Hangoo Kang

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EDUCATION

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

[1] **SynCode: LLM Generation with Grammar Augmentation**
Shubham Ugare, Tarun Suresh, **Hangoo Kang**, Sasa Misailovic, Gagandeep Singh
(Paper under review at TMLR)

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

RESEARCH EXPERIENCE

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 – On Going

- Developed a framework for the grammar-guided generation of Large Language Models(LLMs) to enhance the syntactical correctness of the output, resulted in paper [1] (In Review)
- Developed random prompt augmentation attacks for evaluating LLM safety on random character based augmentations. Resulted in paper [2] (In Review)
- Created an incremental data augmentation algorithm to increase corruption robustness of computer vision models.
- Implemented RLHF training pipeline including best of N sampling and PPO trainer for Best of top N training algorithm. (In submission)

Crop Science Research Lab — UIUC

Advised by Dr. Jinwook Kim — Spring 2024 – On Going

- 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 – Sep2021

- 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

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

- Lead 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 Developer & President — Jan 2023 – July 2023

- Referenced the Markowitz portfolio theory to build the optimized 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 and agent that can trade stocks and learn from it.

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.

MindeMe — *Champaign, IL*

Machine Learning Developer — Aug 2021 – Jan 2023

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

LEADERSHIP

Codable — UIUC

President — Spring 2024 – On going

- 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 – On going

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

AWARDS

- **Illinois Engineering Outstanding Scholarship (2023, 2024)**
- **Illinois Engineering Achievement Scholarship (2023, 2024)**

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, WEB3, AWS, Git, Docker