SIMRAN KAUR

B.S. Artificial Intelligence
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EDUCATION

CARNEGIE MELLON UNIVERSITY SCHOOL OF COMPUTER SCIENCE
B.S. ARTIFICIAL INTELLIGENCE
Pittsburgh, PA | Aug 2018 - May 2022

GPA: 3.93/4.0
Dean's List (Spring 2019 – present)

SKILLS:

Python • C • C0 • Java • PyTorch • Data Structures & Algorithms • Functional Programming (SML) • R • Parallel Programming • Machine Learning • Jupyter Notebook • Swift • Git • Latex

RELEVANT COURSEWORK

10-315 Machine Learning
15-281 Artificial Intelligence
11-485 Deep Learning
11-711 Algorithms for NLP
16-385 Computer Vision
36-218 Probability Theory
15-210 Parallel & Sequential Algorithms
15-251 Great Theoretical Ideas in CS
15-122 Data Structures & Algorithms
15-213 Computer Systems
15-150 Functional Programming
36-401 Modern Regression

PRINCETON HIGH SCHOOL
(2014 – 2018)
Unweighted GPA: 3.99
Weighted GPA: 4.64

NEW JERSEY GOVERNOR'S SCHOOL IN THE SCIENCES (July 2017)
Intensive three-week summer program that brings the top 50 science high school students in NJ to take core courses and labs and partake in a team research project.

ORGANIZATIONS

WOMEN@SCS, CARNEGIE MELLON UNIVERSITY (2018 – Present)

CMU ALPHA PHI (Iota Sigma Chapter) (2019 – Present)

AI LOGO DESIGN COMMITTEE, CARNEGIE MELLON UNIVERSITY (2019 – 2020)

HOBBIES

Running
Painting
Baking biscotti

PUBLICATIONS

- *Are Perceptually-Aligned Adversarial Attacks a General Property of Robust Classifiers?*
  Simran Kaur, Jeremy Cohen, Zachary C. Lipton

  Accepted at Science Meets Engineering of Deep Learning Workshop at NeurIPS 2019

- *Gradient Descent on Neural Networks Typically Occurs at the Edge of Stability*
  Jeremy Cohen, Simran Kaur, Yuanzhi Li, J. Zico Kolter, Ameet Talwalkar

  Accepted as conference paper at ICLR 2021 and at OPT2020 Workshop at NeurIPS2020

RESEARCH EXPERIENCE

ACMI LAB RESEARCH ASSISTANT, CARNEGIE MELLON UNIVERSITY (June 2019 – Present)

- Investigated targeted adversarial attacks against a robust classifier trained under randomized smoothing. Our research suggests perceptually-aligned gradients may be a general property of robust classifiers (not just adversarially trained classifiers).

  Tech stack: Google Cloud Platform (GCP) GPU, ACMI Lab GPUs, ImageNet, Python

- Implemented model frameworks to investigate gradient descent optimization in non-convex settings (in collaboration with Locus Lab and SAGE Lab)

- Investigating the role of the train loss Hessian in the generalization ability of models trained via stochastic gradient descent and full-batch gradient descent

  Tech stack: ACMI Lab GPUs, Locus Lab GPUs, CIFAR10, FASHION MNIST, Python, Git

FINAL PROJECT, 11-747 NEURAL NETWORKS FOR NLP

- Explored open-domain Question Answering using Google AI Research's Natural Questions Corpus; leveraged the strength of pre-trained abstractive answer generation models and augmented their predictions with expected answer types to improve answer generation

EXPERIENCE

RESEARCH INTERN, ABRIDGE INC (Summer 2021)

- Using machine learning and NLP to extract and classify symptom mentions from doctor patient transcripts; working towards automating ROS section of SOAP Notes for doctors

HEAD TEACHING ASSISTANT – 15-281: AI REPRESENTATION AND PROBLEM SOLVING, CARNEGIE MELLON UNIVERSITY (Spring 2020, Fall 2020, Spring 2021, Fall 2021)

- Lead weekly 30 student recitation; develop assignments, recitations, and course notes; hold office hours
- Course Topics: Informed vs. Adversarial Search, Constraint Satisfaction Problems, Local Search, Optimization & Linear Programming, Propositional and First Order Logic, MDPs, Reinforcement Learning, Bayes Nets, HMMs, Particle Filtering, Game Theory, AI and Ethics

TEACHING ASSISTANT – 10-301 + 10-601: INTRODUCTION TO MACHINE LEARNING (Undergraduate and Graduate Level), CARNEGIE MELLON UNIVERSITY (Summer 2020)

- Lead weekly recitations, create assignments and recitations, and hold office hours
- Course Topics: Linear and Logistic Regression, Regularization, Neural Networks, Learning Theory, Decision Trees, Generative Models, Naïve Bayes, MLE vs. MAP, HMMs, MDPs, Clustering, Recommender Systems, Ensemble Methods

JANE STREET INSIGHT PROGRAM – SOFTWARE DEVELOPMENT TRACK (January 2020)

- Programmed Lumines game in OCaml; learned about building electronic trading systems

GOLDMAN SACHS ENGINEERING ESSENTIALS PROGRAM (Summer 2020)

- Participated in trading games and attended talks detailing finance and engineering

ILAUNCH, FOUNDER AND VICE PRESIDENT (2016 – 2018)

- Founded incubator that helps launch apps developed by Princeton High School Students
- Captain of Gamethon; facilitated release of 15 apps to Apple App Store (2017)

AWARDS & LEADERSHIP

- Winning Team Member of BLOOMBERG BPuzzled: Race to New York at CMU (2019); participated in Global BPuzzled final competition in February 2020
- CMU Women@SCS Sisters Program Mentor