Sungjun (June) Cho

+1 608 213 0572
sungjuncho@cs.wisc.edu
sc782.github.io

Research Interests

Large Language Models, Temporal Reasoning, Machine Unlearning, Geometric Deep Learning.

Education

2024–Present **Ph.D. in Computer Science**, University of Wisconsin-Madison, Madison, WI
- **Coursework (4.00 GPA):** Foundation Models (CS839), Randomized Linear Algebra (MATH718), Data-Driven Dynamical Systems, Stochastic Modeling and Prediction (MATH616).

2018–2020 **M.S. in Computer Science**, Cornell University, Ithaca, NY
- **Advisors:** Prof. David Bindel & Prof. David Mimno
- **Thesis:** Robust and Scalable Spectral Topic Modeling for Large Vocabularies
- **Coursework (4.00 GPA):** Matrix Computations, Data-Sparse Matrix Computations, Numerical Data Science, Analysis of Algorithms, Advanced Language Technologies.

2011–2017 **B.A. in Computer Science and Mathematics**, Cornell University, Ithaca, NY
- **Coursework (3.87 GPA):** Machine Learning, Natural Language Processing, Nonlinear Dynamics and Chaos, Numerical Analysis: Linear & Nonlinear Problems, Basic Probability.

Work and Research Experience

Aug 2024 –Dec 2024 **Graduate Teaching Assistant**, Computer Science, University of Wisconsin-Madison
- Led weekly discussion sections and office hours, proctored exams, and participated in grading sessions for CS240: Introduction to Discrete Mathematics (1 semester).

Feb 2022 –Jul 2024 **Research Scientist (full-time)**, Advanced ML Lab, LG AI Research
- Designed a sparse-attention module that reduces computational cost by data-adaptively choosing its sparsity. Conducted experiments on synthetic token-matching task as well as LRA and GLUE benchmarks.
- Developed a self-supervised molecular pretraining framework with 3D denoising and cross-modal distillation for transferrable molecular representation learning. Conducted experiments on QM9 and OGB benchmarks.
- Applied Riemannian geometry to Transformers to design a non-Euclidean graph Transformer architecture with learnable curvatures. Conducted experiments on graph reconstruction and node classification datasets.
- Participated in other projects on geometric deep learning, continual learning and unlearning, molecular property prediction, image classification, video captioning, music generation, and time-series forecasting.

Sep 2021 –Jan 2022 **Research Scientist (intern)**, Fundamental Research Lab, LG AI Research
- Proposed a graph pooling module using adaptive number of clusters for molecular graph learning.
- Managed experiments on molecular fluorescence, binding-affinity, and toxicity prediction tasks.

Aug 2020 –Aug 2021 **Graduate Research Assistant**, Computational Science and Engineering, Georgia Tech
- Derived spectral characterization of pathogen load-based 2-mode-SIS model on patient-location networks.
- Developed precautions based on characterization and tested its effect on suppressing spread of MRSA.

Aug 2018 –May 2020 **Graduate Teaching Assistant**, Computer Science, Cornell University
- Led group of $\geq$30 undergraduate TAs as head TA in teaching CS4820: Introduction to Analysis of Algorithms (1 semester) and CS1112/1132: Introduction to Computing using MATLAB (3 semesters).
- Conducted weekly lab/discussion sections and organized grading sessions on assignments and exams.

Aug 2016 –May 2017 **Undergraduate Teaching Assistant**, Computer Science, Cornell University
- Ran weekly office hours and participated in grading sessions for CS2800: Discrete Structures (2 semesters).

Honors and Awards

Nov 2019 **Student Travel Scholarship**, Conference on Empirical Methods in Natural Language Processing

May 2019 **Outstanding Graduate Teaching Assistant Award**, Cornell Computer Science
- For work as graduate teaching assistant for CS4820 and CS1112/1132

May 2017 **Outstanding Undergraduate Teaching Assistant Award**, Cornell Computer Science
- For work as undergraduate teaching assistant for CS2800

Publications

(* denotes equal contribution)

Conference & Workshop Publications

Sungmin Cha*, **Sungjun Cho***, Dasol Hwang, Moontae Lee. Towards Robust and Parameter-Efficient Knowledge Unlearning for LLMs. *International Conference on Learning Representations (ICLR)*, 2025.

Sungjun Cho, Dae-Woong Jeong, Sung Moon Ko, Jinwoo Kim, Sehui Han, Seunghoon Hong, Honglak Lee, Moontae Lee. 3D Denoisers are Good 2D Teachers: Molecular Pretraining via Denoising and Cross-Modal Distillation. *AAAI Conference on Artificial Intelligence*, 2025.

Byoungjip Kim, Dasol Hwang, **Sungjun Cho**, Youngsoo Jang, Honglak Lee, Moontae Lee. Show, Think, and Tell: Thought-Augmented Fine-Tuning of Large Language Models for Video Captioning. *2nd Workshop on What is Next in Multimodal Foundation Models (MMFM at CVPR)* 2024.

Minhyuk Seo, Hyunseo Koh, Wonje Jeung, Min Jae Lee, San Kim, Hankook Lee, **Sungjun Cho**, Sungik Choi, Hyunwoo Kim, Jonghyun Choi. Learning Equi-angular Representations for Online Continual Learning. *Conference on Computer Vision and Pattern Recognition (CVPR).* 2024.

Sungmin Cha*, **Sungjun Cho***, Dasol Hwang*, Honglak Lee, Taesup Moon, Moontae Lee. Learning to Unlearn: Instance-wise Unlearning for Pre-trained Classifiers. *AAAI conference on Artificial Intelligence (AAAI).* 2024.

Jiaming Cui*, **Sungjun Cho***, Methun Kamruzzaman, Matthew Bielskas, Anil Vullikanti, B. Aditya Prakash. Using Spectral Characterization to Identify Healthcare-associated Infection (HAI) Patients for Clinical Contact Precaution. *Scientific Reports*. 2023.

Sungjun Cho, Seunghyuk Cho, Sungwoo Park, Hankook Lee, Honglak Lee, Moontae Lee. Mixed-Curvature Transformers for Graph Representation Learning. *Workshop on Topology, Algebra, and Geometry in Machine Learning (TAG-ML at ICML).* 2023.

Sungmin Cha, **Sungjun Cho**, Dasol Hwang, Sunwon Hong, Moontae Lee, Taesup Moon. Rebalancing Batch Normalization for Exemplar-based Class-Incremental Learning. *Conference on Computer Vision and Pattern Recognition (CVPR).* 2023.

Sung Moon Ko, **Sungjun Cho**, Dae-Woong Jeong, Sehui Han, Moontae Lee, Honglak Lee. Grouping-matrix based Graph Pooling with Adaptive Number of Clusters. *AAAI conference on Artificial Intelligence (AAAI).* 2023.

Sungjun Cho, Seonwoo Min, Jinwoo Kim, Moontae Lee, Honglak Lee, Seunghoon Hong. Transformers meet Stochastic Block Models: Attention with Data-Adaptive Sparsity and Cost. *Conference on Neural Information Processing Systems (NeurIPS).* 2022.

Jinwoo Kim, Tien Dat Nguyen, Seonwoo Min, **Sungjun Cho**, Moontae Lee, Honglak Lee, Seunghoon Hong. Pure Transformers are Powerful Graph Learners. *Conference on Neural Information Processing Systems (NeurIPS).* 2022.

Jinwoo Kim, Saeyoon Oh, **Sungjun Cho**, Seunghoon Hong. Equivariant Hypergraph Neural Networks. *European Conference on Computer Vision (ECCV).* 2022.

Moontae Lee, **Sungjun Cho**, Kun Dong, David Mimno, and David Bindel. On-the-fly Rectification for Robust Large-Vocabulary Topic Inference. *International Conference on Machine Learning (ICML).* 2021.

Moontae Lee, **Sungjun Cho**, David Bindel, and David Mimno. Practical Correlated Topic Modeling and Analysis via the Rectified Anchor Word Algorithm. *Conference on Empirical Methods in Natural Language Processing (EMNLP).* 2019.

Preprints Seungyeon Rhyu, Kichang Yang, **Sungjun Cho**, Jaehyeon Kim, Kyogu Lee, Moontae Lee. Practical Symbolic Music Generation with Large Language Models using Structural Embeddings. arXiv 2024.

Jaehoon Lee, Hankook Lee, Sungik Choi, Sungwoo Park, **Sungjun Cho**, Moontae Lee. Periodic and Random Sparsity for Multivariate Long-Term Time-Series Forecasting. Under Review.

Thesis **Sungjun Cho**, Robust and Scalable Spectral Topic Modeling for Large Vocabularies. *M.S. Thesis, Cornell University.* 2020.

Presentations

2025 3D Denoisers are Good 2D Teachers: Molecular Pretraining via Denoising and Cross-Modal Distillation.
- Oral and Poster Presentations at AAAI 2025 Conference. Philadelphia, USA. Feb 2025

2024 Learning to Unlearn: Instance-wise Unlearning for Pre-trained Classifiers.
- Poster Presentation at AAAI 2024 Conference. Vancouver, Canada. Feb 2024.

Mixed-Curvature Transformers for Graph Representation Learning
- Poster Presentation at TAG-ML Workshop at ICML 2023 Conference. Online Virtual. Jul 2023.

2023 Transformers meet Stochastic Block Models: Attention with Data-Adaptive Sparsity and Cost
- Poster Presentation at LG Tech Conference. Seoul, Korea. Mar 2023.

2022 Transformers meet Stochastic Block Models: Attention with Data-Adaptive Sparsity and Cost
- Poster Presentation at NeurIPS 2022 Conference. New Orleans, USA. Nov 2022.
- Poster Presentation at 2022 SNU AI Retreat. Seoul, Korea. Nov 2022.
- Poster Presentation at 1st Yonsei AI Workshop. Seoul, Korea. Oct 2022.

2019 Practical Correlated Topic Modeling and Analysis via the Rectified Anchor Word Algorithm
- Poster Presentation at EMNLP 2019 Conference. Hong Kong, China. Nov 2019.

Reviewer Experience

2025 ICLR, CVPR, ICML

2024 ICLR, CVPR, ICML, KDD, ECCV, NeurIPS

2023 ICLR, CVPR, JMLR, ACL, ICCV, NeurIPS