Changhun Lee

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Education

Ulsan National Institute of Science and Technology (UNIST) *Ulsan, Republic of Korea*

MSc.-Ph.D. Industrial Engineering *2016.03 - 2023.02*

- Advisor: Dr. Chiehyeon Lim

Ajou University *Suwon, Republic of Korea*

BSc. Economics *2011.03 - 2015.02*

Professional Experience

2023.03-Present	**Postdoctoral Researcher**, Graduate School of Artificial Intelligence, UNIST
2023.03	**Participating Researcher**, Research Project Meeting, Kakao Enterprise Corp.
2019-2022	**Principal Investigator**, Granted Research Program, Daewoong Pharmaceutics Foundation
2021.11-2021.12	**Research Advisor**, Project-based Learning Program, LG Electronics
2018-2019	**Co-founder**, Data Team, Smart Ship Venture Tech
2017.07-2017.12	**Data Scientist Intern**, Business Planning Department, Hyundai Mipo Dockyard
2016-2017	**Graduate Teaching Assistant**, Department of Industrial Engineering, UNIST

Awards, Fellowships, & Grants

2023	**UNIST Best Research Award**, Ulsan National Institute of Science and Technology
2022	**Prominent Presentation Award**, The Korean Nutrition Society
	Best Oral Presentation Award, Korean Academy of Pediatric Allergy and Respiratory Disease
2020	**Best Poster Presentation Award**, The Korean Nutrition Society
	Minister of Science and ICT Award, Korea Institute of Science and Technology
2018	**Daewoong Research Scholarship Grant**, Daewoong Pharmaceutics Foundations
2013	**Student Best Paper Award**, Korean Association for Policy Sciences

Publications

Conference & Journal

Changhun, Lee., Chiehyeon Lim. (2023). "Theoretical Principles of Controllable Generation: Reinforcing the Levenshtein Agent Mitigates the Discrepancy Problem," *To be submitted to AAAI'23 (conference)*

Changhun, Lee., Chiehyeon Lim. (2023). "Analyzing the Controllability of Language Models and Improving the Control Performance with Reward Dropout," *Under Review in EMNLP'23 (conference)*

Changhun, Lee., Soohyeok Kim., Sehwa Jeong., Jayun Kim., Yeji Kim., Chiehyeon Lim., Minyoung Jung. (2023). "Artificial intelligence generates allergy-free high-nutrition diets: A first study on the real-world solution development and its evaluation," *To be submitted to Allergy (journal).*

Changhun, Lee., Soohyeok Kim., Jayun Kim., Chiehyeon Lim., Minyoung Jung. (2022). "Challenges of diet planning for children using artificial intelligence," *Nutrition Research and Practice, 16(6), 801-812. (journal)*

Jongkyung Shin.*, **Changhun, Lee.***, Chiehyeon Lim., Yunmo Shin., Junseok Lim. (2022). "Recommendation in Offline Stores: A Gamification Approach for Learning the Spatiotemporal Representation of Indoor Shopping," *In Proceedings of the 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (pp. 3878-3888). (conference)*

Changhun, Lee., Soohyeok Kim., Sehwa Jeong., Chiehyeon Lim., Jayun Kim., Yeji Kim., Minyoung Jung. (2021). "MIND dataset for diet planning and dietary healthcare with machine learning: Dataset creation using combinatorial optimization and controllable generation with domain experts," *In Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS) Datasets and Benchmarks Track (Round 2). (conference)*

Changhun, Lee., Soohyeok Kim., Chiehyeon Lim., Jayun Kim., Yeji Kim., Minyoung Jung.. (2021). "Diet Planning with Machine Learning: Teacher-forced REINFORCE for Composition Compliance with Nutrition Enhancement," *In Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discovery & Data Mining (pp. 3150-3160). (conference)*

Changhun, Lee., Chiehyeon Lim. (2021). "From technological development to social advance: A review of Industry 4.0 through machine learning," *Technological Forecasting and Social Change, 167, 120653. (journal)*

Min Jung., Chiehyeon Lim., **Changhun, Lee.**, Soohyeok Kim., Jayun Kim. (2020). "Human dietitians vs. Artificial intelligence: Which diet design do you prefer for your children?," *Journal of Allergy and Clinical Immunology, 147(2), AB117. (journal)*

Presentations

** presenting author; [+] mentored undergraduate*

Contributed Presentations

Sehwa Jeong.[+], Soohyeok Kim, **Changhun, Lee.**, Jayun Kim., Yeji Kim., Chiehyeon Lim., Minyoung Jung.* 2022. Toward the Diet Planning with Artificial Intelligence for Children with Food Allergies. Flash Talk Session: EAACI Hybrid Congress 2022, Prague, Czech Republic

Changhun, Lee.*, Soohyeok Kim., Sehwa Jeong.[+], Chiehyeon Lim., Jayun Kim., Yeji Kim., Minyoung Jung. 2021. MIND dataset for diet planning and dietary healthcare with machine learning: Dataset creation using combinatorial optimization and controllable generation with domain experts. Best Paper Sessions: Korean Artificial Intelligence Association 2021, Virtual

Changhun, Lee., Soohyeok Kim., Jayun Kim., Chiehyeon Lim., Minyoung Jung.* 2021. Human- or Artificial Intelligence-designed Diets: Which Do You Prefer for Your Children? Poster Presentation: AAAAI 2021, Virtual

Research Experience

UNIST - Dept of Industrial Engineering & Grad of Artificial Intelligence *Ulsan, South Korea*

Funding Agency: Ministry of Education *2021 - present*

- Project: Develop and validate a learning framework for interaction and co-evolution between humans and AI

UNIST - Dept of Industrial Engineering *Ulsan, South Korea*

Funding Agency: Ministry of SMEs and Startups *2021 - 2023*

- Project: Developing intelligent bio-omics analysis technology

UNIST - Dept of Industrial Engineering *Ulsan, South Korea*

Funding Agency: Ministry of Education *2020 - 2022*

- Project: Develop a methodology for identifying latent factors explaining variability in social science big data

UNIST - Dept of Industrial Engineering *Ulsan, South Korea*

Funding Agency: Ministry of Science and ICT *2020-2021*

- Project: Development of a non-face-to-face precision dietary AI service system tailored to the gut flora of pediatric atopic diseases

UNIST - Dept of Industrial Engineering *Ulsan, South Korea*

Funding Agency: Daewoong Pharmaceutics Foundation *2019 - 2022*

- Project: Development of a data reorganization and recommendation system to reduce the cost of the drug discovery

UNIST - Dept of Industrial Engineering *Ulsan, South Korea*

Funding Agency: Ministry of Education *2018 - 2021*

- Project: Structural Analysis of the Process of Technological Innovation in the Fourth Industrial Revolution

UNIST - Dept of Industrial Engineering *Ulsan, South Korea*

Funding Agency: Ministry of Science and ICT *2018-2019*

- Project: Research on servitization in Industry 4.0 through regional industrial-academic cooperation

UNIST - Dept of Industrial Engineering *Ulsan, South Korea*

Funding Agency: Ulsan National Institute of Science and Technology *2017-2020*

- Project: Understand the key research and application industries of the Fourth Industrial Revolution