Research Interests

My research interests encompass machine learning and natural language processing. I focus on advancing methodologies for understanding and modeling human and Al-driven communication. I am interested in applying Bayesian models and artificial neural networks to evaluate Al-generated content and simulate human behavior. I am also interested in uncovering latent patterns and insights from large-scale datasets, such as conversational corpora. ¹

Employment

Associate Professor

Sungkyunkwan University (SKKU)

Suwon, South Korea

Sep 2024 - Present

Assistant Professor

SKKU

Suwon, South Korea

Sep 2020 - Aug 2024

I am working as a professor in the College of Computing and Informatics at Sungkyunkwan University. I am the leader of the Human Language Intelligence Lab².

Junior Data Scientist

United Nations Global Pulse Lab

Jakarta, Indonesia

June 2016 - Aug 2016

I interned with Dr. Jonggun Lee in the United Nations Global Pulse Lab Jakarta. I developed a topic model-based methodology for expanding relevant keywords for specific subjects to identify related tweets on Twitter. This work is published at ICML 2017 workshop [46].

Research Intern

Microsoft Research Asia

Beijing, China

Sep 2013 - Feb 2014

I interned with Dr. Chin-Yew Lin in the Knowledge Mining group at Microsoft Research Asia. I developed a topic model to identify self-disclosure in Twitter conversations. This work is published at EMNLP 2014 as a full paper [48].

Education

KAIST, Ph.D., School of Computing, Mar 2013 - Aug 2020

Dissertation: Speaker oriented Conversation Model and its Evaluation [39]

Dissertation committee: Prof. Alice Oh, Dr. Chin-Yew Lin, Prof. Kee-Eung Kim, Prof. Meeyoung Cha, and Prof. Sung-Hyon Myaeng

Outstanding PhD Thesis Award

KAIST, M.S., Computer Science, Feb 2011 - Feb 2013

GPA: 3.98/4.30

Thesis: Distributed Online Learning for Topic Models [49]

Thesis committee: Prof. Alice Oh, Prof. Sung-Eui Yoon, and Prof. Sung-Hyon Myaena

Sungkyunkwan University, B.S., Computer Engineering, Mar 2004 - Feb 2011

GPA: 4.45/4.50

Graduation project: On-Line LEcture Allocation³, Worked with Byung II Woo,

Best Project Award

SKKU Academic Excellence Scholarship (Fall 2004), Udeok Scholarship (Mar 2008 - Feb 2011)

Last updated: April, 2025

¹Full research statement: https://nosyu.kr/assets/JinYeong_Bak_ResearchStatement.pdf

²https://hli.skku.edu

³Online system for lecture allocation and mileage management

Publications

Google Scholar: https://scholar.google.com/citations?user=oYK9Z_IAAAAJ ORCiD: https://orcid.org/0000-0002-3212-5241

DBPia: https://www.dbpia.co.kr/author/authorDetail?ancId=5086204

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- [2] Xiaohong Yu, Jinyong Kim, Yoseop Ahn, Mose Gu, Jaehoon (Paul) Jeong, **JinYeong Bak**, and Jaemin Jo. An intelligent marketing platform with influencer classification in social networking services. In *Knowledge-Based Systems*, volume 310, page 112972, 2025.
- [3] Dai Quoc Tran, Yuntae Jeon, Armstrong Aboah, **JinYeong Bak**, Minsoo Park, and Seunghee Park. Leveraging semisupervised learning for domain adaptation: Enhancing safety at construction sites through long-tailed object detection. In *Journal of Construction Engineering and Management*, volume 151, page 04024190, 2025.
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- [13] Dongjun Kang, Joonsuk Park, Yohan Jo, and JinYeong Bak. From values to opinions: Predicting human behaviors and stances using value-injected large language models. In *Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing*, pages 15539–15559, Singapore, December 2023. Association for Computational Linguistics.

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- [21] Jihee Kim and **JinYeong Bak**. Increasing robustness of end-to-end speech translation using pitch and speed perturbation. In *Proceedings of the Korea Computer Congress*, pages 815–817. The Korean Institute of Information Scientists and Engineers, December 2022.
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- [27] ChaeYun Jang and **JinYeong Bak**. Multi-turn question generation using past and future information. In *Proceedings of the Korea Computer Congress*, pages 1976–1978. The Korean Institute of Information Scientists and Engineers, June 2022.
- [28] Dai Quoc Tran, Minsoo Park, Yuntae Jeon, **JinYeong Bak**, and Seunghee Park. Forest-fire response system using deep-learning-based approaches with cctv images and weather data. In *IEEE Access*, volume 10, pages 66061–66071, 2022.

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- [33] YeongJun Hwang and **JinYeong Bak**. User attribute inference using knowledge graph. In *Proceedings of the Korea Software Congress*, pages 551–553. The Korean Institute of Information Scientists and Engineers, December 2021.
- [34] Ji Woo Kim and JinYeong Bak. Finding the hidden relation through text-mining the annals of the joseon dynasty. In *Proceedings of the Korea Software Congress*, pages 1473–1439. The Korean Institute of Information Scientists and Engineers, December 2021.
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- [45] Jongin Lee, Daeki Cho, Junhong Kim, Eunji Im, JinYeong Bak, Kwan Hong Lee, John Kim, and others. Itchtector: A wearable-based mobile system for managing itching conditions. In Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems. ACM, 2017.

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- [47] **JinYeong Bak** and Alice Oh. Five centuries of monarchy in Korea: Mining the text of the annals of the Joseon dynasty. In *Proceedings of the 9th SIGHUM Workshop on Language Technology for Cultural Heritage, Social Sciences, and Humanities (LaTeCH)*, 2015.
- [48] JinYeong Bak, Chin-Yew Lin, and Alice Oh. Self-disclosure topic model for classifying and analyzing Twitter conversations. In *Proceedings of the 2014 Conference on Empirical Methods* in Natural Language Processing, 2014.
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- [53] Suin Kim, **JinYeong Bak**, Yohan Jo, and Alice Oh. Do you feel what I feel? social aspects of emotions in twitter conversations. In *Proceedings of Workshop on Computational Social Science and the Wisdom of Crowds*, 2011.
- [54] Rae Young Ko, Duk Sun Kim, **JinYeong Bak**, and Sang Gu Lee. Development of mobile sage-math and its use in linear algebra. In *J. Korea Soc. Math. Ed. Ser. E: Communications of Mathematical Education*, 2009.
- [55] Duk Sun Kim, **JinYeong Bak**, and Sang Gu Lee. The educational models using enhanced mathematics ict in the Korean it environments. In *J. Korea Soc. Math. Ed. Ser. E: Communications of Mathematical Education*, 2008.

Manuscripts

Arxiv: https://arxiv.org/search/?query=JinYeong+Bak&searchtype=author

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- [2] JiWoo Kim, Minsuk Chang, and **JinYeong Bak**. Beyond turn-taking: Introducing text-based overlap into human-llm interactions, 2025. [link].
- [3] HyunJin Kim, Xiaoyuan Yi, Jing Yao, Jianxun Lian, Muhua Huang, Shitong Duan, **JinYeong Bak**, and Xing Xie. The road to artificial superintelligence: A comprehensive survey of superalignment, 2024. [link].
- [4] Jaehyeok Lee, Keisuke Sakaguchi, and **JinYeong Bak**. Self-training meets consistency: Improving Ilms' reasoning with consistency-driven rationale evaluation, 2024. [link].
- [5] Yeonji Lee, Sangjun Park, Kyunghyun Cho, and **JinYeong Bak**. Mentalagora: A gateway to advanced personalized care in mental health through multi-agent debating and attribute control, 2024. [link].
- [6] Kyumin Park, Myung Jae Baik, YeongJun Hwang, Yen Shin, HoJae Lee, Ruda Lee, Sang Min Lee, Je Young Hannah Sun, Ah Rah Lee, Si Yeun Yoon, Dong ho Lee, Jihyung Moon, JinYeong Bak, Kyunghyun Cho, Jong-Woo Paik, and Sungjoon Park. Harmful suicide content detection, 2024. [link].

Academic Services - Program Committee

AAAI 2020, 2021, 2022, 2023, 2024, 2025

AACL 2020, 2022, 2023

ACL 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2023, 2024, 2025

ARR {Jul, Sep, Oct, Nov} 2021, {Jan, Jul, Oct} 2022, {Dec} 2023, {Feb, Apr, Jun,

Aug, Oct, Dec} 2024, {Feb} 2025

BigComp 2023, 2024, 2025

CHI 2025

CL 2024

COLING 2020, 2022, 2024, 2025

COLM 2024

EAAI 2024, 2025

EACL 2016, 2023

EMNLP 2015, 2016, 2019, 2020, 2021, 2022, 2023, 2024

HCLT 2023, 2024

ICLR 2021, 2022, 2023, 2024, 2025

ICML 2020, 2023, 2024

ICWSM 2015, 2016

IEIE 2024

JOK 2020, 2021, 2022, 2023, 2024

KSC 2023, 2024

LaTeCH-CLfL 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025

LREC 2022, 2024

NAACL 2019, 2021, 2024, 2025

NeurIPS 2021, 2022, 2023, 2024

NN 2024

SAC 2021, 2024, 2025

TASLP 2022, 2023

TheWebConf 2019, 2020, 2022

WiNLP 2024

W-NUT 2020, 2021, 2022, 2024, 2025

Academic Services - Others

Chair IJCNLP-AACL 2023 Publicity and Social Media Chair

EMNLP 2022 Virtual Poster Chair ACM FAccT 2022 Virtual co-Chair

Session Chair KSC 2024

HCLT-KACL 2024 BigComp 2023 TheWebConf 2022 POLTEXT 2019

Organizer W-NUT 2024, 2025

IJCAI 2024 Workshop and Tutorial Coordinators

Volunteer ACL 2020 Birds of a Feather Meetup

ACL 2020 Group Mentor
ACL 2020 Micro-blogging
ICLR 2020 Student Volunteer
EMNLP 2019 Student Volunteer
EMNLP 2018 Student Volunteer
ACL 2012 Student Volunteer

Projects

"Offsite AI Model Learning Algorithm for ensuring model and data confidentiality and performance", NRF, Mar 2025 - Present

"Al Guardians: Development of Robust, Controllable, and Unbiased Trustworthy Al Technology", IITP, Aug 2024 - Present

"Demonstration and commercialization of a large-scale Al-based mental health service to eliminate blind spots in mental health", NIPA, Jul 2024 - Dec 2024

"Collaborative Research Projects with Microsoft Research", IITP, Apr 2024 - Present

"Enhancing Language Model Alignment with Human Values and Safety", Microsoft Research Asia, June 2023 - Present

"Research on the reliability and coherence of outcomes produced by Generative AI", IITP, Apr 2024 - Present

"Development of an Artificial Intelligence Model for Integrated Depression Diagnosis Technology based on Depression Behavior Characteristics Dataset", NRF, Aug 2023 - Dec 2024

"A study on DetectGPT to detect plagiarism of codes and texts from large language models", Elice, June 2023 - June 2023

"Integrating Human Values into Language Models: Generating Human Value-Aligned Arguments", Microsoft Research Asia, June 2023 - Present

"Language Localization Neural Machine Translation Model for User Generated Text", NRF, June 2023 - May 2024

"A study on large AI de-biasing algorithms", KT, Dec 2022 - Sep 2023

"A study on explainable automatic evaluation model for generated natural language texts in terms of factual consistency", NRF, June 2022 - May 2023

"Abductive inference framework using omni-data for understanding complex causal relations", IITP, Apr 2022 - Present

"National Program for Excellence in SW", IITP, Apr 2021 - Present

"A study on automatic evaluation model for generated natural language texts in terms of topic consistency", NRF, June 2021 - May 2022

"Digital SOC D.N.A. based Health Care Laboratory for Carbon Neutralization", NRF, June 2021 - Feb 2024

"Development of Digital Therapeutics for Depression from COVID19", KEIT, June 2021 - Present

"Standard Development of Blockchain based Network Management Automation Technology", IITP, Sep 2020 - May 2021

"Artificial Intelligence Graduate School Program", IITP, Sep 2020 - Present

"Explainable Human-level Deep Machine Learning", IITP, Sep 2017 - Aug 2020

"Machine Learning Center", IITP, Mar 2013 - Mar 2017

"Distributed online topic modeling for big data analysis", Samsung Electronics, Dec 2012 - Nov 2013

Talks

"Memoria: Resolving Fateful Forgetting Problem through Human-Inspired Memory Architecture", Dongguk University, Seoul, South Korea, 2024.10.11.

"Memoria: Resolving Fateful Forgetting Problem through Human-Inspired Memory Architecture", RIKEN, Tokyo, Japan, 2024.08.19.

"Applying ML to Historical Corpora: Translating Classical Korean Texts to Contemporary Korean and Analyzing Monarchical Ruling Styles", Machine Learning for Ancient Languages Workshop, Bangkok, Thailand, 2024.08.15

"Life with human-like artificial intelligence", Korea National Diplomatic Academy, Seoul, South Korea, 2024.04.23

"At the King's Command: A Historical Study of Extraordinary Natural Occurrences and Executive Orders", New York University Abu Dhabi, Abu Dhabi, United Arab Emirates, 2024.03.21

"From Human Values to Personal Opinions with LLM", Adobe, San Jose, California, United States of America, 2023.08.07

"From Human Values to Personal Opinions", Yonsei University, Seoul, South Korea, 2023.06.30

"From Human Values to Personal Opinions", Microsoft Research Asia, Beijing, China, 2023.06.27

"Understanding ChatGPT", Samsung Medical Center, Seoul, South Korea, 2023.06.09

"Understanding ChatGPT", SKKU, Suwon, South Korea, 2023.04.26

"Transformer and Pretrained Language Model", KICS, Seoul, South Korea, 2023.03.23

"Emotion-Cause Pair Extraction & Sociolect-to-Sociolect", KRAFTON, Seoul, South Korea, 2023.02.16.

"Tips for graduates students and NLP Research Trends", GIST, Online, 2023.01.13.

"NLP for Conversations", Soongsil University, Seoul, South Korea, 2022.12.28.

"Natural Language Inference with Knowledge and Emotion-Cause Pair Extraction", RIKEN, Tokyo, Japan, 2022.11.01.

"Mining the Text of the Annals of the Joseon Dynasty", Seoul National University, Seoul, South Korea, 2022.10.28.

"NLP for Conversations", Yonsei University, Seoul, South Korea, 2022.09.15.

"Introduction to NLP for Conversations", University of Seoul, Seoul, South Korea, 2022.09.06.

"Al and Ethics", The Al Korea 2022, Seoul, South Korea, 2022.08.17.

"Mining the Text of the Annals of the Joseon Dynasty", KAIST, Daejeon, South Korea, 2021.12.14.

"Evaluation and Scalability of Conversation models", Korea Institute of Science and Technology Information, Daejeon, South Korea, 2021.08.20.

"Automatic evaluation methods for conversation models", SOCAR, Seoul, South Korea, 2021.07.28.

"Automatic evaluation methods for conversation models", 2021 Summer Conference, Korean Artificial Intelligence Association, Online, 2021.07.09.

"2021 NLP Research Trends", CJ Olive Networks, Seoul, South Korea, 2021.06.08.

"Automatic evaluation methods for conversation models", AI Frontiers Summit 2021, The Korean Institute of Communications and Information Sciences, Seoul, South Korea, 2021.05.21.

"Scaling laws in Natural Language Processing", 2021 Spring Colloquium, SKKU Department of Physics, Suwon, South Korea, 2021.03.03.

"Conversation Model and its Evaluation", 2020 Fall Conference, Korean Artificial Intelligence Association, Online, 2020.11.20.

"Speaker-oriented Conversation Model and its Evaluation", Online Seminar, Dongguk University, Seoul, South Korea, 2020.11.18.

"Speaker-oriented Conversation Model and its Evaluation", BK21 Artificial Intelligence Colloquium, Ajou University, Online, 2020.11.10.

"Speaker-oriented Conversation Model and its Evaluation", Fall 2020 CSE GSAI Seminar Series, Postech, Online, 2020.09.09.

"Speaker-oriented Conversation Model and its Evaluation", Machine Learning for Language, NYU, Online, 2020.06.16.

"At the King's command: rules and natural disasters in the Annals of Dynasty", 2nd Annual POLTEXT Conference 2019, Tokyo, Japan, 2019.09.14.

"Variational Hierarchical User-based Conversation Model", KAIST-NAVER Clova Al Workshop, KAIST, Daejeon, South Korea, 2019.06.19.

"Conversational decision-making model for predicting the kings decision in the annals of the Joseon dynasty", NAVER, Seongnam, South Korea, 2018.12.14.

"Conversational decision-making model for predicting the kings decision in the annals of the Joseon dynasty and Word vector Interpretability", Samsung Electronics, Suwon, South Korea, 2018.11.30.

"Studying Political Contention using Text as Data", GESIS, Cologne, Germany, 2015.12.02.

"Meaning Structures in Political Discourse: Measuring Institutional Dynamics of a Hybrid Democracy via the Topic Modeling from Contested Concepts in Newspaper Articles", GESIS, Cologne, Germany, 2014.12.01.

"Self-disclosure in Twitter conversations", Qatar Computing Research Institute, Doha, Qatar, 2014.10.23.

"Bayesian Nonparametric Topic Modeling", Korean machine learning summer school, Seoul, South Korea, 2013.08.22.

Teaching Experience

Lecturer, "Open Source Software Practice", SKKU, {Spring 2023, Fall 2023, Spring 2024, Fall 2024}

Lecturer, "Mathematics for Machine Learning", SKKU, {Fall 2022, Fall 2023, Fall 2024}

Lecturer, "Machine Learning Algorithms and Applications", SKKU, {Spring 2022, Fall 2022, Spring 2023, Spring 2024}

Lecturer, "Smart Factory Application Programming", SKKU, {Fall 2021, Fall 2023}

Lecturer, "Al and Ethics", SKKU, {Fall 2021, Spring 2024}

Lecturer, "Introduction to Artificial Intelligence", SKKU, {Fall 2021, Fall 2022, Fall 2023, Fall 2024}

Lecturer, "Bayesian Learning", SKKU, {Spring 2021, Spring 2023}

Lecturer, "Natural Language Processing", SKKU, {Spring 2021, Fall 2021, Spring 2022, Spring 2023}

Lecturer, "Natural Language Processing", DSME, {Oct 2020, June 2021, Dec 2021, Feb 2023}

Lecturer, "Probability and Random Process", SKKU, {Fall 2020, Spring 2021, Spring 2022, Spring 2024}

Lecturer, "Artificial Intelligence for Data Scientists", elice, {Apr 2017 - Aug 2017, Jun 2018 - Sep 2018}

Teaching Assistant, "Artificial Intelligence and Machine Learning", KAIST, {Fall 2011, Spring 2013, Spring 2015, Fall 2018}

Teaching Assistant, "Introduction to Programming", KAIST, {Spring/Fall 2014, Fall 2015, Spring/Fall 2016, Spring/Fall 2017}

Teaching Assistant, "IT Convergence User-centered Service Design", KAIST - Microsoft Design Expo, Spring 2015

Teaching Assistant, "Operating Systems", SKKU, Fall 2010

Teaching Assistant, "Discrete Mathematics", SKKU, Spring 2010

Graduate Student Research Supervision

Academic Advisor

- Taemin Yeom, taemin.yeom@g.skku.edu, Master (Expected)
- Jinsu Shin, jinsu0000@g.skku.edu, Master (Expected)
- Jaejun Shim, junshim@g.skku.edu, Master (Expected)
- Suyoung Kim, swimkim@g.skku.edu, Ph.D (Expected)
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- Won Kyu Lee, stbaker517@g.skku.edu, Master, 2021

Programming Skills

Programming languages that I've learned and used:

Bash, BASIC, Batch file, C, C++, C#, Go, Java, JavaScript, Maple, MATLAB, Perl, PHP, Prolog, Python, R, Rust, Scheme, SQL, TeX

GitHub Repositories: https://github.com/NoSyu

Extracurricular Activities

Session Chair, 1st International NLP Workshop @ KAIST, KAIST, 2024

Organizer, Optimistic, Pessimistic and Realistic of Large Language Models, KOFST, 2023

Organizer, 2023 Al Doctoral Consortium, AIGS, 2023

Organizer, State, Limitations, and Future of Large Language Models, KOFST, 2022

Advisory Committee Member, Korea Tourism Organization, 2021

Students Representative of the Department of Computer Science in Student Council, KAIST, 2014

Social Service Personnel, Banyeo Library, Busan, South Korea, May 2005 - July 2007

Member and Representative, Linux & Open-source Learned Club (SKKULUG), SKKU, 2004 - 2010

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