SAHIL SOMANI

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Highly driven undergraduate interested in applying his experience with reinforcement learning to an industry research lab.
Continuing to a Masters program to gain a deeper understanding of the research process and to expand his industry relevant skill set.

EDUCATION

CARNEGIE MELLON UNIVERSITY — Pittsburgh, PA
Master of Science, Concentration in AI/ML Systems — August 2023 - December 2024

UNIVERSITY OF CALIFORNIA, IRVINE — Irvine, CA
Bachelor of Science in Computer Science, Specialization in Intelligent Systems — Sept. 2020 - June 2023
- **Cumulative GPA:** 4.0/4.0
- **Relevant Coursework:** CS 116: Computer Vision, CS 179: Probabilistic Graphical Models, CS 175: Adversarial AI, CS 125: Next Generation Recommendation Systems, CS 161: Design and Analysis of Algorithms
- **Associated Awards:** Regents' Scholarship, Dean's Scholarship, Phi Beta Kappa Honor Society Book Award, Dean's List

PROFESSIONAL EXPERIENCE

Google — Mountain View, CA
Incoming Software Engineering Intern **on the Hearables Embedded Software Team** — May 2023 - Aug. 2023

Google — Mountain View, CA
Software Engineering Intern **on the Android Systems Team** — June 2022 - Sept. 2022
- Created a record and replay system for kernel IPC transactions. The finished project generated a set of binaries for each AIDL interface, enabling a developer to listen to specific services. Developers can use this infrastructure for various tasks such as debugging or testing whether a service is deterministic. This level of kernel understanding is wholly new to Android.
- Added code generating infrastructure and numerous build system changes, which can all be seen publicly on the Android Open Source Project. The final project is available for use globally by any Android systems developer, internal or external.
- **Technical Skills**: C++, C, Go, Systems

The Make-A-Wish Foundation — Irvine, CA
Cloud Database Intern — Oct. 2021 - June 2022
- Migrated tens of thousands of records from disjoint Raiser's Edge databases to a single global Salesforce database.
- Used various machine learning models to predict donor behavior. My work enabled the foundation to make informed fundraising and outreach decisions, thus maximizing donation revenue. Generated scripts for use by non-technical staff.
- **Technical Skills**: Python, Scripting, Salesforce, Database Cleaning/Management

RESEARCH EXPERIENCE AND SELECTED PROJECTS

Undergraduate Researcher — Present
- Working in Dr. Alexander Ihler's Statistical Learning and Inference group.
- Working on applying stochastic variational inference to Markov decision process policy optimization to better explore rare outcomes and thus avoid local minima. A senior thesis on key findings will be completed by the end of the year.
- **Technical Skills**: PyTorch, Pyro, Reinforcement Learning, Statistical Learning

Arabic Text Analysis using Higher Order Markov Chains — May 2022 - June 2022
- Led a team in analyzing a large set of Arabic Tweets using several orders of Markov Chains. The final report detailed the specific phrases and textual structures that led the text to fall towards different sentiment classes.
- **Technical Skills**: Python, Graphical Models, Natural Language Processing

Attacking and Defending Against Image Recognition Models — March 2022 - June 2022
- Combined and adjusted several new algorithms in the realm of Adversarial AI to best work for and against image recognition models. The key algorithms used for attacking were Carlini and Wagner and the Iterative Least Likely Class Method. Defending involved training the model with several adversarial examples such as those from the Fast Gradient Sign Method, as well as applying Gaussian and other filters to prevent minor perturbations from affecting the model's output.
- This served as a capstone project for the Intelligent Systems degree specialization.
- **Technical Skills**: Computer Vision, PyTorch, Adversarial Artificial Intelligence

CAMPUS INVOLVEMENT

Reader — Jan. 2023 - April 2023
CS 161: Design and Analysis of Algorithms
- Assists Dr. Michael Shindler and his graduate teaching assistants with grading homework and exams.

Learning Assistant and Lab Tutor — Jan. 2022 - April 2023
CS 161: Design and Analysis of Algorithms, ICS 46: Data Structure Implementation and Analysis in C++
- Holds biweekly office hours to assist students with conceptual problems and programming intricacies.
- Proofreads course materials and helps the professor fine tune the curriculum.
- Additional responsibilities include holding test review sessions and helping students during lecture with practice problems.

Hackathon Winner (Natural Language Processing Category) — May 2022
VenusHacks Hackathon
- Won first place for the best improvement on a leading text to speech software. The core of the project was adding a grammar layer to fill in gaps or other flaws in raw transcriptions caused by common errors in video call or speech recordings.
- **Technical Skills**: Python, Flask, NLP