

Youngsuk Park

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Education

Ph.D. Electrical Engineering, Stanford University, 2020.

Advisors: Stephen P. Boyd and Jure Leskovec.

Dissertation: Topics in Convex Optimization for Machine Learning.

M.S. Electrical Engineering, Stanford University, 2016.

B.S. Summa Cum Laude. Electrical Engineering (Major) and Mathematics (Minor), KAIST, 2013.

Employment

Applied Scientist II, Amazon Web Service (AWS) AI Labs, Jun. 2020 – present.

Lead Scientist of Amazon Forecast, in partnership with engineering and PM teams.

Host of Weekly Time Series Seminar where 25+ Scientists in AWS AI Labs attend.

Amazon Advisor having been mentoring 20+ Junior Scientists and Interns.

Research Intern, Adobe Research, Jun.–Sept. 2019.

Research Intern, Criteo Artificial Intelligence Lab, Jun.–Sept. 2018.

Research Intern, Bosch Center for Artificial Intelligence, Jun.–Sept. 2017.

Research Interest

Machine Learning, Time-series, Optimization, XAI, Uncertainty Quantification, and RL.

Publications

Conference and Journal Papers

1. L. Lui, **Y. Park**, N. Hoang, H. Hasson, J. Huan. Robust Multivariate Time-Series Forecasting: Adversarial Attacks and Defense Mechanisms. To appear in *Proceedings of International Conference on International Conference on Learning Representations (ICLR)*, 2023.
2. C. Marx, **Y. Park**, H. Hasson, Y. Wang, J. Huan, S. Ermon. But Are You Sure? An Uncertainty-Aware Perspective on Explainable AI. To appear in *Proceedings of International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2023.
3. X. Jin, **Y. Park**, D. Maddix, Y. Wang. Domain Adaptation for Time Series Forecasting via Attention Sharing. *Proceedings of International Conference on Machine Learning (ICML)*, 2022.
4. **Y. Park**, D. Maddix, J. Gasthaus, Y. Wang. Learning Quantile Functions without Quantile Crossing for Distribution-free Time Series Forecasting. *Proceedings of International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2022.

5. T. Yoon, **Y. Park**, E. Ryu, Y. Wang. Robust Probabilistic Forecasting via Randomized Smoothing. *Proceedings of International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2022.
6. K. Kan, F. Aubet, T. Januschowski, **Y. Park**, K. Bendis, J. Gasthaus. Multivariate Quantile Functions for Forecasting. *Proceedings of International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2022. **Selected as an oral, 2.6% of all submissions.**
7. Y. Lu, **Y. Park**, L. Cheng, Y. Wang, D. Foster. Variance Reduced Training with Stratified Sampling for Forecasting Models. *Proceedings of International Conference on Machine Learning (ICML)*, 2021.
8. **Y. Park**, R. Rossi, Z. Wen, G. Wu, H. Zhao. Structured Policy Iteration for Linear Quadratic Regulator. *Proceedings of International Conference on Machine Learning (ICML)*, 2020.
9. J. Kim, **Y. Park**, J. Fox, S. Boyd, W. Dally. Optimal Operation of a Plug-in Hybrid Vehicle with Battery Thermal and Degradation Model. *Proceedings of the American Control Conference (ACC)*, 2020.
10. **Y. Park**, S. Dhar, S. Boyd, M. Shah. Variable Metric Proximal Gradient Method with Diagonal Barzilai-Borwien Stepsize. *Proceedings of International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2020.
11. **Y. Park**, E. K. Ryu. Linear Convergence of Cyclic SAGA. *Optimization Letters*, 2020.
12. **Y. Park**, K. Mahadik, R. Rossi, G. Wu, H. Zhao. Linear Quadratic Regulator for Resource-Efficient Cloud Services. *Proceedings of ACM Symposium on Cloud Computing (SOCC)*, 2019.
13. **Y. Park**, D. Hallac, S. Boyd, J. Leskovec. Learning the Network Structure of Heterogeneous Data via Pairwise Exponential Markov Random Fields. *Proceedings of International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2017.
14. D. Hallac, **Y. Park**, S. Boyd, J. Leskovec. Inferring Time Varying Networks via Graphical Lasso. *Proceedings of ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, 2017.

Preprints under Review and Workshop Papers

15. J. Zhang, **Y. Park**, D. Maddix, D. Roth, Y. Wang. Reverse Causal Inference on Panel Data via Generalized Synthetic Control. NeurIPS Workshop on Causal Dynamic System 2022.
16. A. Jambulapati, H. Hasson, **Y. Park**, Y. Wang. Testing Causality of High-Dimensional Data. Under review.
17. Y. Ding, **Y. Park**, K. Gopalswamy, Y. Wang, J. Huan. Dynamic Ensembling for Probabilistic Time Series Forecasting: Reinforcement Learning Approach. Under review.
18. X. Zhang, X. Jin, K. Gopalswamy, **Y. Park**, D. Maddix, Y. Wang. First De-Trend then Attend: Rethinking Attention for Time-Series Forecasting. NeurIPS Workshop on Attention Models 2022.
19. L. Masserano, S. Rangapuram, R. Nirwan, S. Kapoor, **Y. Park**, M. Bohlke-Schneider. Adaptive Sampling for Probabilistic Forecasting Under Distribution Shift. NeurIPS Workshop on Distribution Shift 2022.
20. H. Hasson, D. Maddix, Y. Wang, G. Gupta, **Y. Park**. Theoretical Guarantees of Learning Ensembling Strategies with Applications to Time Series Forecasting. Under review.

Teaching Experience

Head TA, Convex Optimization II, Winter 2015. Stanford.

Guest lecturer, Convex Optimization II, Winter 2015. Stanford.

Talks, Seminars, and Tutorials

2023	Dept. of Computer Science, University of San Diego, San Diego
2022	Tutorial: Deep Time Series Forecasting, IEEE Big Data, Osaka
2022	Amazon Machine Learning Conference (AMLC), Virtual
2022	AWS AI Labs, Santa Clara
2021	Amazon Machine Learning Conference, Virtual
2020	School of Data Science, Seoul National University (SNU), S. Korea
2020	Amazon Web Service (AWS) AI, Palo Alto
2020	Facebook AI, Menlo Park
2020	Rakuten Research, San Mateo
2019	Adobe Research, San Jose
2019	Hyundai AI Labs, Seoul, Korea
2018	Hyundai Global Forum, San Diego
2017	Kakao Brain, Bundang, Korea
2017	Bosch AI, Palo Alto

Open-source Softwares

- GluonTS**: Probabilistic Time Series Modeling in Python
- SnapVX**: Python-based Convex Optimization Solver for Problems Defined on Graphs
- TVGL**: Time-series Analysis via Time Varying Graphical Lasso
- PEMRF**: Graphical Structure Inference via Pairwise Exponential Markov Random Field

Professional Service

Organizer SIGKDD International Workshop on Mining and Learning from Time Series – Deep Forecasting: Models, Interpretability, and Application, 2022.

Tutorial Deep Time Series Forecasting, IEEE Big Data, 2022.

Reviewer *Neural Information Processing Systems (NeurIPS)*, *International Conference on Machine Learning (ICML)*, *International Conference on Artificial Intelligence and Statistics (AISTATS)*, *International Conference on Representation Learning (ICLR)*, *Journal of Machine Learning Research (JMLR)*, *Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, *SIAM Journal on Mathematics of Data Science (SIMODS)*, *Neural Processing Letter (NEPL)*, *Journal of Artificial Intelligence Research (JAIR)*, *Journal of Scientific Computing (JOSC)*.

Community President of Korean Electrical Engineering Association at Stanford, Member of Korean Gates Society at Stanford, Committee of Stanford-KAIST-Silicon Valley Association

Honors & Awards

- Top 10 among Amazon Science Blogs in 2022
- Top 3 Paper of Amazon Science in Q2 2022
- Best Presenter Award in Artificial Intelligence Session, Hyundai Global Forum, 2018.
- Kwanjeong Graduate Fellowship, 2013–2015.
- Fulbright Graduate Fellowship (Declined), 2013.
- National Science and Engineering Scholarship, KOSAF, 2006–2009.
- Department Merit-based Scholarship, KAIST, 2007–2009.

List of Collaborators

Academia

Stephen P. Boyd, Professor (Department Chair), Electrical Engineering, Stanford
Jure Leskovec, Associate Professor (Chief Scientist at Pinterest), Computer Science, Stanford
Tsachy Weissman, Professor, Electrical Engineering, Stanford
Michael Saunders, Research Professor, Computational Mathematical Engineering, Stanford
Ernest K. Ryu, Assistant Professor, Mathematics, Seoul National University
Hongseok Namkoong, Assistant Professor, Decision, Risk, and Operations, Columbia B School
Andrew Gordon Wilson, Associate Professor, Computer Science, NYU

Industry

Luke (Jun) Huan, Principal Applied Scientist, AWS
Yuyang Wang, Principal Applied Scientist, AWS
Dean Foster, Senior Principal Applied Scientist, Amazon
Dominik Janzing, Principal Research Scientist, AWS
Suju Rajan, Senior Director, LinkedIn
Mohak Shah, Vice President, LG Electronics North America
Zheng Wen, Research Scientist, Google Deepmind

Research Interns

Charlie Marx, Stanford CS
Yuhao Ding, UC Berkeley OR
Linbo Liu, UCSD Applied Math
Sanae Lotfi, NYU Stats
Jiayao Zhang, UPenn Applied Math
Luca Masserano, CMU Stats
Xiyuan Zhang, UCSD CS
Arun Jambulapati, Stanford ICME (Applied Math)
Kelvin Kan, Emory Math
Shantnu Gupta, CMU CS
Taeho Yoon, SNU Math
Yucheng Lu, Cornell CS
Xiaoyong Jin, UCSB CS