YOONJOO LEE

yoonjoo.lee@kaist.ac.kr | yoonjoolee.com

RESEARCH INTEREST

My research interest lies in the intersection of human-computer interaction (HCI) and natural language processing (NLP). I aim to support people to learn from and make sense of dense information (e.g., content in lecture videos and scientific articles) by structuring the information in the context to create adaptive scaffoldings (e.g., QAs, dialogues, explanations) using AI models.

EDUCATION

KAIST — **Daejeon, Republic of Korea**
Ph.D. Candidate in Computer Science. Advisor: Juho Kim — Sep. 2020 – Present

Ewha Womans University — **Seoul, Republic of Korea**
M.S. in Statistics (Applicational Statistics). Advisor: Dongwan Shin — Mar. 2018 – Feb. 2020
B.S. Major in Mathematics Education, Minor in Statistics — Mar. 2014 – Feb. 2018
Graduated with Honors (*Magna Cum Laude*)

University of California, Davis — **Davis, CA, USA**
Exchange student in Mathematics — Sep. 2015 – Feb. 2016

PUBLICATIONS

Conference and Journal Papers

[C7] QASA: Advanced Question Answering on Scientific Articles
Yoonjoo Lee[*], Kyungjae Lee[*], Sunghyun Park, Dasol Hwang, Jaehyeon Kim, Hong-in Lee, Moontae Lee
ICML 2023: Proceedings of the 40th International Conference on Machine Learning

[C6] Cells, Generators, and Lenses: Design Framework for Object-Oriented Interaction with Large Language Models
Tae Soo Kim, **Yoonjoo Lee,** Minsuk Chang, Juho Kim
UIST 2023: Proceedings of the 2023 ACM Symposium on User Interface Software and Technology (to appear).

[C5] DAPIE: Interactive Step-by-Step Explanatory Dialogues to Answer Children's Why and How Questions
Yoonjoo Lee, Tae Soo Kim, Sundong Kim, Yohan Yun, Juho Kim
CHI 2023: Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems.

[C4] Promptiverse: Scalable Generation of Scaffolding Prompts Through Human-AI Hybrid Knowledge Graph Annotation
Yoonjoo Lee, John Joon Young Chung, Tae Soo Kim, Jean Y. Song, Juho Kim
CHI 2022: Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems

[C3] Personalizing Ambience and Illusionary Presence: How People Use "Study with Me" Videos to Create Effective Studying Environments
Yoonjoo Lee, John Joon Young Chung, Jean Y. Song, Minsuk Chang, Juho Kim
CHI 2021: Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems.

[C2] A Machine Learning Approach that meets Axiomatic Properties in Probabilistic Analysis of LTE Spectral Efficiency
Yoonjoo Lee, Yunbae Kim, Seungken Park
ICTC, Oct. 2019

[C1] Probabilistic Analysis of Spectral Efficiency for LTE based on PDCCH Measurement Data
Yoonjoo Lee, Yunbae Kim, Yeonkyu Park, Seungken Park
IEEE Communications Letters, vol. 23, no. 9, Sep. 2019

Preprints

[A1] EvalLM: Interactive Evaluation of Large Language Model Prompts on User-Defined Criteria
Tae Soo Kim, **Yoonjoo Lee**, Jamin Shin, Young-Ho Kim, Juho Kim
Under Review, 2023

Posters and Workshop Papers

[P5] LMCanvas: Object-Oriented Interaction to Personalize Large Language Model-Powered Writing Environments
Tae Soo Kim, Arghya Sarkar, **Yoonjoo Lee**, Minsuk Chang, and Juho Kim
CHI 2023 Workshop on Generative AI and HCI

[P4] Interactive Children's Story Rewriting Through Parent-Children Interaction
Yoonjoo Lee, Tae Soo Kim, Minsuk Chang, Juho Kim
ACL 2022 Workshop on Intelligent and Interactive Writing Assistant

[P3] XDesign: Integrating Interface Design into Explainable AI Education
Hyungyu Shin, Nabila Sindi, **Yoonjoo Lee**, Jaeryoung Ka, Jean Y. Song, Juho Kim
SIGCSE TS 2022 Posters

[P2] A Study on the Distribution Analysis of LTE Resource Block Usage from TSME Measurement Data
Yoonjoo Lee, Yunbae Kim, Seungken Park
KICS, Jun. 2018

[P1] A Study on the Estimation of Probability Distribution of the Spectral Efficiency of LTE based on TSME Measurement Data
Yunbae Kim, **Yoonjoo Lee**, Seungken Park
KICS, Jun. 2018

RESEARCH EXPERIENCE

Allen Institute for AI (AI2) — **Seattle, US**
Research Scientist Intern, Semantic Scholar Team — May - Oct. 2023
Mentor: Pao Siangliulue, Joseph Chee Chang, Jonathan Bragg, Kyle Lo

LG AI Research — **Seoul, Republic of Korea**
Research Scientist Intern, Advanced Machine Learning Lab — Nov. 2022 – Mar. 2023
Mentor: Moontae Lee, Kyungjae Lee — [C6]

KIXLAB, KAIST — **Daejeon, Republic of Korea**
Graduate Research Intern — Mar. 2020 – Aug. 2020
Mentor: Juho Kim, Jean Y. Song

Electronics and Telecommunications Research Institute (ETRI) — **Daejeon, Republic of Korea**
Graduate Research Assistant, Data Sciences Group — Mar. 2018 – Dec. 2019
Mentor: Yunbae Kim, Seungken Park — [P1, P2, C1, C2]

Undergraduate Research Intern, Data Sciences Group — Jan. 2018 – Feb. 2018
Mentor: Yunbae Kim, Seungken Park

TEACHING

Introduction to Social Computing Fall 2020, Fall 2021
KAIST CS473, Instructor: Juho Kim

Time Series Analysis Spring 2019
Ewha Womans University, Instructor: Dongwan Shin

Regression Analysis Fall 2018
Ewha Womans University, Instructor: Donghwan Lee

ACADEMIC SERVICES

Program Committee
- CHI LBW 2023

Reviewer
- EMNLP 2023
- CHI 2024, 2023, 2022
- UIST 2022, 2023
- ACL 2023
- CSCW 2023
- C&C 2022
- IEEE Transactions on Learning Technologies

Student Volunteer
CHI 2022

INVITED TALKS

Invited Talk at UCSD Design Lab Oct. 2023
Title: Adapting Scaffolding to Support Knowledge Consumption through Interactive AI-Driven Systems

Invited Talk at University of Washington Oct. 2023
Title: Adapting Scaffolding to Support Knowledge Consumption through Interactive AI-Driven Systems

HONORS, AWARDS, AND SCHOLARSHIPS

Research Assistant Scholarship 2019
College of Natural Sciences, Ewha Womans University

Admission Scholarship 2018
College of Natural Sciences, Ewha Womans University

Honors Scholarship 2014, 2015, 2016, 2017
College of Education, Ewha Womans University

Dean's List 2014, 2015, 2016, 2017
College of Education, Ewha Womans University

Ewha Womans University Alumnae Association Scholarship 2017
College of Education, Ewha Womans University

SERVICE AND LEADERSHIP

KAIST-Google ExploreCSR 2022
Student Organizer

Programming Mentoring 2016 – 2017
Leader of Student Organizer

Last Updated: November 3, 2023

HONORS, AWARDS, AND SCHOLARSHIPS

Research Assistant Scholarship 2019
College of Natural Sciences, Ewha Womans University

Admission Scholarship 2018
College of Natural Sciences, Ewha Womans University

Honors Scholarship 2014, 2015, 2016, 2017
College of Education, Ewha Womans University

Dean's List 2014, 2015, 2016, 2017
College of Education, Ewha Womans University

Ewha Womans University Alumnae Association Scholarship 2017
College of Education, Ewha Womans University

Electronics and Telecommunications Research Institute (ETRI) **Daejeon, Republic of Korea**
Research Assistant, Data Sciences Group Feb. 2018 – May 2019
- Created applicable transformation making results follow approximately jointly normal distribution with measurement data
- Derived the key probabilities for SE analysis and adopted Deep Neural Network(DNN) to extend the analysis from measured cases to general cases.

Time Series Analysis Research Lab, Ewha Womans University **Seoul, Republic of Korea**
Time Series Research Lab (Advisor: Professor Dongwan Shin) Jan. 2019 – Dec. 2019
- Built prediction models for high frequency data

Probabilistic Analysis **Daejeon, Republic of Korea**
ETRI Feb. 2018 – May 2019
- Created applicable transformation making results follow approximately jointly normal distribution with measurement data
- Derived the key probabilities for SE analysis and adopted Deep Neural Network(DNN) to extend the analysis from measured cases to general cases.

Deep Learning **Daejeon, Republic of Korea**
ETRI Feb. 2018 - Dec.2018
- Participated in research on busy hour RB usage rates data
  - Stochastic modeling: Derived a method to estimate probability density of the data by the family of Exponentiated Exponential Distribution using quantiles
  - Deep Learning: Predicted future RBU using Long Short-Term Memory(LSTM), Gated Recurrent Unit(GRU), Encoder-Decoder versions models

Time Series Analysis **Seoul, Republic of Korea**
Time Series Research Lab (Advisor: Professor Dongwan Shin) Jan. 2019 – Dec. 2019
- Built prediction models for high frequency data
  - Deep Learning: Used DNN, LSTM for Realized Volatility(RV) classification and regression
  - Time Series model: Used Autoregressive Integrated Moving Average(ARIMA) and Heterogeneous Autoregressive(HAR) model to forecast RV and compared with Deep Learning model based on prediction error
- Applied dimension reduction methods to simplify original data structure with 40 financial features and forecast future RV

KAIST-Google ExploreCSR Spring 2022 – Present
Student Organizer

Programming Mentoring Mar. 2016 – Dec. 2017
Leader of Student Organizer
- Planned and led lectures about Python and Ruby on Rails for college students, prepared learning materials including lecture

slides and coding assignments
- Organized a Hackathon event for 100+ students to promote cooperation with students from other schools

Mathematics Mentoring in Ewha Girl's High School, Seoul, South Korea Feb. 2015 – Dec. 2017
- Taught math to high school students every week with follow-up Q&A sessions

ACADEMIC SERVICES

Reviewer

CHI 2022
C&C 2022
IEEE Transactions on Learning Technologies

Student Volunteer

CHI 2022

SERVICE AND LEADERSHIP

KAIST-Google ExploreCSR Spring 2022 – Present
Student Organizer

Programming Mentoring Mar. 2016 – Dec. 2017
Leader of Student Organizer

Mathematics Mentoring in Ewha Girl's High School Feb. 2015 – Dec. 2017
Mentor

My research interest is supporting people to perform tasks ranging from teaching, writing, to prototyping effectively by 1) building AI powered systems with humans in the loop and 2) analyzing and adapting large scale data and models. Specifically, one of my research goals is to create computational methods and systems that support scalable teaching and learning using human-AI collaboration.