
HAEIN JEON

Ph.D. in Artificial Intelligence (she/her)

 hjeon@knu.ac.kr |  [Personal page](#) |  [Google Scholar](#) |  [GitHub](#)

RESEARCH PROFILE

I am a researcher in natural language processing, investigating how linguistic structure emerges and is represented in language models and how computational methods can support language learning.

EDUCATION

Ph.D.: Artificial Intelligence, 02/2026

Kyungpook National University - Daegu, Korea

Ph.D. Thesis: “Adaptive Intelligent Tutoring Systems through Pedagogical Knowledge Augmented Prompting,” Kyungpook National University, December 2025. (Supervised by Prof. Bo-Yeong Kang)

M.S.: Artificial Intelligence, 02/2022

Kyungpook National University - Daegu, Korea

M.S. Thesis: “Deep Reinforcement Learning with Voice Feedback for a Table Balancing Robot,” Kyungpook National University, December 2021. (Supervised by Prof. Bo-Yeong Kang)

B.A.: English Education, 02/2020

Kyungpook National University - Daegu, Korea

(Supervised by Prof. Yae-Shiek Lee)

SELECTED PAPERS AND PREPRINTS

Language, Learning, and Human-AI Interaction

- **Haein Jeon** and Bo-Yeong Kang, “Leveraging Large Language Models for Adaptive Tutoring Systems via Pedagogical Knowledge-Augmented Prompting,” *Expert Systems with Applications*, vol. 332(A), 2026, Article 133414. (SCIE, Q1, IF 9.4.)
- **Haein Jeon**, “Probing Native-Language Signals in Learner English Representations,” *Under review, ACL Rolling Review, August 2026.*
- **Haein Jeon**, Dae-Won Kim, and Bo-Yeong Kang, “Deep Reinforcement Learning for Cooperative Robots Based on Adaptive Sentiment Feedback,” *Expert Systems with Applications*, vol. 243, 2024, Article 121198. (SCIE, Q1, IF 9.4.)
- Yewon Kim, **Haein Jeon**, and Bo-Yeong Kang, “Interactive Robot-Robot Reinforcement Learning for Object Balancing Task,” *In Proceedings of the 42nd IEEE International Conference on Consumer Electronics (ICCE 2024)*, Las Vegas, USA, January 2024.
- **Haein Jeon**, Yewon Kim, and Bo-Yeong Kang, “Interactive Reinforcement Learning for Table Balancing Robot,” *In Proceedings of the Second International Combined Workshop on Spatial Language Understanding and Grounded Communication for Robotics*, co-located with ACL-IJCNLP 2021, Virtual Conference, August 2021.

Applied AI

- **Haein Jeon**, Donghun Lee, Bo-Yeong Kang, and Jimin Oh, “Transfer Learning Framework for SEM-Based Degraded Lithium-ion Battery Diagnostics under Domain Shift and Data Scarcity,” *Journal of Power Sources*, vol.694, 2026, Article 241237. (SCIE, Q1, IF 8.4)
- Eunbin Noh¹, **Haein Jeon**¹, Jinseo Kim, Junhwan Yu, Chanyoung Lee, Jina Lee, and Jimin Oh “The Cathode–Electrolyte Interphase Meets Artificial Intelligence: From Formation and Evolution Mechanisms to Data-Driven Interphase Design,” *In revision, Chemical Engineering Journal.*

- Eunbin Noh, **Haein Jeon**, Jinseo Kim, Chanyoung Lee, Junhwan Yu, Bo-Yeong Kang, and Jimin Oh, “SEM image-based classification of manufacturing-induced microstructural evolution in Ni-rich cathodes,” *International Journal of Energy Research*, 2026, 3779468, 11 pages, July 2026.
- Ruchitha Gangula, Hammed Obasekore, **Haein Jeon**, and Bo-Yeong Kang, “Real-time Monitoring System for Industrial Worker Emotion State Using Vision Transformer-based Facial Expression Analysis,” *The 62nd Winter Academic Conference of Korea Industrial Hygiene Association*, February 2026.
- **Haein Jeon**, Donghun Lee, Bo-Yeong Kang, and Jimin Oh, “Bridging Data-Rich and Data-Poor Domains in Lithium-Ion Batteries Using SEM Data via CNN Transfer Learning,” *In AI for Accelerated Materials Discovery Workshop (AI4Mat)*, co-located with NeurIPS 2025, San Diego, USA, December 2025.
- Hye-Won Kim, **Haein Jeon**, Soo-Young Byun, Soo-Min Ji, Bo-Yeong Kang, and Ji-Young Lim, “Unsupervised Clustering-Based Analysis of Media Diaries of Adolescents and Segmentation of Media Literacy Education,” *Proceedings of the Fall Conference of the Korean Home Economics Association*, October 2024.
- **Haein Jeon**, Jeonghun Kang, and Bo-Yeong Kang, “Deep Reinforcement Learning-Based Cooperative Robot Using Facial Feedback,” *Journal of Korea Robotics Society*, vol. 17, no. 3, pp. 264–272, September 2022. (KCI)

PROJECTS

- **Calibrating Physics Education with Misconception-Tuned Lightweight LLM**, Core Research Grants (Type B) / New Basic Research Projects, Ministry of Science and ICT (MSIT), Apr. 2026 – Feb. 2030. (*Research Associate*)
- **Digital Twin and ML-Based Battery-BMS Performance and Safety Optimization**, Basic Research Lab Support Program, Ministry of Science and ICT (MSIT), Apr. 2026 – Present. (*Postdoctoral Researcher*)
- **Comparative Analysis of Adolescent Media Diaries Using Unsupervised Learning**, Graduate Student Autonomous Research Program, Apr. 2024 – Feb. 2025.
- **Evolutionary Cooperative Robot Development Using Distributed Deep Reinforcement Learning**, Mid-career Research Project, Ministry of Science and ICT (MSIT), Mar. 2019 – Feb. 2022. (*Research Assistant*)

RESEARCH EXPERIENCE

ESSL Postdoctoral Researcher | Apr. 2026 – Present | **Kyungpook National University**
Artificial Intelligence Robot Lab Researcher | Jan 2020 – Feb 2026 | **Kyungpook National University**
Technical Consultant– Vision-Based Tool Lifetime Estimation | July 2025 – October 2025 | **CHAMPDIA**
Outsourced Researcher– Robot Vision-Based Joint Tracking Project | July 2025 – August 2025 | **MDX**
Undergraduate Research Assistant | Educational NLP | 2019 | **Kyungpook National University**

TEACHING EXPERIENCE

- **Lecturer**, Kyungpook National Univ. (KNU): Human and Artificial Intelligence (Fall 2025) [[Slides](#)]
- **Teaching Assistant**, KNU: AI Design, Human and Artificial Intelligence, C/C++ Programming, Engineering Mathematics I & II (2022 Spring–2024 Fall)
- **Student Teacher**, Wolsoe Middle School: English Teaching Practicum (May 2019)

PROFESSIONAL ACTIVITIES

Reviewer

- **Expert Systems with Applications (SCIE)**, 2026
- **Discover Artificial Intelligence (SCOPUS)**, 2026
- **The Journal of Supercomputing (SCIE)**, 2025
- **Journal of Korea Robotics Society (KCI)**, 2023–2024

Committee & Evaluation Service

- External Interview Panel Member for the Selection of Robot Companies for the AI Care Robot Public Project, Uiseong County Office, Gyeongbuk, Korea, February 24, 2023.

Invited Talk

- “Basic Principles and Future Directions of Artificial Intelligence”, COLLEGE OF SOCIAL SCIENCES, Kyungpook National University, Daegu, South Korea

PATENTS

- **Haein Jeon** and Bo-Yeong Kang
“Method and Apparatus for Adaptive Intelligent Tutoring Based on Pedagogical Knowledge-Augmented Prompts”
Korean Patent Application No. 10-2026-0081263, filed May 6, 2026.
- Bo-Yeong Kang, **Haein Jeon**, and Yewon Kim,
“Method of Interactive Reinforcement Learning for Table Balancing Robot, Recording Medium, and Device for Performing the Method,”
Korean Patent **No. 10-2814408**, Registered May 26, 2025.
(Application No. 10-2022-0011771, filed July 29, 2021)
- Bo-Yeong Kang, **Haein Jeon**, and Jeonghun Kang,
“Deep Reinforcement Learning-Based Cooperative Robot and Method Using Facial Expression Feedback,”
Korean Patent **No. 10-2776109**, Registered February 27, 2025.

SOFTWARE REGISTRATIONS

- **Haein Jeon**, Bo-Yeong Kang
“PATs: Pedagogically Adaptive Tutoring System.”
Software Registration **No. C-2026-027623**, June 5, 2026
- Hammed Olatunde Obasekore, **Haein Jeon**, Woonghee Tae, Youngmin Kim, and Bo-Yeong Kang,
“Robot Action Learning System for Manipulator Joint Coordinate Tracking,”
Software Registration **No. C-2025-040639**, October 2, 2025.
- **Haein Jeon**, Yewon Kim, and Bo-Yeong Kang,
“Interactive Reinforcement Learning System for Table Balancing Robot Using Voice Feedback,”
Software Registration **No. C-2025-025436**, July 8, 2025.

SKILLS

Programming & ML Python, PyTorch, scikit-learn, pandas, NumPy, MATLAB

NLP&LLM Tools Hugging Face Transformers, Ollama, OpenAI API, Sentence Transformers

Research & Development Git/GitHub, Linux, Jupyter, CUDA

Research Expertise NLP & Language Models, Representation Analysis, LLM Evaluation, Transfer Learning, Deep Reinforcement Learning, Continual Learning

Languages Korean (Native), English (Proficient; TOEFL iBT 94)

Teacher's Certificate Secondary School Teacher (GradeII) of English

SCHOLARSHIPS

- 2020.03 – 2022.03, Tuition Scholarship
- 2020.09– 2022. 09, Professional Manpower Training for 3D Printing based on 3D Printing Materials
- 2021.03 – 2023.08, BK21 FOUR: AI Convergence Innovation Talent Training Program
- 2022.09 – 2023.09, Scholarship for Academic Excellence
- 2023 Autumn Semester, Teaching Assistant Scholarship
- 2025.01 KNU Women's Faculty Association Scholarship (KRW 1,000,000)