

# NISHANT BHASKAR

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## RESEARCH INTERESTS

Embedded Systems, Wireless Communication, Security, Privacy, Electronic Crime

## EDUCATION

**University of California San Diego**, La Jolla, CA  
Ph.D. Candidate in Computer Engineering (degree expected 2023)  
Advisor: Aaron Schulman

**University of California San Diego**, La Jolla, CA  
M.S. in Computer Engineering (2020)  
Advisor: Aaron Schulman

**Birla Institute of Technology Science Pilani**, Pilani, India  
B.E.(Hons.) in Electronics and Instrumentation (2012)

## PUBLICATIONS

[Observing wideband RF spectrum with low-cost, resource limited SDRs](#)

Raghav Subbaraman, **Nishant Bhaskar**, Sam Crow, Moein Khazraee, Aaron Schulman, Dinesh Bharadia  
*MobiSys 2022*

[Evaluating Physical-Layer BLE Location Tracking Attacks on Mobile Devices](#)

Hadi Givehchian<sup>†</sup>, **Nishant Bhaskar**<sup>†</sup>, Dinesh Bharadia, Aaron Schulman  
*IEEE Symposium on Security and Privacy (Oakland) 2022 [15% acceptance]*  
(<sup>†</sup>Co-primary authors)

[Century-Scale Smart Infrastructure](#)

Dhananjay Jagtap, **Nishant Bhaskar**, Pat Pannuto  
*Hot Topics in Operating Systems (HotOS) 2021 [29% acceptance]*

[A Survey of Techniques in Passive Identification of Wireless Personal Devices and the Implications on User Privacy](#)

**Nishant Bhaskar**  
*Research Exam, 2019*

[Please Pay Inside: Evaluating Bluetooth-based Detection of Gas Pump Skimmers](#)

**Nishant Bhaskar**, Maxwell Bland, Kirill Levchenko, Aaron Schulman  
*USENIX Security 2019 [16% acceptance]*

## INVITED PRESENTATIONS

**Evaluating Physical-Layer BLE Location Tracking Attacks on Mobile Devices**

*Conference Presentation, IEEE S&P 2022*  
May 2022, San Francisco, CA

**Century-Scale Smart Infrastructure**

*Conference Presentation, HotOS 2021*  
June 2021, Virtual

### **Bluetana: Bluetooth Detection of Gas Pump Skimmers**

*Skimming Working Group Meeting, National Cyber Forensics and Training Alliance (NCFTA)*  
Nov 2019, Scottsdale, AZ

*Southern California Electronic Crimes Task Force (ECTF) Meeting*  
Oct 2019, San Diego, CA

### **Please Pay Inside: Evaluating Bluetooth-based Detection of Gas Pump Skimmers**

*Conference Presentation, USENIX Security 2019*  
Aug 2019, Santa Clara, CA

*Center for Networked Systems Research Review 2019*  
Sep 2019, San Diego, CA

### **Wireless Connectivity in Home and Street Lighting**

*LED Lighting Seminar, Texas Instruments*  
Dec 2014, New Delhi, India

## **PRESS**

### **Evaluating Physical-Layer BLE Location Tracking Attacks on Mobile Devices**

[Researchers Find Bluetooth Signals Can be Fingerprinted to Track Smartphones](#), The Hacker News, Jun 2022

[Research Suggests Always-On Bluetooth Could Be Used to Track Your Phone](#), Gizmodo, Jun 2022

[Bluetooth Signals Can be Used to Identify and Track Smartphones](#), UC San Diego News, Jun 2022

[How your phone, laptop, or watch can be tracked by their Bluetooth](#), TheRegister, Oct 2021

[Widespread Vulnerability Identified in Phones and Bluetooth Devices](#), IEEE Spectrum, Nov 2021

[Your iPhone can be tracked via Bluetooth—you may not be able to stop it](#), Tom's Guide, Oct 2021

### **Please Pay Inside: Evaluating Bluetooth-based Detection of Gas Pump Skimmers**

[Meet Bluetana, the Scourge of Pump Skimmers](#), Krebs on Security, Aug 2019

[A new app can detect Bluetooth credit card skimmers on gas pumps](#), Techcrunch, Aug 2019

[New app detects Bluetooth-enabled card skimmers at gas pumps](#), Creditcards.com, Dec 2019

[Bluetana App Quickly Detects Hidden Bluetooth Card Skimmers](#), The Hacker News, Aug 2019

[App Allows Inspectors to Find Gas Pump Skimmers Faster](#), UC San Diego News, Aug 2019

TV/Radio interviews: [KPBS](#), [Marketplace](#), [Noticias ya](#)

### **Wireless Connectivity in Home and Street Lighting**

Interview: [Technological Advancements in LEDs and ZigBee are Making Lighting Smart](#), Electronics For You, Feb 2015

## **RESEARCH EXPERIENCE**

**Graduate Research Assistant** UC San Diego 2017 - present

Advisor: Aaron Schulman

Designing and implementing wireless embedded systems and wireless measurement infrastructure with the aim of defending my thesis statement: Understanding the real-world deployment of low power wireless devices to identify potential security vulnerabilities and criminal threats, and designing techniques for combating such wireless devices.

**Graduate Research Assistant** UC San Diego 2016 - 2017

Advisor: Michael Taylor

Worked towards the design and implementation of a heterogeneous microcontroller architecture based on RISC-V core. The architecture used custom accelerators for sensor applications, achieving power savings through a NoC traffic based gating mechanism.

**Undergrad Researcher** BITS Pilani 2011 - 2012

Advisor: H.K. Mohanta

Worked on implementing a new PID control mechanism for a CSTR setup in the chemical engineering labs. Further on, was responsible for integrating the CSTR setup into the BITS iLabs initiative, allowing students from anywhere in the world to run experiments on the setup.

## TEACHING EXPERIENCE

**Course Instructor**, CSE 30: Computer Organization and Systems Programming **Summer 2022**

**Graduate Teaching Assistant**, ECE 101: Signals and Systems **Spring 2022**

**Graduate Teaching Assistant**, CSE 291A: Embedded Systems & The IoT **Spring 2021**

**Graduate Teaching Assistant**, CSE 190D: Wireless Embedded Systems **Winter 2021**

**Graduate Teaching Assistant**, WES 237A: Introduction to Embedded Systems **Winter 2017  
Spring 2016**

Responsible for designing assignments related to Zigbee communication, Linux device drivers and device tree modifications. Conducted weekly lab hours for students, and graded assignments.

**Graduate Teaching Assistant**, CSE 141: Introduction to Computer Architecture **Summer 2016**

Responsible for designing an assignment related to branch prediction and pipelining. Conducted weekly office hours and discussion sections, and graded assignments

**Graduate Teaching Assistant**, CSE 291F: Advanced Robotics Project **Winter 2016**

Responsible for designing base control loop for robotic arm evaluation and testing, that students used for their projects. Graded all checkpoints, and conducted weekly lab sessions.

**Graduate Teaching Assistant**, CSE 291E: Introduction to Robotic Systems **Fall 2015**

Conducted weekly lab hours and graded assignments. In the absence of the instructor, taught a couple of lectures on Linux device drivers/flattened device tree and Zigbee communication.

## PROFESSIONAL EXPERIENCE

**Embedded Applications Engineer** Texas Instruments India 2012 - 2015

Resolving end-customer design issues for applications in Consumer Electronics, Wearables and Fitness, Smart Lighting, Home Automation. Designed reference systems based on TI embedded and wireless chipsets, e.g., gateway design for BLE and Zigbee based lighting systems, MPPT solar charge controller reference system for a two-stage interleaved buck system. Worked extensively on designing tools to detect, and system-level fixes to combat energy meter tampering and energy theft. Also worked with the Smart Grid Application team in Dallas on detailed analysis of energy meter accuracy with temperature. Analysis revealed root cause as RTC drift; implemented system level fixes that are now deployed in real-world energy meters.

**Digital Design Intern** Texas Instruments India 2011

Designed flow automation for verification of clock gating and clustering efficiency across a mixed-signal design. Performed analysis for identifying clock hierarchy levels for optimization.

## AWARDS

**Doctoral Award for Excellence in Service and Leadership**  
*Computer Science & Engineering, UC San Diego, 2022*

**Doctoral Award for Excellence in Teaching**  
*Computer Science & Engineering, UC San Diego, 2021*

## **SERVICE**

### **Journal Review**

Invited Reviewer, *Computers & Security*, 2021

### **Artifact Evaluation**

*DATA* 2021 (co-located with SenSys 2021)

*DATA* 2020 (co-located with SenSys 2020)

### **Ph.D Visit Day**

Department-wide lead, UCSD CSE Visit Day 2022

SysNetSec group lead, UCSD CSE Visit Day 2019 – 2021

### **Ph.D. Admissions**

Committee Member, UCSD CSE PhD Admissions Committee 2018 – 2022