

# Hyeon-Ju Jeon

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CONTACT INFORMATION	Data Assimilation Group, Data Preprocessing Team Korea Institute of Atmospheric Prediction Systems (KIAPS) Seoul, Korea	+82(0)10-5153-0105 hjjeon@kiaps.org higd963@gmail.com
RESEARCH INTERESTS	Spatiotemporal Graph Neural Network Unsupervised/Self-supervised Graph Representation Learning Multi-modal and Irregular Real-world Data Analysis Uncertainty Quantification Explainable AI <b>- Application Domain:</b> Earth Science, Medical Epidemiology, Biomedical, Weather Prediction, Bibliographic Network Analysis, etc.	
WORK EXPERIENCE	<b>Korea Institute of Atmospheric Prediction Systems (KIAPS)</b> Research Scientist	October 2021-Present
	<ul style="list-style-type: none"><li>• Developing intelligent weather prediction models</li><li>• Analyzing the characteristics of weather phenomena</li><li>• Preprocessing of weather observation data</li><li>• Impact analysis of each observation type</li></ul>	
EDUCATION	<b>Chung-Ang University</b> , Seoul, Korea M.S., Computer Engineering, February 2021 Thesis: Bibliographic network representation learning for research pattern analytics GPA: 4.3  <b>Myong-Ji College</b> , Seoul, Korea B.S., Computer Engineering, February 2019 GPA: 4.2	
HONORS AND GRANTS	<b>Best Researcher Award</b> , Korea Institute of Atmospheric Prediction Systems (2022) <b>Best Paper Award</b> , Computing4Human 2021 (2021) <b>Best Research Project Award</b> , Center for Women in Science, Engineering, and Technology (2021) <b>Research Assistant</b> , Chung-Ang University (2020) <b>Teaching Assistant</b> , “Introduction to Artificial Intelligence and its Applications,” Chung-Ang University (CAU CE S’20) <b>Teaching Assistant</b> , “Basic Computer Programming,” Chung-Ang University (CAU CE S’19)	
TALKS	<b>Invited talks - International Conference on Next Generation Computing</b> (July 2022) Efficient weather forecasting through deep learning based analysis of multi-modal observational data	
PUBLICATIONS	<b>Journal</b>  1. <b>Hyeon-Ju Jeon</b> , Hyeon-Jin Jeon, Seung Ho Jeon. Predicting the Daily Number of Patients for Allergic Diseases based on Spatiotemporal Graph Convolutional Networks, <i>Plos One</i> . (Under Review)	

2. Daehun Kim\*, **Hyeon-Ju Jeon\***, Hyeyoon Jeong, O-Joun Lee, Hae Gyun Lim. Automated real-time red tide monitoring system using reflected ultrasonic signals and convolutional neural networks. *Engineering Applications of Artificial Intelligence*. (Under Review, \*Co-first authors)
3. Ji Won Nam\*, **Hyeon-Ju Jeon\***, Jeong Eun Lee, O-Joun Lee, Hae Gyun Lim (2024). Quantification of dysnatremia using single-beam acoustic microbeam and convolutional neural networks. *IEEE Sensors Journal*. (In press, \*Co-first authors)
4. Jeong Eun Lee\*, **Hyeon-Ju Jeon\***, O-Joun Lee, Hae Gyun Lim (2024). Diagnosis of diabetes mellitus using high frequency ultrasound and convolutional neural network. *Ultrasonics*, 136, 107167. (\*Co-first authors, JCR Top 15%)
5. **Hyeon-Ju Jeon**, Jason J. Jung (2023). Discovering the Role Model of Authors by Research History Embedding. *Journal of Information Science*, 49 (4), 990-1006.
6. Van Thuy Hoang, **Hyeon-Ju Jeon**, Eun-Soon You, Yoewon Yoon, Sungyeop Jung, O-Joun Lee (2023). Graph Representation Learning and Its Applications: A Survey. *Sensors*, 23 (8), 4168.
7. **Hyeon-Ju Jeon**, Hae Gyun Lim, K Kirk Shung, O-Joun Lee, Min Gon Kim (2022). Automated cell-type classification combining dilated convolutional neural networks with label-free acoustic sensing. *Scientific Reports*, 12 (1), 19873.
8. **Hyeon-Ju Jeon**, Min-Woo Choi, O-Joun Lee (2022). Day-Ahead Hourly Solar Irradiance Forecasting Based on Multi-Attributed Spatio-Temporal Graph Convolutional Network. *Sensors*, 22 (19), 7179.
9. O-Joun Lee, **Hyeon-Ju Jeon**, Jason J. Jung (2021). Learning Multi-resolution Representations of Research Patterns in Bibliographic Networks. *Journal of Informetrics*, 15 (1), 101126. (JCR Top 10%)
10. **Hyeon-Ju Jeon**, O-Joun Lee, Jason J. Jung (2019). Is performance of scholars correlated to their research collaboration patterns? *Frontiers in big Data*, 2 (39).

## Conference

1. **Hyeon-Ju Jeon**, Jeon-Ho Kang, In-Hyuk Kwon, O-Joun Lee (2024). Explainable Graph Neural Networks for Observation Impact Analysis in Atmospheric State Estimation. in *Proceedings of the Workshop on Explainable machine learning for sciences (XAI4Sci 2024)*, co-located with the 38th Annual AAAI Conference on Artificial Intelligence (**AAAI 2024**), Vancouver, Canada; February 2024.
2. Jeong Eun Lee, **Hyeon-Ju Jeon**, O-Joun Lee, Hae Gyun Lim (2023). Blood Glucose Classification Using high-Frequency Ultrasound and Artificial Intelligence. in *Proceedings of the 2023 IEEE International Ultrasonics Symposium (IEEE IUS 2023)*, Montreal, Canada; September 2023.
3. Ji Won Nam, **Hyeon-Ju Jeon**, Jeong Eun Lee, O-Joun Lee, Hae Gyun Lim (2023). Classification of Red Blood Cells for the Diagnosis of dysnatremia Based on Ultrasound and Convolutional Neural Networks. in *Proceedings of the 2023 IEEE International Ultrasonics Symposium (IEEE IUS 2023)*, Montreal, Canada; September 2023.
4. Jeong Eun Lee, **Hyeon-Ju Jeon**, O-Joun Lee, Hae Gyun Lim (2023). High-frequency ultrasound and convolutional neural network: A Potential tool for diagnosis of diabetes mellitus. *Samsung Global Technology Symposium*, Seoul, Korea; April 2023.

5. Hui-Nae Kwon, **Hyeon-Ju Jeon**, Jeon-Ho Kang, In-Hyuk Kwon, and Seon Ki Park (2023). Bias correction of aircraft temperature observations in the Korean Integrated Model based on a deep learning approach. *in Proceedings of the EGU General Assembly 2023* (EGU 2023), Vienna, Austria; April 2023, EGU23-12218.
6. **Hyeon-Ju Jeon**, Jeon-Ho Kang, In-Hyuk Kwon (2023). Estimating the observation impact based on attentive 3d-convolutional RNN. *in Proceedings of the 24th International TOVS Study Conference* (ITSC 2023), Tromso, Norway; March 2023.
7. Eun-jin Kim, **Hyeon-Ju Jeon**, Jeon-Ho Kang, In-Hyuk Kwon (2023). A Study on Machine Learning-Based Quality Control Techniques for the Satellite Radiance Data Assimilation. *in Proceedings of the 24th International TOVS Study Conference* (ITSC 2023), Tromso, Norway; March 2023.
8. **Hyeon-Ju Jeon**, Jeon-Ho Kang, In-Hyuk Kwon (2022). What Meteorological Characteristics Do Affect Weather Forecasts? *in Proceedings of the 3rd International Conference on Human-centered Artificial Intelligence* (Computing4Human 2022), Hanoi, Vietnam; December 2022.
9. Nam D Vo, O-Joun Lee, Khac-Hoai Nam Bui, Hae Gyun Lim, **Hyeon-Ju Jeon**, Phuong-Mai Nguyen, Jin-Taek Kim, Bui Quang Tuyen, Jason J Jung, Thuy Anh Vo (2021). Computing4Human 2021: *The 2nd International Conference on Human-centered Artificial Intelligence. The 2nd International Conference on Human-centered Artificial Intelligence* (Computing4Human 2021), Da Nang, Vietnam; October 2021. (**Editorial**)
10. **Hyeon-Ju Jeon**, Gyu-Sik Choi, Se-Young Cho, Hanbin Lee, Hee Yeon Ko, Jason J Jung, O-Joun Lee, Myeong-Yeon Yi (2021). Learning Contextual Representations of Citations via Graph Transformer. *in Proceedings of the 2nd International Conference on Human-centered Artificial Intelligence* (Computing4Human 2021), Da Nang, Vietnam; December 2021.
11. **Hyeon-Ju Jeon**, O-Joun Lee, Jason J. Jung (2019). Is Performance of Scholars Correlated to their Research Collaboration Patterns? *in Proceedings of the 6th Workshop on Big Scholarly Data* (BigScholar 2019), *co-located with the 28th ACM International Conference on Information and Knowledge Management* (**CIKM 2019**), Beijing, China; November 2019.

#### Pre-print

1. **Hyeon-Ju Jeon**, Jeon-Ho Kang, In-Hyuk Kwon, O-Joun Lee (2024). CloudNine: Analyzing Meteorological Observation Impact on Weather Prediction Using Explainable Graph Neural Networks, submitted to *IJCAI 2024*. (Under Review)

#### Patent

1. Jason J. Jung, **Hyeon-Ju Jeon** (2023). Explainable role model recommendation method and apparatus thereof, NO. 10-2021-0029267, issued June 2023.

RESEARCH  
PROJECT

#### Principal Investigator

- Development of GNN-Based Citation Context Extraction and Analysis System for Intelligent Knowledge Information Services (2021/05/01 – 2021/10/31), Supported by the Women In Science, Engineering and Technology (WISSET) grant funded by the Korea government (MSIT), **Best Research Project Award**.

- Explainable Recommendation Service based on Graph Embedding by Processing Academic Big Data (2020/05/01 – 2020/10/31), Supported by the Women In Science, Engineering and Technology (WISET) grant funded by the Korea government (MSIT).
- Social data modeling for resolving differences in perceptions of online users (2020/06/01 – 2020/11/30), Supported by the Korea Institute of Human Resources Development in Science and Technology (KIRD) grant funded by the Korea government (MSIT).

TEACHING  
EXPERIENCE

**LG CNS**

2021-2022

Lecturer in Database Modelling Methodologies and Practices

- Developed and conducted lectures and facilitated hands-on exercises
- Provided one-on-one feedback on practical application in real-world scenarios

**Chung-Ang University**

Spring 2020

Teaching Assistant in Introduction to Artificial Intelligence and its Applications

- Attended class while observing learning and teaching throughout course
- Assisted students with assignments and material comprehension

**Chung-Ang University**

Spring 2019

Teaching Assistant in Basic Computer Programming

- Graded weekly assignments and moderated questions and answers at the end of class
- Developed lesson plan and lead programming class sessions

SKILLS AND  
ABILITIES

Programming: Python, Java, C, JSP, JavaScript  
 Machin Learning Frameworks: Pytorch, TensorFlow, JAX  
 Database: Oracle, Neo4j  
 Operation Systems: Linux, Windows  
 Language: Korean, English, Chinese