# YOUNG JIN PARK

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## ABOUT ME

I build more **reliable and efficient AI** systems at scale. From robotics to recommender systems to LLMs, I've consistently tackled each era's most critical challenges with cutting-edge solutions. Currently pursuing my PhD at MIT while leveraging **4+ years** of experience deploying **billion-scale** models at **Meta** and **NAVER**, specialized in translating cutting-edge research into high-impact product.

## RESEARCH EXPERTISE

**AREAS:** Large Language Models, Agentic Enterprise, AI Safety & Alignment, Personalization, Planning & Control
**TOPICS:** Inference-time Scaling, Reward Modeling, Uncertainty Quantification, Sequential Decision Making

## TECHNICAL SKILLS

**DEEP LEARNING** Transformers (LLMs, VLMs), Model Calibration, Reinforcement Learning, Time-Series
**ENGINEERING** Systems (vLLM, TRL, Distributed Training), SQL (Hive, Presto, Spark), Workflow Orch. (Airflow)

## PROFESSIONAL EXPERIENCE

**Research Engineer @ NAVER AI LAB | CLOVA** — Seongnam-si, Korea
Feb 2019 – Aug 2022
• Developed and deployed enterprise AI systems for Asia's top-tier companies: NAVER (Korea's leading tech company, $30B+ market cap), LINE (APAC's leading messaging platform, 200M+ users), and CJ Logistics (Korea's largest logistics provider).
• Delivered production e-commerce solutions including recommendation and demand forecasting systems serving millions of daily users.

### ADDITIONAL INDUSTRY RESEARCH EXPERIENCE

**ML SWE Intern @ META** — Menlo Park, CA
May 2025 – Aug 2025
• Built LLM embeddings for Instagram ads (achieved +0.03% CTR uplift).

**Visiting Student Researcher @ MIT-IBM WATSON AI LAB** — Cambridge, MA
Mar 2024 – May 2025
• Developed uncertainty-aware reward models to optimize LLM test-time reasoning, achieving 70% reduction in inference tokens while maintaining accuracy.
• Developed uncertainty quantification tools for pre-trained embedding models.

**Research Intern @ MITSUBISHI ELECTRIC RESEARCH LABORATORIES (MERL)** — Cambridge, MA
May 2024 – Aug 2024
• Developed time-series foundation models for building energy forecasting.

## EDUCATION

**MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT)** — Cambridge, MA
Ph.D. Candidate in Mechanical Eng. (Focus: Machine Learning, GPA: 5.0/5.0) — Sept. 2022 – May 2026

**KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY (KAIST)** — Daejeon, Korea
M.S. in Aerospace Eng. (Focus: Machine Learning, GPA: 4.12/4.3) — Feb. 2017 – Feb. 2019

**KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY (KAIST)** — Daejeon, Korea
B.S. in Aerospace Eng. & Mathematical Sciences (GPA: 4.03/4.3) — Mar. 2013 – Feb. 2017

## SELECTED HONORS & AWARD

Wunsch Foundation Award for excellence in a graduate student | Dept. of MechE., MIT — July 2024
Best Poster Awards | NeurIPS ICBINB Workshop — Dec. 20220
M.S. Outstanding Paper Award | Dept. of Aerospace Engineering, KAIST — Oct. 2019
KAIST Presidential Fellowship – Awarded to the top 10 students of the Class of 2017 — Mar. 2013

## PUBLICATIONS | Full publication list available at [Google Scholar]

*Authors contributed equally.

Selected Publications

1. **Know What You Don't Know: Uncertainty Calibration of Process Reward Models** (paper, slides)
   Y.J. Park, K. Greenewald, K. Alim, H. Wang, and N. Azizan.
   In *Neural Information Processing Systems (**NeurIPS**)*, 2025.
2. **Test-Time-Scaling for Zero-Shot Diagnosis with Visual-Language Reasoning** (paper)
   J.Y. Byun, Y.J. Park, N. Azizan, and R. Chellappa.
   In *IEEE Winter Conference on Applications of Computer Vision (**WACV**), submitted*.
   In *Neural Information Processing Systems (**NeurIPS**), Workshop on GenAI for Health, 2025.*
3. **Quantifying Representation Reliability in Self-Supervised Learning Models** (paper, slides, poster)
   Y.J. Park, H. Wang, S. Ardeshir, and N. Azizan.
   In *Conference on Uncertainty in Artificial Intelligence (**UAI**),* 2024. [Spotlight @ 2023 RSS Workshop]
4. **A Large-Scale Ensemble Learning Framework for Demand Forecasting** (paper, slides)
   Y.J. Park, D. Kim, F. Odermatt, J. Lee, and K.M. Kim.
   In *IEEE International Conference on Data Mining (**ICDM**),* 2022. [Oral Presentation]
5. **Distilling a Hierarchical Policy for Planning & Control via Representation and Reinforcement Learning** (paper)
   J.S. Ha*, Y.J. Park*, H.J. Chae, S.S. Park, and H.L. Choi.
   In *IEEE International Conference on Robotics and Automation (**ICRA**)*, 2021.

Additional Publications

6. **Distributional Process Reward Models: Calibrated Prediction of Future Rewards via Conditional Optimal Transport**
   R. Ma, Y.J. Park, D. Hadfield-Menell, K. Greenewald.
   Work in Progress.
7. **MaxMin Decoding: Inference-Time Scaling under Reward Uncertainty**
   K. Alim, Y.J. Park, H. Wang, K. Greenewald, and N. Azizan.
   Work in Progress.
8. **Quantifying the Reliability of Predictions in Detection Transformers** (paper, slides)
   Y.J. Park*, C. Sobolewski*, and N. Azizan.
   *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI),* in revision.
9. **Probabilistic Forecasting for Building Energy Systems using Time-Series Foundation Models** (paper)
   Y.J. Park, F. Germain, J. Liu, Y. Wang, T. Akino, G. Wichern, N. Azizan, C. Laughman, and A. Chakrabarty.
   *Energy and Buildings*, 2025.
10. **Uncertainty-Aware Meta-Learning for Analytically Tractable Posterior** (paper)
    Y.J. Park*, C. Almecija*, A. Sharma, and N. Azizan
    In *Conference on Artificial Intelligence and Statistics (AISTATS)*, submitted, 2026.
    In *Neural Information Processing Systems (NeurIPS), Workshop on Meta-Learning*, 2022.
11. **Online Gaussian Process SSM: Learning and Planning for Partially Observable Dynamical Systems** (paper)
    S.S. Park, Y.J. Park, Y. Min, and H.L. Choi.
    *International Journal of Control, Automation and Systems*, 2022.
12. **Interpretable Unsupervised Learning of Nonparametric SSM for Multi-modal Dynamics** (paper)
    Y.J. Park, S.S. Park, and H.L. Choi.
    *Journal of Aerospace Information Systems*, 2021.
13. A **Neural Process Approach for Probabilistic Reconstruction of No-Data Gaps in Lunar DEMs** (paper)
    Y.J. Park, and H.L. Choi.
    *Aerospace Science and Technology*, 2021.
14. **Tripartite heterogeneous graph propagation for large-scale social recommendation** (paper)
    K.M. Kim*, D. Kwak*, H. Kwak*, Y.J. Park*, S. Sim, J.H. Cho, M. Kim, J. Kwon, N. Sung, and J.W Ha.

In *ACM Recommender Systems (RecSys)*, *Late-Breaking Results*, 2019

15. **Adaptive Path-Integral Autoencoders: Representation Learning and Planning for Dyn. Sys**. (paper, video)
    J.S. Ha, Y.J. Park, H.J. Chae, S.S. Park, and H.L. Choi.
    In *Neural Information Processing Systems (NeurIPS)*, 2018.
16. **Deep Gaussian Process-Based Bayesian Inference for Contaminant Source Localization** (paper)
    Y.J. Park, P.M. Tagade, and H.L. Choi.
    *IEEE Access*, 2018.
17. **Efficient Sensor Network Planning Method using Approximate Potential Game** (paper)
    S.J. Lee, Y.J. Park, and H.L. Choi.
    *International Journal of Distributed Sensor Networks*, 2018.

Technical Reports and Workshop Papers

18. **One4all User Representation for Recommender Systems in E-commerce** (paper)
    K. Shin, H. Kwak K.M. Kim, M. Kim, Y.J. Park, J. Jeong, and S. Jung
19. **Adaptive Memory using Dynamic Graph Networks for Staleness Problem in RecSys** (paper)
    I.J. Kwon, K.M. Kim, J. Jeong, K. Shin, Y.J. Park, and B.T. Zhang.
    In *Knowledge Discovery and Data mining (KDD), Workshop on OARS*, 2021. [Spotlight]
20. **A Worrying Analysis of Probabilistic Time-series Models for Sales Forecasting** (paper)
    S. Jung*, K.M. Kim*, H. Kwak*, and Y.J. Park*.
    In *Neural Information Processing Systems (NeurIPS), ICBINB Workshop, PMLR*, 2020. [Best Poster Awards]
21. **VQ-AR: Vector Quantized Autoregressive Probabilistic Time Series Forecasting** (paper)
    K. Rasul, Y.J. Park, M. Ramström, and K.M. Kim.
22. **Hop Sampling: A Simple Regularized Graph Learning for Non-Stationary Environments** (paper)
    Y.J. Park, K. Shin, and K.M. Kim.
    In *Knowledge Discovery and Data mining (KDD), Workshop on MLG*, 2020.
23. **Multi-Manifold Learning for Large-scale Targeted Advertising System** (paper)
    K. Shin, Y.J. Park, and K.M. Kim.
    In *Knowledge Discovery and Data mining (KDD), AdKDD Workshop*, 2020.
24. **div2vec: Diversity-Emphasized Node Embedding** (paper)
    J. Jeong, J.M. Yun, H. Keam, Y.J. Park, Z. Park, and J. Cho.
    In *ACM Recommender Systems (RecSys), Workshop on the IRS*, 2020.

## SELECTED PRESENTATIONS

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|---|---|
| @Red Hat AI: *Instance-Adaptive Inference-Time Scaling* | Oct. 2025 |
| @Meta: *Uncertainty Calibration of Process Reward Models* | July 2025 |
| @MERL: *Towards Time-Series Foundation Models for Modeling Building Disturbance Inputs* | Aug. 2024 |

## MENTORSHIP

Mihika Dusad | Massachusetts Institute of Technology (undergraduate researcher at MIT), 2025
- *Project: LLM inference-time scaling leveraging model uncertainty and reward models.*

Addison Kristanto Julistiono | Massachusetts Institute of Technology (MEng student at MIT), 2025
- *Project: Ensemble-free Quantification for Representation Reliability*

Carson Sobolewski | University of Florida (summer intern at MIT), 2024
- *Project: Uncertainty quantification in object detection Transformer (submitted a paper to IEEE TPAMI).*

Frédéric Odermatt | ETH Zürich & Donghyun Kim | SNU (interns at NAVER CLOVA), 2021-2022
- *Project: A large-scale deep forecasting models (published a paper in ICDM 2022).*