SooHyuk Cho

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Education

2020 - present B.A. in Computer Science @ **University of California, Berkeley** (GPA: 3.97/4.00)

Relevant Coursework:
Data Structures, Discrete Mathematics and Probability Theory, Designing Information Devices and Systems I & II, Linear Algebra, Efficient Algorithms and Intractable Programs, Machine Structure, Probability and Random Process, Signals and Systems, Introduction to Machine Learning, Optimization Models in Engineering, Computer Architecture and Engineering

Involvement:
CS Scholars Program, UC Berkeley IEEE Student Branch, Computer Science Mentors, Upsilon Pi Epsilon (UPE) Nu Chapter

Research Experience

UC Berkeley SLICE Lab *Gemmini Project* Jan 2023 - Present

Implementing pipeline parallelism support for *Gemmini*, a DNN accelerator generator under the guidance of Prof. Sophia Shao, and graduate students Hasan Genc and Dima Nikiforov.

Berkeley Artificial Intelligence Research Lab *Prompt Inject Project* May 2023 - Present

Implementing the defense algorithm for prompt injection attack on LLM model under the guidance of Prof. David Wagner, and the graduate student Chawin Sitawarin.

Projects

Adversarial Machine Learning *Pytorch, Scipy, Numpy* May 2023

Implemented and analyzed the algorithmic characteristics of two main adversarial attack models: L-BFGS and Fast Gradient Sign Method. Compared the effectiveness of each algorithm in terms of the tradeoff between the amplitude of the perturbation and adversarial effects to cause misclassification. Explored different initialization schemes for the L-BFGS attack and compared adversarial examples generated by each in terms of how similar the perturbed image is to the original image.

RISC-V NN *RISC-V* Sep 2022 - Oct 2022

Built a RISC-V artificial neural network that classifies handwritten digits based on pre-trained data by implementing linear algebra operations in RISC-V. Programmed file operations that read and write matrices from and to files.

Gitlet *Java, Git* Feb 2021 - Apr 2021

Developed a local git system using Java to provide the version-control system. Functionality includes local add, commit, remove, and reset operations and remote branch, merge, and conflict-detection.

2048 AI *Python* Dec 2020 - Apr 2021

Project Manager @ UC Berkeley IEEE Student Branch
Developed an AI that plays a 2048 game using Numpy and Pygame libraries in Python. Applied MiniMax algorithm and various heuristics such as empty spaces, smoothness, monotonicity, etc. AI's winning rate (successfully creating 2048 title) is close to 90%

Teaching Experience

EECS 16A (Designing Information Devices and Systems I) Reader Aug 2022 - present

Working 6 hours per week as a reader for EECS 16A. Grading weekly homework, giving feedback to students, debugging exams, and answering conceptual question on the online Ed Forum.

Academic Intern @ UC Berkeley EECS Jan 2021 - Aug 2021

Summer 2021 CS 70 (Discrete Mathematics and Probability Theory) Academic Intern @ UC Berkeley
Spring 2021 CS 61A (The Structure and Interpretation of Computer Programs) Academic Intern @ UC Berkeley

Awards & Achievements

Korean Presidential Science Scholarship July 2020

Selected as one of 20 scholarship recipients for outstanding academic excellence and potential to contribute to the areas of science, engineering, and technologies. $50,000/yr scholarships awarded by the Government of South Korea for 4 years under the name of the President of the Republic of Korea (Total $200,000)

Honors to Date Spring 2021, Fall 2020
Dean's List - College of Letters and Science Spring 2021

Activities & Involvements

Junior & Senior Mentor (CS 70 & EECS 16A) @ Compute Science Mentors Aug 2022 - Present

Teach a 4-5 person section for CS 70 and EECS 16A on a weekly basis to accelerate student learning. Explain the key concepts of the course through mini-lectures and promote group discussion

Member @ Upsilon Pi Epsilon (UPE), CS Honor Society Aug 2022 - Present

CS Scholar @ CS Scholars Program Aug 2020 - Present

The CS Scholars Program at UC Berkeley is a community in which students can learn and grow together. The program is intended to serve those from under-represented communities who have had little or no exposure to Computer Science

Industrial Relations Officer @ UC Berkeley IEEE Student Branch Aug 2020 - Aug 2021

Assisted with the development of UC Berkeley's annual global startup fair. Sourced 25+ startups for invitation to our career fair while managing communications between these startups and IEEE executives.

Skills

Programming Languages	Java, Python, C, SQL, RISC-V, Lisp
Tools	Git, Unix, NumPy, Matplob, Pygame, Scipy, Pytorch, LaTeX