Yong-chan Park

Ph.D. Candidate, Data Mining Laboratory, Seoul National University | https://yongchanpark.github.io/

About me

I am a Ph.D. student majoring in Computer Science and Engineering at Seoul National University (SNU), advised by Prof. U Kang in Data Mining Laboratory. My research interests include machine learning, tensor analysis, and anomaly detection.

Research vision and current work

My research lies at the intersection of machine learning and large-scale tensor analysis. I develop algorithms that make high-dimensional data representations both *faster* and *more interpretable*, with particular emphasis on streaming and irregular tensors common in web-scale applications. Recent projects include

- **Partial Fourier Transform**: a linear-time Fourier transform that accelerates spectral anomaly detection by × 20 over prior art.
- **Data-Axis Transformer with Multi-Level Contexts**: the first end-to-end architecture that models inter-stock dependencies across markets for price-movement prediction.
- **PuzzleTensor**: a method-agnostic transformation that reduces the target rank of arbitrary tensors while preserving reconstruction fidelity.

Education

Ph.D. Student Mar. 2020 - Present
- Computer Science and Engineering, SNU

Bachelor of Science Mar. 2012 - Feb. 2019
- Department of Mathematical Sciences, SNU

Publications

[1] **Yong-chan Park**, Jun-Gi Jang, and U Kang. "Fast and Accurate Partial Fourier Transform for Time Series Data." KDD 2021

[2] Jaemin Yoo, Yejun Soun, **Yong-chan Park**, and U Kang. "Accurate Multivariate Stock Movement Prediction via Data-Axis Transformer with Multi-Level Contexts." KDD 2021

[3] **Yong-chan Park***, Sangjun Son*, Minyong Cho, and U Kang. "DAO-CP: Data-Adaptive Online CP Decomposition for Tensor Stream." PLOS One 2022 (*equal contribution)

[4] Jun-Gi Jang, Jeongyoung Lee, **Yong-chan Park**, and U Kang. "Fast and Accurate Dual-Way Streaming PARAFAC2 for Irregular Tensors - Algorithm and Application." KDD 2023

[5] **Yong-chan Park**, Jongjin Kim, and U Kang. "Fast Multidimensional Partial Fourier Transform with Automatic Hyperparameter Selection." KDD 2024

[6] Jun-Gi Jang, **Yong-chan Park**, and U Kang. "Fast and Accurate PARAFAC2 Decomposition for Time Range Queries on Irregular Tensors." CIKM 2024

[7] JinGee Kim, **Yong-chan Park**, Jaemin Hong, and U Kang. "Accurate Stock Movement Prediction via Multi-Scale and Multi-Domain Modeling." BigData 2024

[8] SeungJoo Lee, **Yong-chan Park**, and U Kang. "Accurate Coupled Tensor Factorization with Knowledge Graph." BigData 2024

[9] **Yong-chan Park**, Kisoo Kim, and U Kang. "PuzzleTensor: A Method-Agnostic Data Transformation for Compact Tensor Factorization." KDD 2025

[10] SeungJoo Lee, **Yong-chan Park**, and U Kang. “SwaGNER: Leveraging Span-aware Grid Transformers for Accurate Nested Named Entity Recognition.” CIKM 2025

Under review

[R1] **Yong-chan Park**, SeungJoo Lee, and U Kang. “Fast and Accurate Online Coupled Matrix-Tensor Factorization via Frequency Regularization.”

[R2] **Yong-chan Park**, SeungJoo Lee, and U Kang. “CoCoNat: Leveraging Cross-Query Context to Enhance Named Entity Recognition.”