR CHANGE WITH A STORYTELLING VIRTUAL AGENT”

[Boston, MA](#)

March 17, 2023

ACM International Conference on Intelligent Virtual Agents

POSTER PRESENTER - “MOTIVATING HEALTH BEHAVIOR CHANGE WITH A STORYTELLING VIRTUAL AGENT”

[Faro, Portugal](#)

September 8, 2022

ACM IUI HEALTHI Workshop

PRESENTER - “TECHNO-SPIRITUAL ENGAGEMENT: MECHANISMS FOR IMPROVING UPTAKE OF mHEALTH APPS DESIGNED FOR CHURCH MEMBERS”

[Remote](#)

March 22, 2022

PRISM Health Symposium

PRESENTER - “LONGITUDINAL ANALYSIS OF THE ATTITUDES AND CONVERSATIONS SURROUNDING VACCINES BY AFRICAN AMERICANS ON SOCIAL MEDIA”

[San Francisco, CA](#)

December 3, 2021

INVITED TALKS

CS3950 Intro to CS Research

GUEST SPEAKER - “MOTIVATING HEALTH BEHAVIOR CHANGE WITH A STORYTELLING VIRTUAL AGENT”

[Boston, MA](#)

October 14, 2022

PANELS

Northeastern University - Pathway to PhD Workshop

WORKSHOP PANELIST

[Boston, MA](#)

August 23, 2022

Northeastern University - Wellesley College Research Students’ Visit

PHD STUDENT PANELIST

[Boston, MA](#)

July 18, 2022

Teaching Experience

Wayfair

Boston, MA

TEACHING ASSISTANT

January 2019 - August 2020

- Provided hands-on assistance to new engineers during Wayfair’s quarterly onboarding MVC framework class
- Offered guidance and answered inquiries, both online and in-person, to new engineers, helping them navigate the MVC framework.

Wayfair

Boston, MA

QUALITY ASSURANCE TO QUALITY ENGINEER PROGRAM INSTRUCTOR

September 2019 - October 2019

- Led and delivered four one-hour department-wide sessions, providing comprehensive instruction on SQL and Introduction to Programming in PHP to individuals with beginner-level coding knowledge.

Wayfair

Boston, MA

LABS MENTOR

August 2019

- Co-mentored a group of 30 entry-level engineers participating in the Labs program, guiding them through their first month’s full-stack project.
- Offered consistent technical feedback by conducting thorough code reviews and engaging in regular conversations during weekly drop-in hours.

Wellesley College, Pforzheimer Learning and Teaching Center

Wellesley, MA

PEER TUTOR AND GRADER

September 2014 - May 2016

- Spring 2016 | **CS 231 Algorithms** | Held weekly group tutoring sessions and graded homework. Contributed to weekly calibration meetings and teaching pedagogy discussions with the professor and fellow tutors & graders.
- Fall 2016 | **CS 320 Tangible User Interface** | Held 2-hour weekly drop-in hours.
- Fall 2016 | **CS 235 Languages & Automata** | Held 1-1 tutoring and review sessions for CS235
- Fall 2014 & Spring 2015 | **JPN 101 & 102 Beginning Japanese** | Held weekly 2-hour drop-in sessions to help students with their oral exercises and written homework.

Professional Experience

Wayfair

Boston, MA

FULL-STACK SOFTWARE ENGINEER/ENGINEERING MANAGER

July 2017 - August 2020

- Developed and implemented features for a supplier-facing web tool, enabling efficient bulk addition of new products to the catalog.
- Successfully spearheaded two major, multi-phase refactoring initiatives: frontend migration from Tungsten to React and Redux and completely rewriting the team’s Excel sheet import service.
- Provided guidance and mentorship during rapid team growth, facilitating the onboarding of 10+ new hires.
- Led team-wide adoption of pair programming to foster collaboration and knowledge sharing and established a program to train new code reviewers.
- Delivered impactful presentations on best practices for reusable Redux components and efficient Jest testing to department and team.
- Managed and led a team of three software engineers, cultivating a collaborative and productive work environment, and ensuring successful project delivery.

Advising

Co-advising

Patrick Wilson - Master in Public Health Dissertation @ King’s College London (2024)

Mentor

David Pogrebitskiy - BS @ Northeastern (2024)

Mentor

Queer in AI 2023 Graduate School Application Review Program

Mentor

Nikita Salkar - MS @ Northeastern (2022); now Software Engineer at Amazon Web Services

Tech Lead and Manager

Cory Knopp, Michael Ko, Julie Aichinger, Amanda Marcal, Hari Kishore Gurram, Alyssa Kim, Dishon Davis at Wayfair

Grants & Awards

GRANTS

2015

Global Engagement Internship/Grant, Wellesley College’s Center for Work and Service Summer Internship Grant

Wellesley, MA

AWARDS

2019 **1st Place**, Wayfair Supplier DIY Innovation Day
2018 **Runner Up**, Wayfair Challenge Day

Boston, MA
Boston, MA

Service and Volunteer

2024 **Program Committee**, Human-Centered Large Language Modeling Workshop (ACL 2024)
2024 **Program Committee**, 24rd ACM International Conference on Intelligent Virtual Agents (IVA 2024)
2024 **Reviewer**, Research Synthesis Methods (journal)
2024 **PhD Student Buddy**, Khoury College PhD Open House
2023 **Reviewer**, 22nd IEEE International Symposium on Mixed and Augmented Reality (ISMAR 2023)
2023 **Reviewer**, 23rd ACM International Conference on Intelligent Virtual Agents (IVA 2023)
2022 **Sub-reviewer**, Conference on Autonomous Agents and Multiagent Systems (AAMAS 2023)
2022 **Faculty Application Student Reviewer**, Khoury College of Computer Science, Northeastern University
2022 **Reviewer**, CHI 2023 Health Subcommittee
2022 **Reviewer**, Workshop on Robustness in Sequence Modeling for NeurIPS 2022
2022 **Program Committee**, UserNLP: User-centered Natural Language Processing Workshop
2021 **PhD Student Application Reviewer**, Khoury College of Computer Science, Northeastern University
2019-2020 **Co-founder and Leader**, Wayfair's Women+ in Software

Extracurricular Activity

2024 **Trainee**, National Research Mentoring Network's Research Mentor Training
2022 **Class of 2022 mentee**, ACL Year-Round Mentorship

Skills

Tools/Platforms	Git, GCP, Docker, Weights & Biases, Prolific, Amazon MTurk
Libraries/Frameworks	Pytorch, HuggingFace, Node.js, REST API, Flask, .NET Core
Front-end	React, Redux, Vue.js, HTML5, SASS, Jekyll
Programming	Python, Java, Javascript, C#, SQL, PHP, \LaTeX , Shell, R, C, Racket, Assembly
Databases	MySQL, SQLite, PostgreSQL, MS SQL Server
Languages	English, Korean, Japanese (Basic), Swahili (Basic)