

# Carter Slocum, PhD.

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Dept. of Computer Science  
University of Southern California, Los Angeles  
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## Teaching Experience

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**USC Teaching Faculty, Lecturer:** 2024-Present  
CS 580, 103, 104, 114  
Graduate Computer Graphics, Intro to Computer science and C++. Data Structures and Algorithms, Intro to Programming and Python. 50-200 students per semester total.

**Harvey Mudd Visiting Professor:** 2023-2024  
CS150, CS70, CS 181  
Computer Graphics, Data Structures, Virtual Reality  
Elective Computer Graphics and Virtual Reality courses developed from the ground-up. Data Structures for second year students. Clinic advisor to 5 senior-capstone students.

**UCR Associate Instructor:** CS 10A (UCR) 2022  
Introduction to Computer Science for Science, Mathematics, and Engineering  
Introductory Computer Science and C++ programming course for any major. Required for Computer science and Electrical engineering Majors, optional core and elective for others. 130 students.

**UCR Teaching Assistant:** CS 135 (UCR) 2019-2022  
Virtual Reality Laboratory.  
Hands-on Virtual Reality app development with Oculus (Meta) Rift. Elective. 27-54 students per quarter.

**CPP Grader:** CS 256 (Cal Poly Pomona) 2018  
C++ Programming.  
I graded weekly assignments and exams while providing feedback to Prof Amar Raheja. 60 students.

## Research Experience

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**University of California, Riverside** 2018-2023  
**Ph.D Candidate and Research Assistant** Riverside, CA  
Advisor: Jiasi Chen  
Thesis Area: Virtual and Augmented Reality  
Computer Science and Engineering Ph.D with focus on Augmented and Virtual Reality Quality of Service. Discovery and mitigation of security threats for head mounted devices and augmented reality services, improved latency for web-based virtual reality, and tools for measuring accuracy for augmented reality.

**KBR Wyle, NASA Ames Research Center** 2020  
**Research Intern** Moffett Field, CA  
My work was on building an Unmanned Aerial Vehicle simulation in Unity 3D. I developed a real-time edge network simulation for autonomous aerial vehicles in urban environments.

**NASA Jet Propulsion Laboratory** 2016  
**Research Intern** Pasadena, CA  
I worked on the PRISM (Portable Remote Imaging SpectroMeter) project. My work involved writing, testing, and maintaining Multi-band, gray-scale, correlation and segmentation software. This involved state of the art computer vision with machine learning algorithms in MATLAB and C++.

**Harvey Mudd College** 2015  
**Research Assistant** Claremont, CA

## Education

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### University of California, Riverside

Ph.D in Computer Science and Engineering

Thesis: Quality of Experience and Security for Augmented and Virtual Reality Applications

Advisor: Jiasi Chen  
2018-2023 Riverside, CA

### California State Polytechnic University, Pomona

B.S Computer Science, Minor Mathematics

Completed in 3.5 years

2014-2018  
Riverside, CA

## Industry Work

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### Northrop Grumman

Embedded Software Engineer

My work involved implementing a DARPA specification message passing interface between two computers on the E2-D aircraft. This involved C, C++, and Ada 95 programming as well as static code analysis tools.

2018

Woodland Hills, CA

### Northrop Grumman

Software Engineering Intern

My work involved static code analysis tools for detecting errors and assisting in their repair.

2017

Woodland Hills, CA

## Publications

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**Carter Slocum**, Yicheng Zhang, Erfan Shayegani, Pedram Zaree, Nael Abu-Ghazaleh, Jiasi Chen "That Doesn't Go There: Attacks on Shared State in Multi-User Augmented Reality Applications" USENIX Security 2024 (Pending Revisions).

**Carter Slocum**, Yicheng Zhang, Nael Abu-Ghazaleh, Jiasi Chen, "Going through the motions: AR/VR typing inference using head motion tracking," USENIX Security 2023.

Yicheng Zhang, **Carter Slocum**, Jiasi Chen, Nael Abu-Ghazaleh. "It's all in your head(set): Side-channel attacks on AR/VR systems," USENIX Security 2023.

**Carter Slocum**, Jingwen Huang, Jiasi Chen. "VIA: Visibility-aware Web-based Virtual Reality," ACM Web3D 2022.

**Carter Slocum**, Xukan Ran, Jiasi Chen. "Reality Check: A Tool to Evaluate Spatial Inconsistency in Augmented Reality," IEEE ISM, 2021.

Xukan Ran, **Carter Slocum**, Yi-Zhen Tsai, Kittipat Apicharttrisorn, Maria Gorlatova, Jiasi Chen. "Multi-User Augmented Reality with Communication Efficient and Spatially Consistent Virtual Objects," ACM CoNEXT, 2020.

Xukan Ran, **Carter Slocum**, Maria Gorlatova, Jiasi Chen. "ShareAR: Communication-Efficient Multi-User Mobile Augmented Reality," ACM HotNets Workshop, 2019.

Weiyun Ma, Dmitry Smirnov, Juliet Forman, Annalise Schweickart, **Carter Slocum**, Srinidhi Srinivasan and Ran Libeskind-Hadas "DTL-RnB: Algorithms and tools for summarizing the space of DTL reconciliations." IEEE/ACM transactions on computational biology and bioinformatics 15.2 (2016): 411-421.

## Service and Volunteering

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### Reviewer.

ACM Multimedia, IEEE/ACM International Symposium on Quality of Service, IEEE ISM

2020-Present

### ACM SIGGRAPH Student Volunteer.

2019

### ACM Chapter President.

(CPP Computer Science Society)