Christiana Marchese

Claremont, CA • cemb2020@mymail.pomona.edu
https://christymarc.github.io/ • https://www.linkedin.com/in/christianamar/

Education

Pomona College, Claremont, CA *May 2024*
Bachelor of Arts Computer Science; GPA: 3.94/4.00

- Relevant Courses: Computer Systems (C), Algorithms, Natural Language Processing (Java), Data Structures and Advanced Programming (Java), Linear Algebra, Calculus, Statistics, Discrete Math and Functional Programming
- Honors: Pomona College Scholar (Top 20% of class), National AP Scholar, National Honor Society

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

Work Experience

Research Assistant, Autonomous Robotics and Complex Systems Lab, Pomona College *May 2021-Present*

- Researched convolutional and recurrent neural networks for computer vision navigation tasks with the intent of overcoming the reality gap between simulation learning and real-life performance for search-and-rescue robots
- Built custom datasets and network architectures like hybrid-input CNNs and ConvLSTMs (Pytorch, Fast-ai)
- Wrote automation scripts (Python) to streamline training and inference of custom neural networks
- Conducted literature reviews and wrote lab learning material, library documentation, and publications (LaTeX)
- Currently, researching the application adversarial machine learning methods to improve the performance of deep learning models for navigation tasks in simulated environments

Cybersecurity Intern, AT&T *June 2023-August 2023*

- Researched and implemented Machine Learning models for sim swap fraud detection across customer call logs to streamline confirmation of fraud cases with the Research and Innovation in Security Engineering Team (Fast-ai)
- Developed word-based and phrase-based sentiment identification algorithms for text highlighting on fraud logs
- Assessed the impact of repeated vulnerabilities across the application landscape by creating mechanized reports that define “top offenders” for targeted remediation activities with the Application Vulnerability Team
- Web scraped CVE data and processed internal vulnerability data in DataBricks (pyspark, pandas)

Meta University Engineering Intern - Android, Meta Platforms Inc. *May 2022-August 2022*

- Created a fully functional Android social media app from scratch: SurfStop (Java)
- Implemented weather API, a Parse backend running on top of MongoDB, database auto-purging through ParseCloud job executions (JavaScript) and an AlarmManager (Java), data offline persistence (Room ORM), etc.
- Deployed custom in-app clean/dirty beach image classifier, trained on a custom dataset (Keras) (Model’s Github)

Research Apprentice, NCSI XSEDE Empower Program *January 2021-May 2021*

- Researched deep learning methods for community assessment of mental health outcomes, using US Census Bureau data, CDC data, TACC’s Stampede2 supercomputer (Linux), geospatial analysis, and neural networks

- Processed and visualized data using Python (NumPy, Pandas, Seaborn, Matplotlib)
- Developed and compared the performances of a linear regression model (Sklearn), a perceptron neural network, and a CNN (Pytorch) that all predict the risk level of California counties for suicide based on community features

Teaching Assistant, Pomona College

CSCI 105 Computer Systems *August 2023-Present*

- Teaching about the components of computer systems, low-level coding in C, etc. through office hours and labs

CSCI 051 Introduction to Computer Science *January 2021-May 2021*

- Taught the fundamentals of programming in Python through hosting office hours and supervising labs

Publications and Projects

Implementing and Evaluating the Probability Weighted Word Saliency Algorithm as a Method of Adversarial Example Generation for Deep Neural Networks, NLP Final Project *May 2023*

- Implemented the Probability Weighted Word Saliency (PWWS) algorithm and evaluated its effectiveness in adversarial example generation for deep neural networks trained for a textual sentiment analysis task (Github)

Investigating Neural Network Architectures, Techniques, and Datasets for Autonomous Navigation in Simulation, 2021 IEEE Symposium Series on Computational Intelligence *December 2021*

- Co-wrote and published research paper on analyzing different neural network architectures (CNNs, hybrid CNNs, ConvLSTMs) and data collection techniques for agent navigation in simulated environments (PDF) (Github)

Predicting Mental Health Outcomes with Deep Learning, 2021 ACM PEARC *July 2021*

- Created and presented research poster based on XSEDE Empower Program work (PDF)

Technical Skills

Proficient in Python, Java; Experienced in Deep Learning (Keras, Pytorch, Fastai), Natural Language Processing, Computer Vision, Explainable Machine Learning, Android Mobile Development, Jupyter Notebook, Git, Linux, DataBricks, Data Processing and Visualization, CAD, soldering; Novice in R and C

Co-Curricular Activities

Association for Computing Machinery-Women, Pomona College *August 2020-Present*

Surf Club, Pomona College *August 2021-Present*

Theatre, Pomona College *January 2022-Present*

English Buddy, Liberty in North Korea *September 2022-January 2023*

- Taught conversational English to North Korean defector as volunteer through the humanitarian and human rights advocacy NGO Liberty in North Korea