

Research Interests

Affective Computing in Healthcare Applications

My research interests mainly revolve around Affective Computing with NLP and Multi-Modal Learning about developing accessible AI healthcare systems to address tangible real-world challenges.

For additional information, please visit my webpage: [\[Research Highlights\]](#)

Education

Sungkyunkwan University, Republic of Korea

Mar. 2020 - Present

- Ph.D. in Applied Artificial Intelligence
- Advisor: [Prof. Jinyoun Han](#)

Sookmyung Women's University, Republic of Korea

Mar. 2012 - Feb. 2017

- B.A. in Social Psychology

Professional Experience

University of South Florida, Tampa, FL, USA

Oct. 2023 - Mar. 2024

- Visiting Scholar in Computer Science & Engineering
- Advisor: [Prof. Seungbae Kim](#)

RaonData, South Korea

Jul. 2022 - Oct. 2022

- AI research Intern
- Processing speech data to develop TTS models

Korea Psychological Autopsy Center, South Korea

Apr. 2018 - Aug. 2019

- Data Scientist
- 5-year time-series analysis of suicides in South Korea

Publications

(* = (co-) corresponding author; ** = equal contribution)

— Conference

[C-1] **Gesture-aware Automatic Speech Recognition System for Individuals with Speech Disorder**

- **Lee, D.**, Son, S., Jeon, H., You., D, Kim, S., & Han, J.*
- **Work in Progress** - Aims to analyze the voice replacement gesture characteristics of patients with speech disorders and develop an Automatic Speech Recognition System by incorporating gesture information.

[C-2] **An Effective Balancing approach for Gender Bias Mitigation**

- Park, S., Kim, M., **Lee, D.**, Park, E., & Han, J.*
- **Work in Progress** - Aims to propose a data sampling approach to mitigate gender bias in state-of-the-art image captioning models.

[C-3] **Detecting Bipolar Disorder from Misdiagnosed Major Depressive Disorder with Mood-Aware Multi-Task Learning**

- **Lee, D.****, Jeon, H**, Son, S., Park, C., Ahn, J., Kim, S., & Han, J.*
 - **Under NAACL Review** - Proposed a novel approach to identify Bipolar Disorder risk in individuals initially misdiagnosed with Major Depressive Disorder with Mood-Aware Multi-Task Learning using social media data.
- [C-4] **Fighting against Fake News on Newly-Emerging Crisis: A Case Study of COVID-19**
- Yang, M.**, Park, C**, Kang, J., **Lee, D.**, Choi, D., & Han, J.*
 - **The Web 2024** - The ACM Web Conference 2024 (*Short paper*)
 - [\[DATASET & CODE\]](#)
- [C-5] **A Dual-Prompting for Interpretable Mental Health Language Models**
- Jeon, H.*, You, D**, **Lee, D.**, Son, S., Kim, S., & Han, J.*
 - **CLPsych 2024** - The 9th Workshop on Computational Linguistics & Clinical Psychology
 - [\[PDF\]](#) [\[VIDEO\]](#)
- [C-6] **Learning Co-Speech Gesture for Multimodal Aphasia Type Detection**
- **Lee, D.****, Son, S.***, Jeon, H., Kim, S., & Han, J.*
 - **EMNLP 2023** - The 2023 Conference on Empirical Methods in Natural Language Processing
 - [\[PDF\]](#) [\[CODE\]](#) [\[VIDEO\]](#)
- [C-7] **Towards Suicide Prevention from Bipolar Disorder with Temporal Symptom-Aware Multitask Learning**
- **Lee, D.**, Son, S., Jeon, H., Kim, S., & Han, J.*
 - **ACM KDD 2023** - The 29th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining
 - [\[PDF\]](#) [\[DATASET & CODE\]](#) [\[VIDEO\]](#)
- [C-8] **Detecting Suicidality with a Contextual Graph Neural Network**
- **Lee, D.**, Kang, M., Kim, M., & Han, J.*
 - **CLPsych 2022** - The 8th Workshop on Computational Linguistics & Clinical Psychology
 - [\[PDF\]](#) [\[DATASET & CODE\]](#)
- [C-9] **Cross-Lingual Suicidal-Oriented Word Embedding toward Suicide Prevention**
- **Lee, D.**, Park, S., Kang, J., Choi, D., & Han, J.*
 - **EMNLP Findings 2020** - The 2022 Conference on Empirical Methods in Natural Language Processing Findings
 - [\[PDF\]](#) [\[DATASET & CODE\]](#) [\[VIDEO\]](#)

— Journal

- [J-1] **Detecting depression on video logs using audiovisual features**
- Min, K**, Yoon, J**, Kang, M., **Lee, D.**, Park, E., & Han, J.*
 - **HSSComms 2023** - Humanities & Social Sciences Communications 2023, 10, 788 (SSCI, JCR 2022 IF = 3.5)
 - [\[PDF\]](#)
- [J-2] **Machine learning for mental health in social media: bibliometric study**
- Kim, J., **Lee, D.**, Park, E.*
 - **JMIR 2021** - Journal of Medical Internet Research 2023, 23(3), e24870. ISSN: 1438-8871 (SCIE, JCR 2019 IF=5.034, Q1 in Medical Informatics)
 - [\[PDF\]](#)

Research Projects

- [P-1] **NRF International Mobility Program 2023, MIST¹ and NRF²**
- Research Associate (*in Charge*) Oct. 2023 - Sep.2024
 - Developing AI models for detecting Dementia using speech data
 - Collaborating with University of South Florida (USF)
 - Published 1 conference articles as a first author
- [P-2] **A Clinical Decision Support System for Retinal Disease Detection with Explainable AI, NRF²**

- Research Associate Mar. 2023 - Feb. 2027
 - Analyzing image segmentation techniques on retinal disease detection
- [P-3] **Developing Deep learning Models and Korean Datasets for Detecting Suicide Risk**, *NRF*²
 • Research Associate (*in Charge*) May. 2022 - Apr. 2024
- Constructed novel Korean social media datasets, and developed suicide risk detection models
 - Published 2 conference articles as a first author
- [P-4] **Developing Artificial Intelligence Application Models and Constructing Dataset for solving social issues**, *ETRI*³
 • Research Associate (*in Charge*) Jun. 2021 - Aug. 2021
- Analyzed and constructed mental health related Q&A dataset
 - Implemented web application using Flask and uploaded project tutorial video
 - Published 1 conference article as a first author
- [P-5] **Developing a Model for Detecting Fake News on COVID-19**, *ETRI*³
 • Research Associate Jul. 2020 - Nov. 2020
- Analyzed a social network on YouTube and developed a COVID-19 fake news detection model
 - Published 1 journal article as a third author

****Sponsor**

- 1 MIST: Ministry of Science and ICT, The government of the Republic of Korea
- 2 NRF : The National Research Foundation of South Korea
- 3 ETRI: Electronics and Telecommunications Research Institute, South Korea

Honors & Awards

- Best Researcher Award** Jan. 2024
- Dept. of Applied AI, Sungkyunkwan University
- Scholarship for Korea-U.S. Research program (\$1,300)** Jul. 2023
- National Research Foundation of Korea (NRF) funded by the Ministry of Science & ICT
 - Supported for being one of the 10 elite young female STEM researchers.
- SIGKDD '23 Student Travel Award (\$800)** Aug. 2023
- The 29th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining
- Graduate Scholarship (\$22,000; 1/2 Tuition)** 2020 - 2023
- Sungkyunkwan University

Services

Reviewer

- ACL ARR '24 Feb / CLPsych '23

Student Volunteer

- ACM KDD '23 / EMNLP '23

Teaching Fellow

Teaching Assistant

Sungkyunkwan University, Seoul, South Korea

- DIM5004: Interactive Graph Mining, Graduate Course Spring 2024
- DAI5019: Graph Mining, Graduate Course Fall 2022
- AAI3005: Data Mining, Undergraduate Course Spring 2021
- AAI3006: Machine Learning, Undergraduate Course Spring 2021
- DAI5002: AI Programming, Graduate Course Fall 2020

<ul style="list-style-type: none"> • SWE2022: Intro to Programming, Undergraduate Course 	Fall 2020
Directed Students	
Sungkyunkwan University , Seoul, South Korea	
<ul style="list-style-type: none"> • Undergraduate Research Program, Tutor <ul style="list-style-type: none"> • Machine-Generated Text Detection • Mental Status Detection 	Fall 2023 Summer 2021
University of South Florida , Tampa, USA	
<ul style="list-style-type: none"> • Undergraduate Research Tutor <ul style="list-style-type: none"> • Speech-Based Cognitive Assessment in Chinese and English 	Spring 2024

Talks & Panels

Learning Co-Speech Gesture for Multimodal Aphasia Type Detection	Mar. 2024
<ul style="list-style-type: none"> • Global and National Security Institute (GNSI), USF 	
Detecting Suicidality in Social Media Using Deep Learning	Oct. 2023
<ul style="list-style-type: none"> • Institute for Artificial Intelligence + X, USF 	
Graph Neural Network-based Diagnosis Prediction	Oct. 2023
<ul style="list-style-type: none"> • Dept. of Applied AI, SKKU 	
Detecting Suicidality in Social Media Using Deep Learning	Sep. 2023
<ul style="list-style-type: none"> • Dept. of Applied AI, SKKU 	
Towards Suicide Prevention from Bipolar Disorder with Temporal Symptom-Aware Multitask Learning [<i>Best Presenter Award</i>]	Sep. 2023
<ul style="list-style-type: none"> • AI Colloquium 2023, SKKU 	
Artificial Intelligence & Mental Health	Aug. 2023
<ul style="list-style-type: none"> • Invited Talk at Doonchon Highschool, South Korea 	
Cross-Lingual Suicidal-Oriented Word Embedding toward Suicide Prevention	Nov. 2021
<ul style="list-style-type: none"> • AI Colloquium 2021, SKKU 	

References

Prof. Jinyoung Han (e-mail: jinyoung@skku.edu)

- Associate Professor
- Department of Applied Artificial Intelligence, Sungkyunkwan University, Seoul, Republic of Korea

Prof. Seungbae Kim (e-mail: seungbae@usf.edu)

- Assistant Professor
- Computer Science and Engineering Department, University of South Florida, Tampa, FL, USA

Prof. Daejin Choi (e-mail: djchoi@inu.ac.kr)

- Assistant Professor
- Computer Science and Engineering Department, Incheon National University, Incheon, Republic of Korea