

Christiana Marchese

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[LinkedIn](#)

[Personal Website](#)
[GitHub](#)

Education

The University of Chicago, Chicago, IL September 2024 - Present
Ph.D. in Computer Science; Advisor: Grant Ho

Pomona College, Claremont, CA May 2024
Bachelor of Arts Computer Science; GPA: 3.95/4.00; Cum Laude

Yonsei University, Seoul, South Korea August 2022 - December 2022
CIEE Arts and Sciences Program Study Abroad Program

Research Interests

I am interested in the privacy and security of machine learning (ML) systems as well as the application of ML to security problems.

Honors

Fulbright Grant Recipient (2024), Marshall Scholarship Finalist (2023), Pomona College Scholar, SCIAC All-Academic Team

Published Work

Investigating Neural Network Architectures, Techniques, and Datasets for Autonomous Navigation in Simulation
Oliver Chang, Christiana Marchese, Jared Mejia, and Anthony J. Clark
2021 IEEE Symposium Series on Computational Intelligence (SSCI) Conference ([PDF](#))

Unpublished Work

Undergraduate Thesis:

Applying a Model Versioning Based-Evasion Attack Defense to Federated Learning
Advised by Dr. Eleanor Birrell and Dr. Anthony Clark
2024 Pomona College Senior Thesis

- Implemented and evaluated a model-versioning test-time defense method specific to federated learning

Research Poster and Presentation:

Predicting Mental Health Outcomes with Deep Learning
2021 ACM Practice and Experience in Advanced Research Computing (PEARC) Conference ([PDF](#))

Class Project:

Implementing and Evaluating the Probability Weighted Word Saliency Algorithm as a Method of Adversarial Example Generation for Deep Neural Networks
2023 Natural Language Processing Final Class Project ([PDF](#))

Past Research Projects

Cybersecurity Intern, AT&T

June 2023-August 2023

ML-Driven Fraud Detection Project with the Research and Innovation in Security Engineering Team

- Developed ML model for sim swap fraud detection across customer call logs to streamline the confirmation of fraud cases (FastAI)
- Researched and implemented word-based and phrase-based sentiment identification algorithms for the text highlighting of words commonly associated with fraud cases
- Work deployed in internal fraud detection app that attempts to confirm thousands of fraud cases every day

CVE Analysis Project with the Application Vulnerability Team

- Created mechanized reports to assess the impact of CVEs across the application landscape
- Web scraped CVE data and processed internal vulnerability data (Beautifulsoup, PySpark, DataBricks)

Research Assistant, Autonomous Robotics and Complex Systems (ARCS) Lab

May 2021-May 2024

Adversarial Training for Sim-to-Real Transfer

- Implemented adversarial example generation algorithms for adversarial training of computer vision models to assess their affect on sim-to-real transferability

Investigating Neural Network Architectures, Techniques, and Datasets for Autonomous Navigation

- Researched neural networks that retain different degrees of state for simulated maze navigation ([GitHub](#))
- Built custom datasets and modified convolutional neural network (CNN) architectures to create hybrid-input CNNs and ConvLSTMs (Pytorch and FastAI)
- Wrote automation scripts to streamline the training and inference of neural network models
- Conducted literature reviews and wrote lab learning material, library documentation, and a publication

Research Apprentice, NSF XSEDE Empower Program

January 2021-May 2021

Predicting Mental Health Outcomes with Deep Learning

- Researched the use of deep learning for community assessment of mental health, using US Census Bureau data, CDC data, geospatial analysis, and TACC's Stampede2 supercomputer resources
- Developed and compared a linear regression model, a multilayer perceptron, and a CNN that all predict the risk level of California counties for suicide based on community features (Sklearn, Pytorch)

Teaching Experience

Computer Systems – Teaching Assistant, Pomona College

August 2023-December 2023

English Conversation – Teacher (Volunteer), Liberty in North Korea

August 2022-December 2022

Introduction to Computer Science – Teaching Assistant, Pomona College

January 2021-May 2021

Other Work Experience

Meta University Engineering Intern – Android, Meta Platforms Inc.

May 2022-August 2022

- Created a fully functional Android social media app: [SurfStop](#) (Java)
- Implemented a Parse backend running on top of MongoDB, data offline persistence (Room ORM), ephemeral timelines through database auto-purging (JavaScript, Java), etc.
- Deployed custom in-app beach state image classifier with web-scraped image data (Keras) ([Model's GitHub](#))

Skills

Technical: Proficient in Python, Java; Experienced in TensorFlow/Keras, Pytorch, Fastai, TensorFlow Federated, Android Mobile Development, Jupyter Notebook, Git, Linux, CAD, soldering

Language: English (native), Korean (intermediate), Spanish (elementary)

Extracurricular Activities

Surf Club, Spotlight Musical Theatre, Greenroom Theatre, Korean Student Association, Association for Computing Machinery-Women