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 (Cloud Service) with Engineering and PM partners.
Host of Time Series Seminar in AWS AI Labs where 25+ Scientists Weekly attend.
Amazon Advisor: Dedicated Mentor for 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, Causality, and Reinforcement Learning.

Publications

Preprints under Review

1. Y. Ding, **Y. Park**, K. Gopalswamy. Y. Wang, J. Huan. Dynamic Ensembling for Probabilistic Time Series Forecasting: Reinforcement Learning Approach. Under review at ICLR.
2. L. Lui, **Y. Park**, N. Hoang, J. Huan. Robust Multivariate Time-Series Forecasting: Adversarial Attacks and Defense Mechanisms. Under review at ICLR.
3. C. Marx, **Y. Park**, H. Hasson, Y. Wang, J. Huan. S. Ermon. But Are You Sure? An Uncertainty-Aware Perspective on Explainable AI. Under review at AISTATS.
4. J. Zhang, **Y. Park**, D. Maddix, D. Roth, Y. Wang. Reverse Causal Inference on Panel Data via Generalized Synthetic Control. Under review at AISTATS.
5. A. Jambulapati, H. Hassan, **Y. Park**, Y. Wang. Testing Causality of High-Dimensional Data. Under review at AISTATS.

6. H. Hasson, D. Maddix, Y. Wang, G. Gupta, **Y. Park**. Theoretical Guarantees of Learning Ensembling Strategies with Applications to Time Series Forecasting. Under review at AISTATS.
7. X. Zhang. X. Jin. K. Gopalswamy. **Y. Park**, D. Maddix. Y. Wang. First De-Trend then Attend: Rethinking Attention for Time-Series Forecasting. Under review at NeurIPS workshop.
8. L. Masserano, S. Rangapuram, R. Nirwan, S. Kapoor, **Y. Park**, M. Bohlke-Schneider. Adaptive Sampling for Probabilistic Forecasting Under Distribution Shift. Under review at NeurIPS workshop.

Published Papers

9. L. Lui, **Y. Park**, N. Hoang, J. Huan. Towards Robust Multivariate Time-Series Forecasting: Adversarial Attacks and Defense Mechanisms. KDD Workshop on Mining and Learning from Time Series 2022.
10. X. Jin, **Y. Park**, D. Maddix, Y. Wang Domain Adaptation for Time Series Forecasting via Attention Sharing. To appear in *Proceedings of International Conference on Machine Learning (ICML)*, 2022.
11. **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.
12. T. Yoon, **Y. Park**, Y. Wang. Robust Probabilistic Forecasting via Randomized Smoothing. *Proceedings of International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2022.
13. 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.**
14. 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.
15. **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.
16. 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.
17. **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.
18. **Y. Park**, E. K. Ryu. Linear Convergence of Cyclic SAGA. *Optimization Letters*, 2020.
19. **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.
20. **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.
21. 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.

Teaching Experience

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

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

Talks, Seminars, and Tutorials

2022 Tutorial: Deep Time Series Forecasting, IEEE Big Data
2022 Amazon Machine Learning Conference, Dallas
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 Expoential 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 Journalon 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

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