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Chawin Sitawarin

Education

2018–2023 (tentative) **PhD in Computer Science**, *UC Berkeley*, Berkeley CA.
Advisor: Professor David Wagner | GPA 3.86

2014–2018 **BSE in Electrical Engineering (High Honor)**, *Princeton University*, Princeton NJ.
Cumulative GPA: 3.90, Departmental GPA: 3.95 | Certificate in Applications of Computing

Research Interests

I am broadly interested in the intersection between ML and computer security where most of my works focus on adversarial robustness. Recently, I have been excited about the new security implications of foundation models with a natural language interface. My research goal is to make ML models safe and secure in practice without compromising their utility.

Publications

2023 **REAP: A Large-Scale Realistic Adversarial Patch Benchmark**, *N. Hingun*, C. Sitawarin*, J. Li, D. Wagner*, ICCV 2023, paper, code.

2023 **SPDER: Semiperiodic Damping-Enabled Object Representation**, *K. Shah, C. Sitawarin*, Preprint (under submission), paper.

2023 **Preprocessors Matter! Realistic Decision-Based Attacks on Machine Learning Systems**, *C. Sitawarin, F. Tramèr, N. Carlini*, ICML 2023 (poster), paper, code.

2023 **Part-Based Models Improve Adversarial Robustness**, *C. Sitawarin, K. Pongmala, Y. Chen, N. Carlini, D. Wagner*, ICLR 2023 (poster), paper, code.

2023 **Short: Certifiably Robust Perception against Adversarial Patch Attacks: A Survey**, *C. Xiang, C. Sitawarin, T. Wu, P. Mittal*, 1st Symposium on Vehicle Security and Privacy (NDSS 2023), Best Short/WIP Paper Award Runner-Up, paper, code.

2022 **Demystifying the Adversarial Robustness of Random Transformation Defenses**, *C. Sitawarin, Z. Golan-Strieb, D. Wagner*, ICML 2022 (short presentation) and AAAI-22 AdvML Workshop (Best Paper), paper, code.

2021 **Adversarial Examples for k-Nearest Neighbor Classifiers Based on Higher-Order Voronoi Diagrams**, *C. Sitawarin, E. M. Kornaropoulos, D. Song, D. Wagner*, NeurIPS 2021 (poster), paper, code.

2021 **Improving the Accuracy-Robustness Trade-Off for Dual-Domain Adversarial Training**, *C. Sitawarin, A. Sridhar, D. Wagner*, Workshop on Uncertainty & Robustness in Deep Learning (ICML 2021), paper, code.

2021 **Mitigating Adversarial Training Instability with Batch Normalization**, *A. Sridhar, C. Sitawarin, D. Wagner*, Workshop on Security and Safety in Machine Learning Systems (ICLR 2021), paper.

2021 **SAT: Improving Adversarial Training via Curriculum-Based Loss Smoothing**, *C. Sitawarin, S. Chakraborty, D. Wagner*, AISec 2021 (co-located with CCS), paper.

2020 **Minimum-Norm Adversarial Examples on k-NN and k-NN-Based Models**, *C. Sitawarin, D. Wagner*, Deep Learning and Security Workshop (IEEE S&P 2020), paper.

2019 **Analyzing the Robustness of Open-World Machine Learning**, *V. Sehwag, A. N. Bhagoji, L. Song, C. Sitawarin, D. Cullina, M. Chiang, and P. Mittal*, AISec 2019 (co-located with CCS), paper.

2019 **Defending Against Adversarial Examples with K-Nearest Neighbor**, *C. Sitawarin, D. Wagner*, Preprint, arXiv:1906.09525.

2018 **On the Robustness of Deep k-Nearest Neighbors**, *C. Sitawarin, D. Wagner*, Deep Learning and Security Workshop (IEEE S&P 2019), paper.

2018 **Not All Pixels are Born Equal: An Analysis of Evasion Attacks under Locality Constraints**, *V. Sehwag, C. Sitawarin, A. N. Bhagoji, A. Mosenia, M. Chiang, P. Mittal*, CCS 2018 Poster, paper.

2018 **DARTS: Deceiving Autonomous Cars with Toxic Signs**, *C. Sitawarin, A. N. Bhagoji, A. Mosenia, M. Chiang, P. Mittal*, Preprint, arXiv:1802.06430.

2018 **Rogue signs: Deceiving Traffic Sign Recognition with Malicious Ads and Logos**, *C. Sitawarin, A. N. Bhagoji, A. Mosenia, M. Chiang, P. Mittal*, Deep Learning and Security Workshop (IEEE S&P 2018), paper.

2018 **Enhancing Robustness of Machine Learning System via Data Transformations**, *A. N. Bhagoji, D. Cullina, C. Sitawarin, P. Mittal*, CISS 2018, paper.

2017 **Beyond Grand Theft Auto V for Training, Testing and Enhancing Deep Learning in Self Driving Cars**, *M. A. Martinez, C. Sitawarin, K. Finch, L. Meincke, A. Yablonski, A. Kornhauser*, Preprint, arXiv:1712.01397.

Other Experiences

Summer 2022 **Google**, *Sunnyvale CA*, Research Intern.
Evaluate and mitigate machine learning security risks in a practical setting where a pair of public client-side and secret server-side models is deployed for a malware detection task. Hosted by Ali Zand and David Tao.

Fall 2021 - Spring 2022 **Google Brain**, *Remote*, Student Researcher (part-time).
Developed threat model and appropriate evaluation for adversarial robustness in new and practical settings (e.g., dynamic models, black-box model recovery). Hosted by Nicholas Carlini.

Summer 2021 **Nokia Bell Labs**, *Remote*, Research Intern.
Investigated relationships between causality and robustness in machine learning, focusing on leveraging causal relationships to improve robustness and generalization to unseen attacks/corruptions. Hosted by Anwar Walid.

Fall 2020 & Spring 2023 **EECS Department, UC Berkeley**, *Berkeley CA*, Graduate Student Instructor.
CS189/289A: Introduction to Machine Learning.

Summer 2019 **IBM Research**, *Yorktown Heights NY*, Research Intern.
Studied the effectiveness of existing defenses against adversarial examples from a perspective of concentration bound and improved adversarial training through optimization techniques. Hosted by Supriyo Chakraborty.

Awards & Honors

2022	**Google-BAIR Commons Project**	*Research grant*
2021-2022	**Center for Long-Term Cybersecurity (CLTC)**	*Research grant*
2021	**Microsoft-BAIR Commons Project**	*Research grant*
2018	**Phi Beta Kappa**	*Academic Honor Society*
2018	**Sigma Xi**	*Scientific Research Honor Society*
2017	**The P. Michael Lion III Fund**	*Summer research funding for Princeton engineering students*
2016	**Tau Beta Pi**	*Engineering Honor Society*
2016	**Shapiro Prize for Academic Excellence**	*Academic award at Princeton University*
2013	**King's Scholarship**	*Prestigious scholarship awarded by Thai government for pursuing a bachelor's degree*

Activities and Services

Program Committee, *AISec 2022, 2023.*

Reviewer, *ICML 2022 | NeurIPS 2022, 2023 | BANDS (ICLR workshop) 2023.*

2019–present **DARE: Diversifying Access to Research in Engineering**, *Mentor*, Mentored under-represented students in CS on multiple research projects..

2018–2020 **CSGSA**, *Treasurer*, Computer Science Graduate Student Assembly at UC Berkeley.

Other Publications

2018 **Enhancing Robustness of Classifiers Against Adversarial Examples**, Undergraduate Thesis, Advisor: Professor Peter Ramadge.

2018 **Inverse-Designed Photonic Fibers and Metasurfaces for Nonlinear Frequency Conversion**, *C. Sitawarin, Z. Lin, W. Jin and A. W. Rodriguez*, Photonics Research Vol. 6, Issue 5, paper.

2016 **Inverse-designed nonlinear nanophotonic structures: Enhanced frequency conversion at the nano scale**, *Z. Lin, C. Sitawarin, M. Lončar, A. W. Rodriguez*, Conference on Lasers and Electro-Optics (CLEO) 2016, paper.