Kyu-Young Kim

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kykim0.github.io

Education

Stanford University, Stanford, CA, USA

M.S., Computer Science with Distinction in Research   Expected Dec 2022
- Thesis: Adaptive Algorithms for Efficient Risk Estimation of Black-Box Systems.
- Advisor: Prof. Mykel Kochenderfer.

Cornell University, Ithaca, NY, USA

B.S., Computer Science with Distinction
- Graduated *magna cum laude*
- Minor in Applied Mathematics

Work Experience

Google, Mountain View, CA, USA

Senior Software Engineer

Google Assistant   Oct 2016 - April 2021
- Tech lead in the effort to localize Google Assistant and support low resource languages.
- Researched deep learning approaches to data-to-text problems, implementing key model components.
- Worked with the Translation team to build a large-scale training pipeline and to train NMT models.
- Led the system integration effort to serve models in Search and Assistant.
- Designed and built a system to collect diverse, task-oriented dialog datasets for NLU research.

Waze Carpool   Nov 2015 - Oct 2016
- Backend engineer in the effort to build an on-demand ride sharing platform.
- Built the logging infrastructure, enhanced matching algorithms, and improved user modeling.

Display Ads   June 2013 - Nov 2015
- Backend engineer in efforts to monetize Google services such as Gmail.
- Proposed and implemented key auction improvements for Gmail ads.
- Built backend components including the ads server, data pipelines and production monitoring.

Facebook, Menlo Park, CA, USA

Software Engineer Intern   Aug 2012 - Nov 2012
- Backend engineer in the Messaging backend team.
- Designed and implemented NoSQL database to reduce log access latency using Apache HBase.

Research Experience

Stanford University, Stanford, CA, USA

Research Assistant

Stanford Intelligent Systems Laboratory   Sep 2021 - Dec 2022
- Researched reinforcement learning methods for efficient risk estimation of black-box systems.
- Explored applications of the methods in validating autonomous vehicle policies.
- Advised by Prof. Mykel Kochenderfer.

Stanford Vision and Learning Lab   Mar 2022 - Dec 2022
- Developed a simulation benchmark for evaluating embodied AI solutions.
- Explored using the simulation benchmark to create datasets for computer vision research.
- Advised by Prof. Fei-Fei Li and Prof. Jiajun Wu.

Cornell University, Ithaca, NY, USA

Research Assistant

Finding overlapping communities from subspaces   Oct 2010 - May 2012
- Researched spectral approaches to finding overlapping community structures.
- Received research funding from Cisco.

- Advised by Prof. David Bindel and Prof. John Hopcroft.

Citation recommendation system   Jan 2011 - May 2011
- Researched Bayesian approaches to document classification.
- Advised by Prof. Thorsten Joachims.

Teaching

Instructor

Machine Learning Crash Course, Google   May 2019

Teaching Assistant

CS229 Machine Learning, Stanford   Autumn 2022, Summer 2022
CS108 Object-Oriented Systems Design, Stanford   Winter 2022
CS4820 Introduction to Algorithms, Cornell   Spring 2011, Spring 2012
CS3220 Scientific Computation, Cornell   Spring 2012
CS2800 Discrete Structures, Cornell   Spring 2010, Fall 2010

Publications

[1] **K.-Y. Kim**. Adaptive Algorithms for Efficient Risk Estimation of Black-Box Systems. MS Thesis, Stanford University, 2022.

[2] R. J. Moss, S. Gupta, M. R. Schlichting, **K.-Y. Kim**, A. Corso, G. Gao, M. Kochenderfer. A Modular Framework for Efficient Autonomous Vehicle Risk Assessment and Validation. To be submitted to *IEEE Transactions on Intelligent Transportation Systems*.

[3] A. Corso, **K.-Y. Kim**, S. Gupta, G. Gao, M. Kochenderfer. A Deep Reinforcement Learning Approach to Rare Event Estimation. arXiv preprint arXiv:2211.12470, 2022.

[4] C. Li, C. Gokmen, G. Levine, R. Martín-Martín, S. Srivastava, C. Wang, J. Wong, R. Zhang, M. Lingelbach, J. Sun, M. Anvari, M. Hwang, M. Sharma, A. Aydin, D. Bansal, S. Hunter, **K.-Y. Kim**, A. Lou, C. Matthews, I. Villa-Renteria, J. Tang, C. Tang, F. Xia, S. Savarese, H. Gweon, K. Liu, J. Wu, F.-F. Li. BEHAVIOR-1K: A Benchmark for Embodied AI with 1,000 Everyday Activities and Realistic Simulation. In *Conference on Robot Learning* (oral), 2022.

[5] S. Roy, C. Brunk, **K.-Y. Kim**, J. Zhao, M. Freitag, M. Kale, G. Bansal, S. Mudgal, C. Varano. Using Machine Translation to Localize Task Oriented NLG Output. arXiv preprint arXiv:2107.04512, 2021.

[6] B. Byrne, K. Krishnamoorthi, C. Sankar, A. Neelakantan, D. Duckworth, S. Yavuz, B. Goodrich, A. Dubey, A. Cedilnik, **K.-Y. Kim**. Taskmaster-1: Toward a Realistic and Diverse Dialog Dataset. In *EMNLP-IJCNLP*, 2019.

[7] D. Bindel, P. Chew, J. Hopcroft, **K.-Y. Kim**, C. Ponce. Finding Overlapping Communities From Subspaces. Technical Report, 2012.

Talks

Multithreading in Julia: An Anecdote   Feb 2022
Stanford Intelligent Systems Laboratory.

Skills

Programming: C/C++, Python, Java, Julia
Technologies: TensorFlow, MapReduce, SQL
Languages: English, Korean

Honors and Awards

Google Display Network Innovation Award   Q2 2013
Awarded to an innovative project within the Display Ads org.

Cornell Engineering Research Award   2011
Awarded funding for the research project on finding overlapping communities.

Morgan Stanley Award for Innovation   2011

For the research project on citation recommendation system.

John S. Knight Institute Award   2009

For the essay *Intrinsic and Instrumental Values*.