Ryan Feng

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EDUCATION

University of Michigan, Ann Arbor, MI, 2019 - Present
Ph.D. in **Computer Science and Engineering**
Advisor: Professor Atul Prakash

University of Michigan, Ann Arbor, MI, 2019 - 2021
M.S. in **Computer Science and Engineering**

University of Washington, Seattle, WA, 2015 - 2019
B.S. in **Computer Engineering**, Summa Cum Laude, GPA: 3.95

PUBLICATIONS

Ryan Feng, Neal Mangaokar, Jiefeng Chen, Earlence Fernandes, Somesh Jha, Atul Prakash, "GRAPHITE: Generating Automatic Physical Examples for Machine-Learning Attacks on Computer Vision Systems", in *Proceedings of the 2022 IEEE European Symposium on Security and Privacy (EuroS&P 2022)*, June 2022.

Nelson Manohar-Alers, **Ryan Feng**, Sahib Singh, Jiguo Song, Atul Prakash, "Using Anomaly Feature Vectors for Detecting, Classifying and Warning of Outlier Adversarial Examples", in *ICML 2021 Workshop on Adversarial Machine Learning,* July 2021.

Yeganeh Jalalpour, Li-Yun Wang, **Ryan Feng**, Wu-chi Feng, "Leveraging Image Processing Techniques to Thwart Adversarial Attacks in Image Classification", in *Proceedings of the 2019 IEEE International Symposium on Multimedia (ISM 2019)*, December 2019.

Ryan Feng*, Youngsun Kim*, Gilwoo Lee*, Ethan K. Gordon, Matt Schmittle, Shivaum Kumar, Tapomayukh Bhattacharjee, Siddhartha S. Srinivasa, "Robot-Assisted Feeding: Generalizing Skewering Strategies across Food Items on a Realistic Plate", in *Proceedings of the 2019 International Symposium on Robotics Research (ISRR 2019)*, October 2019. * denotes equal contribution

Ben Hamlin, Wu-chi Feng, **Ryan Feng**, "ISIFT: Extracting Incremental Results from SIFT", in *Proceedings of ACM Multimedia Systems*, June 2018.

Wu-chi Feng, **Ryan Feng**, Paul Wyatt, Feng Liu, "Understanding the Impact of Compression on Feature Detection and Matching in Computer Vision", in *Proceedings of the 2016 IEEE International Symposium on Multimedia (ISM 2016)*, December 2016.

PREPRINTS

Ryan Feng, Wu-chi Feng, Atul Prakash, "Essential Features: Content-Adaptive Pixel Discretization to Improve Model Robustness to Adaptive Adversarial Attacks", *arXiv preprint arXiv: 2012.01699* (2020).

RESEARCH EXPERIENCE

Graduate Student Research Assistant, Fall 2019 - Present
Computer Science and Engineering, University of Michigan, Ann Arbor, MI

- Studying attacks and defenses in adversarial machine learning and robust AI, with an emphasis on physical attacks and adaptive image-processing defenses

Research Intern, Summer 2019
Computer Science Department, Portland State University, Portland, OR

- Evaluated image processing-based neural network defenses against adversarial attacks

Undergraduate Robotics Research Assistant, Fall 2018 - Spring 2019
Personal Robotics Lab, University of Washington, Seattle, WA

- Worked on an assistive feeding task

- Analyzed skewering strategies, actions, perception, and planning to create new, more complex acquisition motions
- Developed manipulation strategies and algorithms for generalizing to unseen food items
- Led and coordinated data collection process for bite acquisition learning

Software Development Engineer, Summer 2017 - Spring 2019
Xevo Inc., Seattle, WA

- Created and tested AI models for car software/technology with a focus on mobile convolutional neural networks in vision problems
- Project lead and implementer for gaze estimation models
  - Predicted gaze angle from eye images
  - Integrated gaze estimation models with our previous driver attention demo

Undergraduate Networks Research Assistant, Winter 2018 - Spring 2018
Networks & Mobile Systems Lab, University of Washington, Seattle, WA

- Analyzed ambient Wi-Fi packet trends and smartphone Wi-Fi channel transmissions with Wireshark to utilize ambient signals for low-power backscattering communication

Research Intern, Summer 2015, Summer 2016
Computer Science Department, Portland State University, Portland, OR

- Conducted SIFT computer vision algorithm experiments to analyze the impact of compression on feature detection and matching using OpenCV
- Performed experiments on a new time-adaptive SIFT computer vision approach

Internship, Summer 2014
Saturday Academy Apprenticeships in Science and Engineering (ASE) Program
Computer Science Department, Portland State University, Portland, OR

- Implemented color transform algorithm in Matlab and in an Android app
- Developed an Android app using Android Studio that created a color histogram of an image and could shift the color distribution

TEACHING EXPERIENCE

Undergraduate Teaching Assistant, Fall 2016 - Spring 2017
Computer Science and Engineering Department, University of Washington, Seattle, WA
For **CSE 142** (Fall 2016) & **CSE 143** (Winter/Spring 2017) (Computer Programming I/II),

- Taught quiz sections, graded assignments/exams, held office hours (Avg. rating: 4.7 / 5.0)

SERVICE AND ACTIVITIES

Reviewer for TIP (2021), EuroS&P 2021 (external), ICML 2022, NeurIPS 2022, IJCV (2022)
CoE Lunch and Lab with a Grad Student Mentor, University of Michigan, Fall 2021, Winter 2022
CSEG Vice-President and Treasurer, University of Michigan, Winter - Spring 2020

AWARDS

Outstanding Computer Engineering Senior Award, University of Washington, 2019
College of Engineering Dean's Medal Nominee, University of Washington, 2019
Microsoft Endowed Scholarship, University of Washington, 2018
Purple and Gold Scholarship, University of Washington, 2015-2019

LANGUAGES

Python, C, C++, Java

SELECTED PROJECTS

LifeSaVR
Computer Science and Engineering Department, University of Washington, Seattle, WA

- A virtual reality project to prepare firefighters for real danger. Simulates climbing ladders, breaking barriers, and spraying fire extinguishers in a burning building
- Press: Geekwire showcased our project and I was interviewed for their video