# HARI VENUGOPALAN

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## EDUCATION

### University of California, Davis
Davis, California, USA
Doctor of Philosophy in Computer Science

Sep 2020-Present
(Expected graduation: 2025)

### University of California, Davis
Davis, California, USA
Master of Science in Computer Science

Sep 2017-June 2020

### National Institute of Technology, Tiruchirappalli
Tiruchirappalli, Tamil Nadu, India
Bachelor of Technology in Production Engineering

Jul 2010-Aug 2014

## OBJECTIVE

I specialize in security and privacy research with a focus on digital identities. My work involves conducting measurements, employing machine learning techniques, and building systems to discover and deploy innovative vectors for establishing digital identities, including hardware and biometrics.

## RESEARCH EXPERIENCE

### Graduate Student Researcher, University of California, Davis
Sep 2018-Present

Davis, California, USA
- Conducted ML and mobile systems research on combating card-not-present credit card fraud.
- Credit card research led to the establishment of a startup that was acquired by Stripe in 2021.
- Led research to design a privacy enhancing system for mobile cameras to protect user privacy.
- Led research to extract device fingerprints from the bit flips produced by the Rowhammer vulnerability.
- Currently leading research to study adversarial fingerprints that abuse the blind-spots of bot detection.
- Currently leading research to exploit CPU frequency scaling as a power-side channel for fingerprinting.

### ML Research Intern, Blue Hexagon Inc
Jun 2019-Sep 2019

Sunnyvale, California, USA
- Identified functionality-preserving mutations to Windows Portable Executables (PE files).
- Developed GAN to mutate malicious PE files based on identified mutations to evade detection.

### Research Collaborator, University of Arizona
Jan 2015-May 2017

*Remote*
- Collaborated on face recognition research for graded authentication in mobile apps.
- Ran experiments using Haar-Cascades and Local Binary Pattern Histograms for face recognition.

## PROFESSIONAL EXPERIENCE

### Member of Technical Staff, Oracle India Private Limited
Jun 2014-Jul 2017

Bengaluru, Karnataka, India
- Developed analytics framework to periodically collect data on social network activity for Oracle Social Network (OSN).
- Implemented features for the web client of the same product.

## TEACHING EXPERIENCE

**Teaching Assistant, University of California, Davis** Various

Davis, California, USA

Handled discussions, held office hours, designed and graded programming assignments for undergraduate and graduate courses on Computer Security, Computer Networks, Object Oriented Programming, Distributed Database Systems and Programming Languages. (Full list on [my website](#))

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## SELECTED PUBLICATIONS (Full list on [my website](#))

### Aragorn: A Privacy-Enhancing System for Mobile Cameras

**Hari Venugopalan**, Zainul Abi Din, Trevor Carpenter, Jason Lowe-Power, Samuel T. King and Zubair Shafiq
UbiComp 2024 (Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies)

### Doing good by fighting fraud: Ethical anti-fraud systems for mobile payments

Zainul Abi Din, **Hari Venugopalan**, Henry Lin, Adam Wushensky, Steven Liu and Samuel T. King
IEEE Symposium on Security and Privacy 2021

### Boxer: Preventing fraud by scanning credit cards

Zainul Abi Din, **Hari Venugopalan**, Jaime Park, Andy Li, Weisu Yin, Haohui Mai, Yong Jae Lee, Steven Liu and Samuel T. King
Usenix Security 2020

### MultiLock: biometric-based graded authentication for mobile devices

Shravan Aras, Chris Gniady and **Hari Venugopalan**
MOBIQUITOUS: Mobile and Ubiquitous Systems 2019

### Adaptability, Extensibility and Simplicity in the MetabolicOS

**Hari Venugopalan,** Shreyas Madhav Ambattur Vijayanand and Samuel T. King
BioSys Workshop 2024

### FP-Rowhammer: Rowhammer-Based Device Fingerprinting

**Hari Venugopalan**, Kaustav Goswami, Zainul Abi Din, Jason Lowe-Power, Samuel T. King and Zubair Shafiq
In submission at CCS 2024

### Large scale Adversarial Analysis of Evasive Bots

**Hari Venugopalan**, Shaoor Munir, Shuaib Ahmed, Tangbaihe Wang, Samuel T. King and Zubair Shafiq
(In progress)

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## TECHNICAL SKILLS

- Proficient in Python for scripting, data analysis, backend development, and machine learning.
- Proficient with diverse machine learning tools including pytorch, sktime, xgboost, sklearn etc.
- Proficient in Java and C++ for building mobile and desktop systems.
- Proficient in JavaScript for web measurement and development.
- Experience with SQL, particularly MySQL, PostgreSQL, and Oracle SQL.
- Experience with Swift for iOS development.

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## ACHIEVEMENTS AND AWARDS

- "GlucOS: A secure, safe and extensible system for automated insulin delivery" was recognized as the AI-Selected best poster at the IEEE Symposium on Security and Privacy 2024.
- Awarded GGCS summer fellowship by the department of Computer Science at UC Davis in 2022 and 2024.
- Ranked within the top 200 in India at the regional ACM-ICPC contest in 2013.