

# Raymond Muller | Purdue University

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## Summary

Graduate Computer Science student with a computer vision, machine learning, and security background. I have interned at several government institutions working on various computer-related applications spanning computer vision, network security, software engineering, and web development. I am currently working on academic research on autonomous systems and perception under Dr. Z. Berkay Celik. I am also skilled in multiple different martial arts, have an open water diving certification, and I am a former Western States Chess Champion.

## Experience

**Graduate Research Assistant** — Purdue University Aug 2022 — Present  
Conducting research as part of the PurSec Lab under Dr. Berkay Celik.

**Computational Engineering Student Intern** — Lawrence Livermore Ntnl Labs Summers 2019 — Prsnt  
Over the course of over 4 years I have worked on various aspects of Ground Penetrating Radar Systems, including implementing object detection systems, creating UIs through full stack development, and dockerization of certain applications.

**Doctoral Fellow** — National Security Innovation Network June 2023 — Aug 2023  
Worked on critical national security project sponsored by the Department of Defense.

**Graduate Teaching Assistant** — Purdue University Aug 2020 — August 2022  
Working with instructors and teams of 3-4 Teaching Assistants to lead instructional labs.

**Coach** — Apex Movement Norcal Aug 2018 — Aug 2020  
Main responsibilities included teaching parkour to lower level youth and adult classes, monitoring open gym, and providing assistance to the front desk.

**Student Intern** — CCC Department of Information Technology Oct 2018 — May 2019  
Worked on web and software development for Contra Costa County Tax Collector's Office.

**Teaching Assistant** — California State University East Bay Jun 2018 - Aug 2018  
NSF-Technology Pathways TA under Dr. Jiaofei Zhong for Summer Quarter 2018. Work involved creating homework, slides, presentation materials, and assignments for students in the CS200 course using Python, with a Health-Sciences theme.

## Education

- Purdue University** – PhD, Computer Science 2020 – 2024  
Working in computer vision and security research under Dr. Berkay Celik.
- California State University - East Bay** – MS, Computer Science 2019 - 2020  
Graduated with Master's of Science in Computer Science with a 3.97 GPA.
- California State University - East Bay** – BS, Computer Science 2017 - 2018  
Graduated Summa Cum Laude in December 2018.

## Publications

- DRIVETRUTH: Automated Autonomous Driving Dataset Generation for Security Applications (Workshop on Automotive and Autonomous Vehicle Security, co-located at NDSS 2022)
- Physical Hijacking Attacks against Object Trackers (ACM Conference on Computer and Communications Security 2022)
- Evaluating perception attacks on prediction and planning of autonomous vehicles (USENIX Security 2022)
- That Person Moves Like A Car: Misclassification Attack Detection for Autonomous Systems Using Spatiotemporal Consistency (USENIX Security 2023)
- Demo: Physically Hijacking Object Trackers (ISOC Symposium on Vehicle Security and Privacy, co-located at NDSS 2023)
- Discovering Adversarial Driving Maneuvers against Autonomous Vehicles (USENIX Security 2023)
- VOGUES: Validation of Object Guise using Estimated Components (USENIX Security 2024)

## Professional Experiences

- Guest Lecturer at Purdue, CS 592 IoT/CPS, "Machine Learning for Perception and Decision Making (April 4<sup>th</sup> 2022)
- Lightning Talk at Future Automotive Research Datasets: Challenges and Opportunities, invited by David Balenson at USC, "Automated Autonomous Driving Dataset Generation for Security Applications" (November 18<sup>th</sup> 2022)
- Reviewer for IEEE Transactions on Information Forensics and Security (2023)

## Certifications

- Certificate of Robotics Engineering and Programming with Vex (Villanova University)
- First Degree Black Belt in Tae Kwon Do (World Taekwondo Federation)
- Open Water Diving Certification (SDI)

## Skills

Computer Vision • Python • Computer Javascript • Robotics • Penetration Testing • Leadership • Web Development • Machine Learning • Research • C++

## Honors and Awards

- National Security Innovation Network X-Force Fellowship (June 5<sup>th</sup>, 2023)
- Purdue University Graduate Teaching Award (April 15<sup>th</sup>, 2023)
- ISOC Symposium on Vehicle Security and Privacy Best Demo Award Runner Up (February 27, 2023)
- ISOC Symposium on Vehicle Security and Privacy Travel Grant Awardee (2023)
- General Motors Security AutoDriving Security Award (April 24, 2022)
- Western States Chess Champion.
- Junior Olympic Swimmer