Hangoo Kang

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EDUCATION

Stanford University **Aug 2025 - May 2027**
Master of Science, Computer Science

University of Illinois Urbana-Champaign **Aug 2021 - May 2025**
Bachelor of Science, Computer Science GPA: 3.92
Dean's List: Spring 2022, Spring 2023, Fall 2023, Spring 2024

PUBLICATIONS (*denotes equal contribution)

[1] **TRAP: Targeted Redirecting of Agentic Preferences**
Hangoo Kang*, Jehyeok Yeon*, Gagandeep Singh
NeurIPS 2025

[2] **Learning a Pessimistic Reward in RLHF: KL Regularization is Not Necessary**
Hangoo Kang*, Yinglun Xu*, Tarun Suresh, Yuxuan Wan, Gagandeep Singh
ALERT@NeurIPS 2025

[3] **SynCode: LLM Generation with Grammar Augmentation**
Shubham Ugare, Tarun Suresh, **Hangoo Kang**, Sasa Misailovic, Gagandeep Singh
TMLR 2025

[4] **Stochastic Monkeys at Play: Random Augmentations Cheaply Break LLM Safety Alignment**
Jason Vega, Junsheng Huang*, Gaokai Zhang*, **Hangoo Kang***, Minjia Zhang, Gagandeep Singh
(Paper under review at COML 2025)

RESEARCH EXPERIENCE

Scaling Intelligence Lab & Hazy Research Stanford
Advised by Profs. Azalia Mirhoseini & Chris Ré Aug 2025 – On going

- Collaborating with Meta on Reinforcement Learning verifiers to improve mathematical reasoning.
- Improved the GRPO training results on challenging tasks (Matht500, MMLU-PRO, etc.), outperforming SOTA verifiers by **10%**

Formally Certified Automation and Learning (FOCAL) Lab &
Approximate and Resilient Computing (ARC) Group UIUC
Advised by Profs. Gagandeep Singh & Sasa Misailovic & Minjia Zhang Spring 2023 – Spring 2025

- Developed a framework for the grammar-guided generation of Large Language Models(LLMs) to enhance the syntactical correctness of the output, resulted in paper [3] **(TMLR 2025)**
- Developed random prompt augmentation attacks for evaluating LLM safety on random character based augmentations. Resulted in paper [4] (Under Review)
- Created an incremental data augmentation algorithm to increase corruption robustness of computer vision models.
- Led the Pessimistic Reward Trainer project that addresses the reward hacking problem. (**ALERT@NeurIPS 2025**)
- Developed an optimization-driven adversarial attack that stealthily embeds prompts into images, reliably biasing GUI-based AI agents to choose targeted image over competitors. (**NeurIPS 2025**)

Crop Science Research Lab UIUC
Advised by Dr. Jinwook Kim Spring 2024 – Spring 2025

- Developed a prediction model that predicts the final biomass of a grain by differing nutrient supply.

- Analyzed and pre-processed real-world crop data so that it is human and machine understandable.

Individual Research Cornell University
Advised by Prof. Samuel Lederer Sep 2019 – Sep 2021

- Researched about the relations between energy gap and stability of the system.
- Used MATLAB to simulate and calculate the energy gap of the ferromagnetic and anti-ferromagnetic system.
- Improved the simulation runtime from O(n^2) to O($nlog(n)$)

PROJECTS

Heart Disease Prediction Model *Champaign, IL*
Team Lead & Machine Learning Engineer Aug 2023 – Dec 2023

- Led a team of 6 machine learning engineers to develop a predictive model for detecting heart disease.
- Improved classification accuracy by **32%** through feature selection and integrating image data with numerical data, enabling a hybrid model that combined CNN (image) and BERT (text) outputs for final predictions.

Book Recommendation System *Champaign, IL*
Team Lead & Machine Learning Engineer Aug 2023 – Dec 2023

- Led 3 machine learning engineers creating a book recommendation system using X posts of the users.
- Utilized BERT and TF-IDF to build the basic recommendation pipeline to predict the top 10 summaries of the book that are closely related to the user's daily post on their social media.

AutoTA Chrome Extension *Champaign, IL*
Machine Learning Engineer & President Aug 2023 – Dec 2023

- Led 5 machine learning engineers building a video2text application.
- Concatenated word2vect model with PEGASUS language model to retrieve text from input video and summarize them for lecture notes.
- Implemented the system to google chrome extension for broader easy usage.

Build My Portfolio *Champaign, IL*
Machine Learning Engineer & President Jan 2023 – July 2023

- Referenced the Markowitz portfolio theory to build the optimized financial portfolio for the user.
- Implemented Transformer and LSTM models to classify the tickers into different categories with similar characteristics.
- Built a stock reinforcement learning environment with an agent that can trade stocks and self-improve from its experience.

Yield Protocol Chat Bot *Champaign, IL*
Software Engineer, Consultant Jan 2023 – July 2023

- Developed a chat model aiming for retrieving blockchain related knowledge with experienced programmers.
- Implemented vector search engine and lang-chain to extract information from the given boundary.
- Consulted Yield Protocol to utilize the chat bot for Q&A service.

MindMe *Champaign, IL*
Machine Learning Engineer Aug 2021 – Jan 2023

- Developed a conversational chat bot using BERT model in TensorFlow to classify user's personality.
- Combined BERT's decoding layer, Sentiment analysis layer, and CNN text classification pipeline to analyze the user's response and predict the user's personality.

LEADERSHIP

Codable UIUC

President Spring 2024 – Spring 2025

- Led 50+ members per-semester
- Propelled algorithm & tech interview prep workshop cooperated with CodeTree managers.
- Created new website from scratch using NodeJS, streamlining student registration, group projects, and administrative tasks like mass-mails and event check-in; used by **150+ college students**.

Machine Learning Team Lead Fall 2023

- Led 12 machine learning developers for building real-world machine learning projects. (MindMe, Build My Portfolio)
- Created a machine learning & deep learning lecture and presented to 25 members.

Python Learning Team Lead Spring 2023 – Fall 2024

- Prepared weekly lessons and labs for Python and presented to **50+ members** who are new to coding.

UIUC Datathon Team 101 UIUC

Team Lead & Head Engineer

- Led a team of 8 on building a model for (I) Fraud Detection, (II) Anomaly Detection, (III) Future Credit Score Increase Probability, and (IIII) Credit Limit Adjustment.
- Combined autoencoder based pipeline to BERT classification model, gaining **12+%** increase in anomaly detection.
- Won an **honorable mention** award among 120+ teams (top 10)

AWARDS

- **UIUC Datathon 2025 Honorable Mention**
- **Illinois Engineering Outstanding Scholarship (2023, 2024)**
- **Illinois Engineering Achievement Scholarship (2023, 2024)**
- **Hack Illinois 2022 2nd Place in Beginner's Division**

TEACHING EXPERIENCE

CS 124 An Introduction to Computer Science UIUC

Course Assistant Fall 2022

- Led weekly code reviews and mentored semester long project.
- Created a four-week lecture to further help students' understanding.

Math 241 Calculus III UIUC

Peer Tutor Fall 2022

- Delivered weekly lectures and quizzes to guide a group of five students through vector calculus.
- Improved the group's average grade by **15.5%, raising it from 78.5% to 94.0%**.

SKILLS

- **Language:** C++, Python, Java, Javascript, CSS, R, SQL, OCaml
- **Technology:** MATLAB, Tensorflow, PyTorch, Blockchain, AWS, Git, Docker, Ollama

Reviewer

NeurIPS 2025