

# Christiana Marchese

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[LinkedIn](#)

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

## Education

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**The University of Chicago**, Chicago, IL  
*Ph.D. in Computer Science; Advisor: Grant Ho*

September 2024 - Present

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

May 2024

**Yonsei University**, Seoul, South Korea  
*CIEE Arts and Sciences Program Study Abroad Program*

August 2022 - December 2022

## Research Interests

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My research focuses on the application of AI to security problems and understanding the evolving privacy and security implications of generative AI. Apart from this, I am also interested in tech policy and ML security.

## Honors

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

## Published Work

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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](#))

## Other Research Work

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### Undergraduate Thesis:

Exploring the Application of a Model Versioning Based-Evasion Attack Defense to Federated Learning  
*2024 Pomona College Senior Thesis, Advised by Dr. Eleanor Birrell and Dr. Anthony Clark*

- Evaluated robustness of global models against adversarial examples generated on client models
- Implemented and evaluated the difficulties of applying centralized learning defenses to the FL domain

### 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](#))

### Conference Research Poster:

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

## Past Research Projects

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### Cybersecurity Intern, AT&T

June 2023-August 2023

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

- Developed an ML model for sim swap fraud detection across customer call logs to streamline the confirmation of fraud cases (FastAI)
- Researched and developed algorithms for word and phrase-based sentiment identification to highlight words commonly associated with fraud cases
- Deployed algorithms in AT&T's fraud detection app that seeks to confirm thousands of fraud cases everyday

#### *CVE Analysis Project with the Application Vulnerability Team*

- Created mechanized reports to assess the impact of CVEs across AT&T's 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 effect on robot 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)
- Developed automation scripts to streamline the training and inference of neural network models
- Wrote lab tutorials, 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

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### 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

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### 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**

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**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**

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UChicago University Chorus, UChicago Water Polo Club, Korean Graduate Student Association