

# JAYNEEL VORA

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## SUMMARY

Fourth-year Ph.D. student trained in privacy-preserving machine learning, systems designing, and software development, with strong communication skills, developed from extensive teaching experiences. Sound ability to work independently and as a part of a team.

## EDUCATION

### University of California at Davis

Fall 2019- June 2024(expected)

Ph.D. in Computer Science (3.86/4.00), Advisor: Dr. Prasant Mohapatra

Thesis: Optimal Entanglement routing protocols in quantum networks.

### Institute of Technology, Nirma University

2015-2019

B.Tech in Computer Engineering, Major Advisor: Dr. Sudeep Tanwar

## SKILLS

<b>Mathematical Maturity</b>	Discrete Math, Calculus, Linear Algebra, Complex Analysis, Optimization
<b>Theory Maturity</b>	Differential Privacy, Federated Learning, Consensus, Deep Learning, Distributed Systems
<b>Programming Language</b>	Python, SQL, PHP, Qiskit, C, C++ read: R, Java, MATLAB
<b>Framework and Tools</b>	Tensorflow, Git, LaTeX, Docker, MongoDB, Apache Spark, Tableau, WinDbg,

## INTERNSHIP EXPERIENCE

### Graduate Technical Intern - Core OS at Intel, Hillsboro, Oregon

Jan-Sep 2022(ongoing)

Memory Access Tracking with Praveen Ankala

- Understanding memory tiering and memory access in heterogeneous memory architecture.
- Designing workloads and collecting histograms to identify optimizations to a console client to communicate with a device driver..
- Wrote logging mechanisms(C, Py) to analyze memory access in a PCIe device while ensuring minimal latency in workload performance.
- Developed a simulated PCIe driver to lock a pre-defined memory size for experiment runs.
- Increased team awareness regarding version control on an internal repository portal.
- Developed a production-level tool to shutdown processor TLB using a userspace application.
- Provided a source-controlled universal tool for developers to use as a starting point, saving dev hours to focus on feature development.

### Engineering Intern(Ph.D.) at Garrett Motion, Atlanta, GA

Sep-Dec 2021

V2X protocols and intrusion detection systems(IDS) with Gabriel Ciubotaru

- Review attack surfaces for V2X protocols to identify potential vulnerabilities, write a demo IDS for the said vulnerabilities.
- Propose feasibility of a business need to enter the V2X market space based on reviewed and demo protocols and vulnerabilities.

### Graduate Student Researcher at Lawrence Berkeley National Laboratory, Berkeley, CA

Jun-Sep 2020

Differentially Private(DP) Dataset Access with Dr. Sean Peisert

- Designed query engine in the UC CORDS dataset that outputs results, preserving privacy and maintaining accuracy for analysts.
- Investigated (DP) frameworks- SmartNoise and OpenDP for common queries while exploring utility to OMOP based databases.
- Evaluated the query engine on clustering methods and identified the impact of Laplacian noise parameters on convergence metrics.

### AI and HCI Intern at BrunHealth Pvt Ltd, India

May 2018-Apr 2019

Pregnancy Chatbot System with Dr. Prashant Jha

- Wrote algorithms for profiling users and matching messages to send to increase user interactivity on the company's FB page.
- Created an information delivery system for expectant mothers, using reactions to messages and identifying a user's stage in the journey.
- The chatbot achieved a 29% increase in user retention and 44% increase in user turnaround time compared to human response.

### Tech Intern at Sentinel Healthcare, Seattle, WA (now Alertive Healthcare)

May 2017 - July 2017

Gait Analysis System and Stroke Detection with Dr. Nirav Shah

- Observed doctors and therapists to understand the workflow in hospitals, clinics, and care homes.
- Created an Arduino offline gait-analyzing wearable prototype, achieving a 73% accuracy with gait state and transition classification.
- Feasibility study with ophthalmologists on an OpenCV-based stroke detection prototype and fundus image processing app for retinopathy.

## RESEARCH

### NLP-Based Automated Tumor Staging: Hepatocellular Carcinoma

Sep 2021-present

- Reviewing and comparing BERT models for name entity recognition in clinical patient notes and identifying diagnostic severity.

### Game Theoretical Models for Multiple Defender Scenarios

Jan 2021-Mar 2022

- Learning parameterized 'human' strategies from Prisoner's Dilemma(PD) trials to discuss methods to identify the intent behind actions.

- Validating parameters of information sharing(IS) amongst players in a network with added context in a repeated IS game as a PD

## Mathematical Challenges and Opportunities for Autonomous Vehicles

Sept-Dec 2020

- Core-participant, “Long Program: Mathematical Challenges and Opportunities for Autonomous Vehicles,” at IPAM, UCLA.
- Member of a working group on ‘Perception, Safety, and Control of Machine Learning in Autonomous Driving’.
- Investigated the case of using dropout layers in deep neural networks to model uncertainty along with Bayesian inference.

## Implementations on 60 GHz testbed

Sept 2019- Mar 2020

- Investigated mm-wave communication protocols and reviewed mm-wave sensing for VANETs.

## Communication Paradigms for ambient assistant living and VANETs

Jul 2015- May 2019

- Built a proof of concept studying the use of fog computing paradigms and tactile internet infrastructure for patient monitoring.
- Explored distributed system paradigms for patient monitoring and e-health records storage focusing on preserving privacy.
- Reviewed and published a review of security attacks on VANETs focusing on types of attacks and corresponding safety protocols

## AWARDS

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| 1. CS TA of the year award UC Davis- 2021   | 2. Best Paper Award, 2019 IEEE ICC Workshops: SecSDN                 |
| 3. CS Department Fellowship, UC Davis- 2019 | 4. Travel Award, <i>IEEE COMSOC</i> for attending IEEE GLOBECOM 2018 |

## TEACHING

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| 1. Teaching in Computer Science, Instructor                               | Spring 2022, Fall 2020, Fall 2021                  |
| 2. Probability and Statistical Modeling, Lead Graduate Teaching Assistant | Summer 2020  |
| 3. Discrete Mathematics, Lead Graduate Teaching Assistant                 | Winter 2020, Spring 2020, Winter 2021, Spring 2021 |

## SELECTED PUBLICATIONS (Google Scholar: [Link](#))

1. **Vora J**, Shankar S, Higareda A, Abeduto L, Shankar P “Automated Identification and Indexing of Genes and Variants using Bidirectional Encoder Representations from Transformers” at UCDH Human Genomics Symposium 2022, 17 Nov 2022
2. **Vora J.**, Kaneriya S, Tanwar S, Tyagi S, Kumar N, Obaidat M, “TILAA: Tactile Internet-based Ambient Assisted Living in fog environment” in Future Generation Computer Systems, Elsevier.
3. S. Tanwar, **Vora J.**, S. Tyagi, N. Kumar, and M.S. Obaidat “A Systematic Review on Security Issues in VANET” in Security and Privacy Journal, Wiley
4. S. Tanwar, **Vora J.**, S. Kaneriya, S. Tyagi, N. Kumar, V. Sharma, I. You, “Human Arthritis Analysis in Fog Computing Environment using Bayesian Network Classifier and Thread Protocol” in IEEE Consumer Electronics Magazine
5. **Vora J.**, S Tanwar, S Tyagi, N Kumar, and Joel J P C Rodrigues, “HRIDaaY: Ballistocardiogram-based Heart Rate Monitoring Using Fog Computing.” at IEEE Global Communications Conference (IEEE GLOBECOM-2019), Hawaii, USA, 9-13 Dec 2019.
6. Kaneriya S, **Vora J.**, Tanwar S, Tyagi S, “Standardising the use of Duplex Channels in 5G-WiFi Networking for Ambient Assisted Living” at 2019 IEEE International Conference on Communications Workshops (ICC Workshops): SecSDN: Secure and Dependable Software Defined Networking for Sustainable Smart Communities (ICC 2019 Workshop - SecSDN)”, 20-24 May 2019, Shanghai, China
7. **Vora J.**, S Tanwar, S Tyagi, N Kumar, M.S. Obaidat and Joel J P C Rodrigues, “BHEEM: A Blockchain-based Framework for Efficient Storage and Maintenance of Electronic Health Records” at IEEE Global Communications Conference (IEEE GLOBECOM-2018), Abu Dhabi, UAE, 09-13th Dec 2018

## PROFESSIONAL ACTIVITY

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| 1. Program Committee Member, GameSec 2021, Gamesec 2022     | 2. Reviewer, Wiley- Security and Privacy Journal        |
| 3. Shadow Program Committee, IEEE Security and Privacy 2020 | 4. GSA Representative, UC SHIP and Committee on Courses |
| 5. Judge, HackDavis 2021, HackDavis 2022                    | 6. Program Committee Member, SIGCSE TS 2022,2023        |