

Curriculum Vitae

Gyumin Lee



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EDUCATION

- **Ulsan National Institute of Science and Technology**
School of Business Administration
Doctor of Philosophy in Management Engineering
Thesis: "Development of decision support systems for technology and business opportunity analysis"
Ulsan, Republic of Korea
Aug. 2017 – Aug. 2023
- **Ulsan National Institute of Science and Technology**
School of Electrical and Computer Engineering
Bachelor of Engineering in Computer Science
Ulsan, Republic of Korea
Mar. 2011 – Aug. 2017

POSITION HELD

- **Korea University**
Department of Statistics
Postdoctoral Researcher
Seoul, Republic of Korea
Mar. 2024 – Present
- **Korea University**
Center for AI and Big Data in Public Sector,
Institute of Governmental Studies
Participating researcher
Seoul, Republic of Korea
Aug. 2023 – Present
- **Ulsan National Institute of Science and Technology**
Graduate School of Interdisciplinary Management
Collegiate faculty
Ulsan, Republic of Korea
Aug. 2023 – Jan. 2024

RESEARCH EXPERIENCE

- Innovation and Policy Analytics LAB (IPA-LAB)
Researcher
Aug. 2023 – Present
- Technology and Innovation Management Lab (TIM-LAB)
Research Assistant
Aug. 2017 – Aug. 2023
- Technology and Innovation Management Lab (TIM-LAB)
Undergraduate Research Assistant
Jun. 2016 – Aug. 2017

RESEARCH INTERESTS

- Data analytics

- Technology management
- Intelligent manufacturing systems
- Natural language processing
- Generative AI
- Recommender systems

SKILLS AND TECHNIQUES

- Key skills: Machine learning, Deep learning, Language model, System design and development, Web scraping
- Technical skills: Python, R, SQL

PROJECTS

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| 1. | Development of a method for measuring similarity between designated products Korea Institute of Intellectual Property (KIIP, 한국지식재산연구원) | <i>May. 2023 – Nov. 2023</i> |
| 2. | Planning of a system for diagnosing industrial innovation capability Korea Planning & Evaluation Institute of Industrial Technology (KEIT, 한국산업기술기획평가원) | <i>Jan. 2023 – Aug. 2023</i> |
| 3. | Development and application of methods towards the NRF's digital transformation: Focusing on 'expert panel organization' and 'researcher activity analysis' National Research Foundation of Korea (NRF, 한국연구재단) | <i>Nov. 2022 – May. 2023</i> |
| 4. | Railway power distribution line sensing data analysis Nemosis ((주)네모시스) | <i>Mar. 2022 – Oct. 2022</i> |
| 5. | Developing a concordance table for integrated IP analytics: Linkages among patent, trademark, and design classification codes Korea Intellectual Property Office (KIPO, 특허청) | <i>Jun. 2021 – Jan. 2022</i> |
| 6. | Development of a model for shopping products classification and consultation intention classification KTH | <i>Dec. 2020 – Mar. 2021</i> |
| 7. | Development of a battery life deterioration prediction method to accelerate qualification tests on Li-ion batteries Hyundai Motor Group (현대자동차) | <i>Mar. 2020 – Sep. 2020</i> |
| 8. | Discovery of Serendipitous drug candidates based on artificial intelligence methods Daewoong Foundation (대웅재단) | <i>Jan. 2019 – Aug. 2023</i> |
| 9. | Development of operation supporting technology based on artificial intelligence for nuclear power plant start up and shutdown operation Korea Hydro & Nuclear Power (KHNP, 한국수력원자력) | <i>Jan. 2018 – Mar. 2019</i> |
| 10. | Identifying high-risk subrogation group based on the analysis of life stability funds Korea Workers' Compensation and Welfare Service (KCOMWEL, 근로복지공단) | <i>Oct. 2016 – Dec. 2016</i> |

Peer Reviewed Journal Articles

1. Jungwon Park, **Gyumin Lee**, Daeseong Jeon, Jaewoong Choi, and Changyong Lee, 2024. Language models and administrative innovation in the public sector: Concept, approaches, and considerations. *Journal of Governmental Studies*. DOI: -. ISSN: 1229-4241. [Published on Apr. 17, 2024]
2. **Gyumin Lee**, Sungjun Lee, and Changyong Lee, 2023. Inventor–licensee matchmaking for university technology licensing: A fastText approach. *Technovation (SCIE/SSCI)*, 125, p.102765. DOI: 10.1016/j.technovation.2023.102765. ISSN: 0166-4972. [Published on Jul. 1, 2023]
3. **Gyumin Lee**, Daeil Kwon, and Changyong Lee, 2023. A convolutional neural network model for SOH estimation of Li-ion batteries with physical interpretability. *Mechanical Systems and Signal Processing (SCIE)*, 188, p.110004. DOI: 10.1016/j.ymssp.2022.110004. [Published on Apr. 1, 2023]
4. Joram Kim, **Gyumin Lee**, Seungbin Lee, and Changyong Lee, 2022. Towards expert–machine collaborations for technology valuation: An interpretable machine learning approach. *Technological Forecasting and Social Change (SSCI)*, 183, p.121940. DOI: 10.1016/j.techfore.2022.121940. ISSN: 0040-1625. [Published on Oct. 1, 2022]
5. **Gyumin Lee**, Joram Kim, and Changyong Lee, 2022. State-of-health estimation of Li-ion batteries in the early phases of qualification tests: An interpretable machine learning approach. *Expert Systems with Applications (SCIE)*, 197, p.116817. DOI: 10.1016/j.eswa.2022.116817. ISSN: 0957-4174. [Published on Jul. 1, 2022]
6. **Gyumin Lee**, Seung Jun Lee, and Changyong Lee, 2021. A convolutional neural network model for abnormality diagnosis in a nuclear power plant. *Applied Soft Computing (SCIE)*, 99, p.106874. DOI: 10.1016/j.asoc.2020.106874. ISSN: 1568-4946. [Published on Feb. 1, 2021]
7. Jae Min Kim, **Gyumin Lee**, Changyong Lee, and Seung Jun Lee, 2020. Abnormality diagnosis model for nuclear power plants using two-stage gated recurrent units. *Nuclear Engineering and Technology (SCIE)*, 52(9), p.2009–2016. DOI: 10.1016/j.net.2020.02.002. ISSN: 1738-5733. [Published on Sep. 1, 2020]
8. **Gyumin Lee**, Daejin Kim, and Changyong Lee, 2020. A sequential pattern mining approach to identifying potential areas for business diversification. *Asian Journal of Technology Innovation (SSCI)*, 28(1), p.21–41. DOI: 10.1080/19761597.2019.1693900. ISSN: 1976-1597. [Published on Jan. 2, 2020]
9. Changyong Lee and **Gyumin Lee**, 2019. Technology opportunity analysis based on recombinant search: patent landscape analysis for idea generation. *Scientometrics (SCIE/SSCI)*, 121(2), p.603–632. DOI: 10.1007/s11192-019-03224-7. ISSN: 0138-9130. [Published on Nov. 1, 2019]

Peer Reviewed Journal Articles/Abstracts (Other than Published)

1. Gyumin Lee and Changyong Lee, Seek your fortune!: Technological impact-guided technology opportunity analysis using generative-predictive machine learning models. [Submitted to *Technovation*]

CONFERENCES

1. **Gyumin Lee** and Changyong Lee, 2024. Seek your fortune!: Technological impact-guided technology opportunity analysis using generative-predictive machine learning models. In *2024 Winter Conference of Korea Society for Innovation Management & Economics*.
2. **Gyumin Lee** and Changhun Lee, 2021. Development of a method for identifying new drug candidates based on generative and predictive deep learning models considering the possibility of drug repurposing. In *2021 Spring Conference of Korean Institute of Industrial Engineers*.
3. Jae Min Kim, **Gyumin Lee**, Suckwon Hong, and Seung Jun Lee, 2019. Input data dimensionality reduction of abnormality diagnosis model for nuclear power plants. In *International Conference on Intelligent Human Systems Integration*.
4. Changhun Lee, **Gyumin Lee**, and Chiehyeon Lim, 2018. Development of a context-aware serendipitous recommender system. In *INFORMS Annual Meeting 2018*.

COURSES TAUGHT

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| 1. [Graduate] Advanced Data Mining with AI | <i>Sep. 2023 – Dec. 2023</i> |
| 2. [Graduate] Database Management | <i>Sep. 2023 – Dec. 2023</i> |

HONORS AND AWARDS

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| 1. UNIST Best Research Award , Ulsan National Institute of Science and Technology <i>In recognition of outstanding performance in the conduct of research.</i> <i>Thesis titled “Development of decision support systems for technology and business opportunity analysis”</i> | <i>Feb. 2024</i> |
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