Ali Allami

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Education

Ph.D.	Computer Science	University of Missouri-Columbia, MO, USA Dec. 2021
AEP	Intensive Academic English Program	University of Tennessee-Knoxville, TN, USA Dec. 2015
M.Sc.	Computer Science	Informatics Institute for postgraduate studies, Baghdad, Iraq July 2013
B.Sc.	Computer Science	Shatt Al-Arab University, Basrah, Iraq July 2005

Research Interests

Secure Multi-Party Computation (MPC), Privacy-Preserving Machine Learning and Data Mining, and Secure Data Analysis.

Publications

Theses

(1) **Allami, Ali** "EFFICIENT SECURE COMPARISON IN THE DISHONEST MAJORITY MODEL" Ph.D. thesis, University of Missouri-Columbia, 2021.

(2) **Allami, Ali** "IMPROVING MOTION DETECTION USING A HYBRID METHOD" M.Sc. thesis, Informatics Institute, 2013.

Journals and Conferences

(Students that I mentor are marked by *)

(3) David Gao*, Ian Miller, **Ali Allami** and Dan Lin "Preserving Privacy During Reinforcement Learning With AI Feedback" *IEEE International Conference on Trust, Privacy, and Security in Intelligent Systems, and Applications (IEEE-TPS), 2024*

(4) Tyler Nicewarner*, Alexander Esser, Alian Yu, **Ali Allami**, Dan Lin "Advanced Privacy-Preserving Data Aggregation for Accurate Traffic Flow Prediction" *27th IEEE International Conference on Intelligent Transportation Systems (ITSC), 2024*

(5) Barot, Jay*, **Ali Allami**, Yin Ming, and Dan Lin. "ToneCheck: Unveiling the Impact of Dialects in Privacy Policy" *The ACM Symposium on Access Control Models and Technologies (SACMAT), 2024*

(6) Alobaidi Isam , Jennifer L. Leopold, **Ali Allami**, et al. "Predictive analysis of real-time strategy games: a graph mining approach" *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery 11.2 (2021): e1398*

(7) Alobaidi Isam , Jennifer L. Leopold, and **Ali Allami** "The Use of Frequent Subgraph Mining to Develop a Recommender System for Playing Real-Time Strategy Games" *ICDM, pp. 146-160, 2019*

(8) **Allami Ali**, Mukesh K. Mohania, and Wei Jiang "Privacy-preserving watermarking transformation technique in a distributed environment" *IEEE Conference on Communications and Network Security (CNS), pp. 1-9, 2018*

(9) Hussain, Zainab, **Ali Allami**. "Shadow Detection and Removal in Video Sequences Using a Color-Based Method." *Journal of Kerbala University 11.4: 239-257, 2013*

Submitted Papers

(9) Chaoquan Cai *, **Ali Allami**, and Dan Lin. "Privacy-Preserving Travel Buddy Recommendation System" *IEEE Transactions on Information Forensics and Security*

(10) **Ali Allami**, Nicewarner Tyler*, Ken Goss, Ashish Kundu, Wei Jiang, and Dan Lin. "Oblivious and Distributed Firewall Policies for Securing Firewall from Malicious Attacks" *Elsevier-Computer and Security, 2024*

(11) Tyler Nicewarner*, **Ali Allami**, and Dan Lin. "Stealth Friend Locator: Server Blinded Private Location Sharing" *IEEE PerCom 2025*

Prepared Papers

(13) **Ali Allami**, Pooja Satish, Adit Negi, and Dan Lin "Evaluation of Group Decision Making Algorithms for Image Privacy Protection"

(14) Tyler Nicewarner*, **Ali Allami**, and Dan Lin. "Anonymous Task Assignment and Worker Payment in Mobile Crowdsensing"

(15) **Ali Allami**, Alexander Esser*, Wei Jiang, and Dan Lin. Fortified Federated Learning: Resilient to Dishonest Majorities

(16) Chaoquan Cai *, **Allami Ali**, Dan Lin, and Jiang Wei. "Secure Outsourced Virtual Network Functionalities"

(17) **Allami Ali**, Dan Lin, and Wei Jiang. "Secure and Verifiable Evoting System"

Research Projects

(1) **OblivFW:** simplifies the development of secure and distributed firewall solutions for enterprise networks. Obliv-FW leverages Bloom filters and secret sharing to ensure both fast and secure packet filtering. By employing oblivious evaluation and distributing firewall rules across multiple servers. Obliv-FW mitigates data leakage risks and enables dynamic, downtime-free updates to adapt to evolving security needs.

(2) **LTS$^+$:** enables efficient secure comparison where the data are distributed among multiple parties and a majority of the parties may be malicious. LTS+ leverages state-of-the-art techniques like EdaBits and a novel reduction technique, achieving a two- to threefold throughput improvement and reducing communication costs by up to a factor of three compared to existing solutions. The LTS^+ protocol demonstrates significant utility in machine learning applications, particularly in contexts involving activation functions like ReLU and federated learning aggregation functions

(3) **SVEvote:** demonstrates a secure, verifiable, and trustworthy e-voting system that addresses major security and privacy concerns prevalent in existing solutions. SVEvote leverages secret sharing, distributed hash functions, and robust MAC verification to ensure vote privacy, integrity, and verifiability, mitigating vulnerabilities associated with centralized trust, specific system weaknesses, and malicious voter actions.

Professional Experience

Oct. 2023-Present	**Postdoctoral**, Vanderbilt University, USA Institute for Software Integrated Systems, Computer Science and IPrivacy lab. Conduct research in security and privacy-enhancing technologies for data analysis and machine learning.
Spring 22- Sept.23	**Lecturer**, Joint position College of Electrical Engineering, College of education, and college of political science, University of Misan, IQ
Dec. 22- Apr.23	**Director of the graduate studies**, University of Misan, IQ Directed the overall administration and management of graduate studies, ensuring efficient operations and student success.
Fall 20- Fall 21	**Graduate Research Assistant**, University of Missouri-Columbia, USA Electrical Engineering and Computer Science Developed and implemented secure multiparty computation (MPC) protocols for secure data analysis.
Fall 20- Fall 21	**Graduate Teaching Assistant**, University of Missouri-Columbia, USA Electrical Engineering and Computer Science
Fall 2013- Fall 2014	**Assistant manager**, Computer Center, University of Misan- IQ
Fall 2013- Fall 2014	**Assistant Lecturer**, Joint positionCollege of Science, University of Misan
Fall 2012- Fall 2013	**Assistant Lecturer**, Software Engineering Dept., University of ALSadiq
Fall 2012- Fall 2013	**Programmer**, Computer Center, University of Misan-IQ Designed and implemented a university archive system, optimizing data storage and retrieval for efficient access. Provided mentorship and training to junior programmers, fostering their development and skill enhancement.
Fall 2008-Fall 2012	**Assistant Programmer**, Computer Center, University of Misan- IQ Implemented database systems using MySQL and Microsoft Visual FoxPro to meet specific university needs. Provided digital literacy training to undergraduate and graduate students as a Certified IC3 Trainer.

SU 2006- Fall 2008	**IT Support Specialist**, Zain Telecommunication company- IQ Diagnosed and resolved hardware and software issues. Troubleshooted network connectivity problems.
SU 2005-SU 2006	**IT Support Specialist**, Asiacell Telecommunication company- IQ Diagnosed and resolved hardware and software issues. Troubleshooted network connectivity problems.

Teaching Experience

Spring 2023	**Graphical user interface Design (MS-Visual basic)**, university of Misan Developed and delivered engaging MS-Visual Basic GUI design lectures and exercises for Electrical Engineering students.
Spring 2022	**Computer Fundamentals**, University of Misan Introduced students to the fundamentals of computer systems, exploring operating systems, internet technologies, email, and ethical aspects of data usage.
Fall 2021	**CS3380: Database Applications and Information Systems** University of Missouri-Columbia Served as Graduate Teaching Assistant for Prof. Dan Lin while also contributing to the instruction and evaluation of students in database design, implementation, and management.
Spring 2021	**CMP_SC 2270: Introduction to Logic Systems** University of Missouri-Columbia Contributed to the successful delivery of Prof. Yunxin Zhao's logic systems course by supporting assignment creation and grading, answering student questions, and managing the Canvas system.
Fall 2020	**CMP_SC 1050: Algorithm Design and Programming I** University of Missouri-Columbia Assisted Prof. Jim Ries, as a Graduate Teaching Assistant, providing comprehensive lab support and grading assignments.
2013- 2014	**Computer Fundamentals**, University of Misan Taught students the fundamentals of computer systems, including operating system principles, internet technologies, email, and data ethics.
2012-2013	**Data Structures**, University of ALSadiq Taught Data Structures, covering arrays, stack, queue, linked lists, hashing, and sorting, emphasizing practical applications in software development and data analysis.
2012-2013	**Computer Networks I**, University of ALSadiq Taught Computer Network Fundamentals, covering TCP/IP model, network protocols (e.g., HTTP, DNS), network security, and routing protocols,
2012-2013	**Image Processing**, University of ALSadiq Taught Image Processing, covering image acquisition, processing, enhancement, and segmentation.

Mentoring Experience

Fall 2024- Present	Alexander Esser, PhD Student, Computer Science Dept., Vanderbilt University
Spring 2024 -Present	Chaoquan Cai, PhD Student, Computer Science Dept., Vanderbilt University
Fall 2023- Present	Tyler Nicewarner, PhD Student, Computer Science Dept., Vanderbilt University
Fall 2023	Jay Barot, MS Student, Computer Science Dept., Vanderbilt University
Fall 2023	David Gao, BS Student, Computer Science Dept., Vanderbilt University
2012-2013	Zainab Ali, BS Student, Software Engineering Dept., University of ALSadiq
2012-2013	Furat Ahmed, BS Student, Software Engineering Dept., University of ALSadiq
2012-2013	Zainab Salah, BS Student, Software Engineering Dept., University of ALSadiq

Professional Service

Fall 2021 - Present	Editorial Board Member- Frontiers in Big Data
2021–2024	Reviewing for IEEE TDSC 2021–2024, ACM Transactions on Privacy and Security 2024, IEEE ITSC 2024, IEEE TPS 2024, IEEE TETC 2024
Spring 2023	Member of the Graduate Student Thesis Review Committee University of Misan
Fall 2022	Member of the Online Course Management System (Moodle) Committee University of Misan

Awards and Honers

(1) **PhD Research poster contest**, 3^{rd} Place, Computer Science Department , Missouri S&T. April, 2018.

(2) **Certificate of Merit**, outstanding Academic Performance and cultural contribution, University of Tennessee- Knoxville, May 2015.

(3) **HCED scholarship**, full Ph.D. scholarship from The Higher Committee For Education Development in Iraq, 2016-2021.

Invite talks

February 2023	**Keynote Speaker** at IEEE 2023 Second International Conference on Advanced Computer Applications (ACA).