# Kyuyoung Kim

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kykim0.github.io


## Education

**KAIST** Graduate School of AI, Seoul, South Korea
Ph.D., Artificial Intelligence — Sep 2023 - Present
- Advisors: Prof. Kimin Lee, Prof. Jinwoo Shin

**Stanford University**, Stanford, CA, USA
M.S., Computer Science with Distinction in Research
- 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 an 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. Kim**, J. Jeong, M. An, M. Ghavamzadeh, K. Dvijotham, J. Shin, K. Lee. Confidence-aware Reward Optimization for Fine-tuning Text-to-Image Models. In *International Conference on Learning Representations*, 2024.

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

[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*.