ZHENG ZHANG

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EDUCATION

The Pennsylvania State University *Aug 2016 - Dec 2020*
B.S. in Statistics & Data Sciences | 3.73/4.00
Concentrations: Computational Statistics, Statistical Modeling Data Sciences
Minors in Computer Science & Mathematics
Member of Mu Sigma Rho - National Honorary Society for Statistics

PUBLICATIONS

· Preprint: Xinyang Zhang, Zhang, Zheng, and Ting Wang. **Trojaning Language Models for Fun and Profit**. 2020 *https://arxiv.org/abs/2008.00312* (Submitted to Euro S&P 2021, currently under review)

· Preprint: Xinyang Zhang, Zheng Zhang, and Ting Wang. **Composite Adversarial Training for Multiple Adversarial Perturbations and Beyond** (Submitted to ICLR 2021, currently under review)

· Preprint: Ren Pang, Zheng Zhang, Xiangshan Gao, Zhaohan Xi, Shouling Ji, Peng Cheng, and Ting Wang. **TROJANZOO: Everything you ever wanted to know about neural backdoors (but were afraid to ask)** (Submitted to IEEE S&P 2021, currently under review)

RESEARCH EXPERIENCE

Research Assistant Mar 2020 - Present
ALPS Lab, Department of Information Science & Technology *State College, PA*

· Advised by: Dr. Ting Wang
· Conducted deep learning security research in attacking and defending the general natural language models.
· Conducted adversarial machine learning research in defending multiple adversarial perturbations for image classification models.
· Implemented and evaluated deep learning attack and defense methods using PyTorch.
· Presented and discussed the research progress weekly.
· Co-authored and submitted three conference proceedings to the major machine learning / security and privacy conferences.

Research Assistant Aug 2019 - Jan 2020
The Mahony Lab, Center for Eukaryotic Gene Regulation *State College, PA*

· Advised by: Dr. Shaun Mahony
· Developed algorithms and models for predicting the signal of biochemical activities in human genome.
· Utilized Spark and HDFS to provide solutions for handling over 4 TBs massive datasets.
· Created parallel applications for data pre-processing and post-processing.
· Link to Research: https://secantzhang.github.io/project/encode-imputation

Bioinformatics Programmer May 2019 - Aug 2019
The Mahony Lab, Center for Eukaryotic Gene Regulation *State College, PA*

- Advised by: Dr. Shaun Mahony
- Participated in the "Encode Imputation" challenge hosted by Stanford University.
- Developed high-performance parallel algorithms and the data processing pipeline to model the massive datasets.

PROJECTS

Trojan-Zoo May 2020 - Present
Python, PyTorch, Bash *State College, PA*

- On-going research project involving the benchmarking of various SToA attacks and defenses for deep learning systems in adversarial machine learning.
- Implemented and integrated the method in paper **An Embarrassingly Simple Approach for Trojan Attack in Deep Neural Networks** Link: *https://arxiv.org/abs/2006.08131*
- Implemented and integrated the method in paper **Targeted Backdoor Attacks on Deep Learning Systems Using Data Poisoning** Link: *https://arxiv.org/abs/1712.05526*
- Evaluated various metrics in the Trojan-Zoo system such as attack accuracy and defense successful rate.

Composite Perturbations Sep 2020 - Nov 2020
Python, PyTorch, Bash *State College, PA*

- Research project for defending multiple adversarial perturbations for deep neural networks.
- Co-authored the conference proceeding "Anonymous" and submitted to ICLR 2021, currently under blind review.

NLP Security May 2020 - Oct 2020
Python, PyTorch, Bash *State College, PA*

- Research project for backdoor-attacking and defending general language models.
- Co-authored the conference proceeding "Trojaning Language Models for Fun and Profit" and submitted to Euro S&P 2021.

rmodel2tex Dec 2018 - May 2019
R (Personal project) *State College, PA*

- R package for easily converting various existing r model to latex code.
- Supported various statistical models such as linear regression and logistic regression.
- Took into consideration of the differences between population model and fitted model, and supported different representation of interaction and categorical terms.
- Link to Project: https://secantzhang.github.io/project/rmodel2tex

A-weatheR Oct 2018
Swift (HackPSU project) *State College, PA*

- Developed an AR iOS application using AccuWeather API on HackPSU Fall 2018.
- Integrated Augmented Reality within the mobile application to visually sense the weather condition at home.
- Link to Project: https://secantzhang.github.io/project/a-weather

HONORS AND AWARDS

CMPSC 448 Deep Learning Classification Challenge April 2020
Ranked 3/98 *State College, PA*

ECoS Summer Undergraduate Research Scholarship April 2019
Scholarship for Conducting Research During Summer *State College, PA*

DataFest April 2019
Finalists & Best Visualization Award *State College, PA*

HackPSU October 2018
Second Place in AccuWeather Challenge *State College, PA*

Penn State Behrend Honors Student April 2018
Honors Student Award *Erie, PA*

PROFESSIONAL EXPERIENCE

Teaching Assistant Aug 2020 - Present
CMPSC/DS 410 - Programming Models for Big Data *State College, PA*

· Developed guided tutorials and solutions to interact students from diverse linguistic and culture backgrounds on their labs and homework.
· Individualized learning with 70+ students through one-on-one tutorials in office hours.

Grader Jan 2020 - May 2020
CMPSC 442 - Artificial Intelligence *State College, PA*

· Assisted Dr. Kelvin Kamali in grading 100+ student's homework in CMPSC 442 class.

Grader Aug 2019 - Dec 2019
CMPSC 410 - Programming Models for Big Data *State College, PA*

· Assisted Dr. Daniel Kifer in grading 40+ students' homework and lab assignments in CMPSC 410 class.

Entry Analyst Intern Jun 2017 - Sep 2017
Beijing JAYA Technology *Beijing, China*

· Crawled and collected public-available financial data published in 5 companies' annual report.
· Visualized and analyzed the data extensively using R and Python.

TECHNICAL STRENGTHS

Computer Languages	Python, R, Scala, Swift, C++, JAVA, SAS, Shell Script
Data Analysis & Processing	Spark, Hadoop, HDFS, Scikit-Learn, Pandas
Deep Learning	PyTorch, TensorFlow

COURSEWORK

CMPSC 448	Spring 2020	**CMPSC 465**	Summer 2019
Machine Learning and AI	*A*	*Data Structures and Algorithms*	*A*
IST 597	Spring 2020	**CMPSC 410**	Spring 2019
Foundations in Data Privacy (Graduate)	*A-*	*Programming Models for Big Data*	*A*
CMPSC 442	Fall 2019	**STAT 440**	Spring 2019
Artificial Intelligence	*A-*	*Computational Statistics*	*A*
CMPEN 454	Fall 2019	**STAT 462**	Fall 2018
Computer Vision	*A*	*Applied Regression Analysis*	*A-*