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

Institute of Technology, Nirma University 2015-2019

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

SKILLS

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

INTERNSHIP EXPERIENCE

Graduate Technical Intern - Core OS at Intel, Hillsboro, Oregon (scheduled)Jun-Sep 2023

Graduate Technical Intern - Core OS at Intel, Hillsboro, Oregon Jan-Dec 2022

Memory Access Tracking with Praveen Ankala

- Designed workload analysis and collected performance histograms with optimized memory migration using a PCIe device.(C++,Py)
- Developed universal app/driver tools for kernel operations using a userspace application.(Git,C)
- Investigated the feasibility and wrote a user space app for virtual machine installation with dedicated memory allocation.(Virtualization)
- Improved team source control awareness and reduced development hours by creating driver templates with a focus on feature dev(Git,C)

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 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.
- Achieved a 29% increase in user retention and 44% increase in user turnaround time for the chatbot 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

Trustworthy AI: Metrics to Quantify Security and Privacy in Machine Learning Models Oct 2022-

- Quantifying Attribute Inference risk in Machine Learning Models
- Defending Against Poisoning Fairness Attacks

NLP-Based Automated Tumor Staging: Hepatocellular Carcinoma Sep 2021-

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'.

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

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, *IEEE COMSOC* for attending IEEE GLOBECOM 2018

TEACHING

1. Teaching in Computer Science, Instructor — 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. (WIP) **Vora J,** Mohapatra P, " Quantifying Membership Inference risk in Machine Learning Models: a survey"
2. (WIP) **Vora J***, Chabbra A*, Mohapatra M, "Defending Against Poisoning Fairness Attacks "
3. **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
4. **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.
5. 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
6. 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
7. **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.
8. 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
9. **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

* equal contribution

PROFESSIONAL ACTIVITY

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