

# Changhun Lee

PH.D. · DEPARTMENT OF INDUSTRIAL ENGINEERING, UNIST

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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

- 2018-2022 **Granted AI Researcher**, Daewoong Pharmaceuticals Foundation
- 2018-2019 **Co-founder**, Data Team, Smart Ship Venture Tech
- 2017 **Data Scientist Intern**, Business Planning Department, Hyundai Mipo Dockyard
- 2016-2017 **Graduate Teaching Assistant**, Department of Industrial Engineering, UNIST

## Publications

### PUBLISHED

- 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.
- 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).
- 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 Datasets and Benchmarks Track (Round 2)*.
- 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).
- 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.
- 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.
- Changhun, Lee\***, Gyeumin Lee\*, Chiehyeon Lim. (2018). Toward a Context-Aware Serendipitous Recommendation System," *In Advances in Service Science: Proceedings of the 2018 INFORMS International Conference on Service Science* (pp. 161-168).

### IN REVIEW

- Changhun, Lee**, Chiehyeon Lim. (2023). "Theoretical Principles of Controllable Generation: Reinforcing the Levenshtein Agent Mitigates the Discrepancy Problem," *Under Review in ICML23*

### IN PREP

**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*.

## Awards, Fellowships, & Grants

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- 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 Pharmaceuticals Foundations
- 2013 **Student Best Paper Award**, Korean Association for Policy Sciences

## Presentations

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*\* presenting author; + mentored undergraduate*

### CONTRIBUTED PRESENTATIONS

Sehwa Jeong<sup>+</sup>, 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\*, 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

## Teaching Experience

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- Spring 2018 **Course**, Teaching Assistant
- Spring 2017 **Course**, Teaching Assistant
- Fall 2016 **Course**, Teaching Assistant
- Fall 2015 **Course**, Teaching Assistant
- Spring 2015 **Teaching Fellow Position**, University Department
- Fall 2014 **Course**, Teaching Assistant

## Research Experience

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### University of Wyoming - Dept of Botany

ADVISOR: DR. CATHERINE WAGNER

*Laramie, WY*

*Aug. 2016 - Present*

- Dissertation: "Evolution and the environment in freshwater fishes"

### University of Minnesota- Duluth - Dept of Biology

CO-ADVISORS: DR. JARED STRASBURG, DR. RON MOEN

*Duluth, MN*

*2013-2015*

- Thesis: "Genetic diversity, structure, and hybridization in a harvested gray wolf (*Canis lupus*) population in Minnesota"

### University of Arizona - Dept of Entomology

ADVISORS: DR. BRUCE TABASHNIK

*Tucson, AZ*

*2011-2013*

- Honor's Thesis: "Integrity of preserved *Pectinophora gossypiella* samples for DNA analysis"

### University of Minnesota - Dept of Veterinary Sciences

SUPERVISORS: DR. EDWARD PATTERSON, DR. EVA FURROW

*St. Paul, MN*

*2008, 2011*

- Projects: Genetic basis of canine exercise-induced collapse and canine pancreatitis

## Outreach & Professional Development

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## SERVICE AND OUTREACH

2018    **Science Fair**, Volunteer Judge

2016-2017    **Graduate Student Association**, Committee Member

## DEVELOPMENT

**Workshop I Participated In**, and an explanation of this workshop, what I learned from it, and why I consider it to be professional development.

## PEER REVIEW

One journal I review for

Another journal

## PROFESSIONAL MEMBERSHIPS

One fancy society

Another fancy society