Harshavardhan Chenji

Web: https://www.hchenji.com

Research Interests

Quantum information, quantum networks, optical wireless networks, AI for material science, cellular networks, computer architecture, hardware accelerators, cybersecurity.

Appointments

Associate Professor, Ohio University   Aug 2021 - Dec 2024
Faculty member with full tenure in the School of Electrical Engineering & Computer Science

Assistant Professor, Ohio University   Jan 2015 - Aug 2021
Tenure-track faculty member in the School of Electrical Engineering & Computer Science

Postdoctoral Research Associate, University of Texas at Dallas   Apr 2014 - Dec 2014
Mentor: Prof. Zygmunt J. Haas (WNL lab, Cornell University and UT Dallas)

Research Assistant, Texas A&M University   Sep 2011 - Apr 2014
Advisor: Prof. Radu Stoleru

Teaching Assistant, Texas A&M University   Spring 2012, Spring 2013
Courses taught by Prof. Radu Stoleru and Prof. Riccardo Bettati

Research Assistant, Texas A&M University   Dec 2007 - Sep 2011
Supervisor: Dr. Walt Magnussen

Visiting & Adjunct Positions

Adjunct Faculty, University of Toledo, Ohio   2018
Department of Electrical Engineering and Computer Science

AFRL/RI 2016 Visiting Faculty Research Program   Summer 2016
Air Force Research Laboratory Information Directorate at Rome, NY
Mentors: Dr. Elizabeth Bentley and Dr. Michael Medley

Awards

Russ Outstanding Research Paper Award   2023
Russ College of Engineering & Technologies, Ohio University

Education

Ph.D. Computer Engineering, Texas A&M University, U.S.A.   May 2014
Advisor: Prof. Radu Stoleru

Committee: Prof. Rabi Mahapatra, Prof. Dezhen Song, Prof. Alex Sprintson
Dissertation: "A Fog Computing Architecture for Disaster Response Networks"

M.S. Computer Engineering, Texas A&M University, U.S.A.   Dec 2009
Advisor: Prof. Radu Stoleru
Committee: Prof. Deepa Kundur, Prof. Rabi Mahapatra
Thesis: "A Fuzzy Logic-Based Approach for Node Localization in Mobile Sensor Networks"

B.Tech. Electrical and Electronics Engineering, NITK Surathkal, India   Aug 2007
Advisor: Prof. Panduranga Vittal
Thesis: "Development and Implementation of Optical Character Recognition
on the MC9328MXL Development Board"

Students Advised

Michael Atakora, Ph.D., "MEMS-based free space optical networks"   2022

Abdoulaye Saadou, M.S.   2022
"A Novel Approach to Resource Allocation from the Pilot's Perspective in Highly Contested and
Congested Radio Access Networks"

Marcelo Morales, B.S. (Honors Tutorial)   2022

Sponsored Research and Education Grants

External (Research Focused)

"CRII: NeTS OP: A Software Defined Approach to Laser-based Free Space Optical Networks"
National Science Foundation
Amount: $191,000. Role: Sole PI.   2017-19

"DistressNet-NG: Resilient Mobile Broadband Communication and Edge Computing for First-
Net"
Texas A&M University and the National Institute of Standards and Technology (NIST)
Amount: $1,800,000. Role: co-PI (28%). PIs: Radu Stoleru (Texas A&M), Walt Magnussen
(Texas A&M).   2017-20

"Intelligent Channel Sensing Based Secure Cross Layer Cognitive Networking for Resilient Space
Communication"
Ohio Federal Research Network
Amount: $800,000. Role: co-PI (12.5%). PI: John Wu (Wright State University). Co-PIs: Vijay
Devabhaktuni, Ahmad Javaid (Univ. of Toledo), Bob Mills (Air Force Institute of Technology),
Gordon Stewart (Ohio University).   2016-2018

External (Education Focused)

"Assured Digital Microelectronics Education & Training Ecosystem (ADMETE)"
Wright State University and U.S. Air Force Research Laboratory (AFRL)
Amount: $1,800,000. Role: co-PI (15%). PI: Avinash Karanth (Ohio University).   2020-2024

"Strategic Education Initiatives to Improve Cyber-Defenses in State of Ohio"
Sponsor: Ohio Department of Higher Education (ODHE)
Amount: $225,000. Role: co-PI (20%). PI: Avinash Karanth (Ohio University).   2020-2024

"Developing Educational Materials for Post-Quantum Cryptography Application"
Sponsor: Ohio Cyber Range Institute (OCRI)
Amount: $20,000. Role: PI.   2024-2024

"Satellite and Aerospace Cybersecurity Education" Sponsor: Ohio Cyber Range Institute (OCRI)
Amount: $100,000. Role: PI.   2024-2025

Internal

"Adaptable Flexible Technologies for Mobile and Wearable Electronics", $50,000
Ohio University Innovation Strategy. PI: Savas Kaya.   2016

"Partnership for Digitally Connected Environmental Monitoring", $20,000
Ohio University Innovation Strategy. PI: Natalie Kruse.   2016

"Faculty Research Support Program", $1770.
Office of Research and Sponsored Programs, Ohio University. PI: H. Chenji.   2015

"Towards Distributed Quantum Computing with Quantum Networks", $40,000.
School of EECS Internal Award. Role: PI.   2024

Publications (* indicates advisee or co-advisee)

Book Chapters

H. Chenji, R. Stoleru, "Emergency Communications Using Delay-tolerant Networks,"
in Advances in Delay Tolerant Networks: Architectures, Routing and Challenges, Woodhead
Publishing (an imprint of Elsevier), Second Edition, November 2020

Journal Articles

M. Atakora*, H. Chenji, "Agile neighbor discovery in MEMS-based free space optical networks:
a computer vision approach" in Journal of Optical Communications and Networking 14 (4),
222-235, 2022

T. F. Canan, S. Kaya, H. Chenji and A. Karanth, "Fine-Grain Reconfigurable Logic Circuits for
Adaptive and Secure Computing via Work-Function Engineered Schottky Barrier FinFETs," in
IEEE Journal on Exploratory Solid-State Computational Devices and Circuits, 2021

M. Chao, H. Chenji, C. Yang, R. Stoleru, E. Nikolova, A. Altaweel, "EAR: Energy-Aware Risk-
averse Routing for Disaster Response Networks", in Ad Hoc Networks (Elsevier), Volume 103,
June 2020.

M. Atakora*, H. Chenji, "A Multicast Technique for Fixed and Mobile Optical Wireless Backhaul
in 5G Networks", in IEEE Access (IF: 3.56), vol. 6, pp. 27491-27506, 2018.

A. Saadou*, H. Chenji, "Optimizing Situational Awareness in Disaster Response Networks", in
IEEE Access (IF: 3.56), vol. 6, pp. 24625-24638, 2018.

M. Atakora*, H. Chenji, "Multicast Techniques for Hybrid RF/FSO DTNs," in IEEE/OSA Journal of Optical Communications and Networking (IF: 2.74), Vol.9, Issue 11, Nov. 2017.

H. Chenji, W. Zhang, R. Stoleru, C. Arnett, "DistressNet: A Disaster Response System Providing Constant Availability Cloud-like Services," in Ad Hoc Networks (Elsevier), Nov. 2013, Vol. 11, No. 8

H. Chenji, R. Stoleru, "Towards Accurate Mobile Sensor Network Localization in Noisy Environments," in IEEE Transactions on Mobile Computing, Jun. 2013, Vol. 12, No. 6

W. Zhang, M. Suresh, R. Stoleru, H. Chenji, "On Modeling the Coexistence of 802.11 and 802.15.4 Networks for Performance Tuning," in IEEE Transactions on Wireless Communications, Oct. 2014, Vol. 13, No. 10

R. Stoleru, H. Wu, H. Chenji, "Secure Neighbor Discovery and Worhmhole Localization for Mobile Ad Hoc Networks," in Ad Hoc Networks (Elsevier), Sep. 2012, Vol. 10, No. 7

P. Barooah, H. Chenji, R. Stoleru, T. Kalmar-Nagy, "Cut Detection in Wireless Sensor Networks,"
in IEEE Transactions on Parallel and Distributed Systems, Apr. 2012, Vol. 23, No. 3

S. M. George, W. Zhou, H. Chenji, M. Won, Y.-Oh Lee, A. Pazarloglou, R. Stoleru, P. Barooah, "DistressNet: A Wireless AdHoc and Sensor Network Architecture for Situation Management in Disaster Response," in IEEE Communications Magazine, Mar. 2010, Vol. 48, No. 3

Conference Proceedings

G. Cunningham, H. Chenji, D. Juedes, A. Karanth, "d-GUARD: Thwarting Denial-of-Service Attacks via Hardware Monitoring of Information Flow using Language Semantics in Embedded Systems," in 2024 29th Asia and South Pacific Design Automation Conference (ASP-DAC) 2024

G. Cunningham, H. Chenji, D. Juedes, G. Stewart, and A. Karanth, "DAGGER: Exploiting Language Semantics for Program Security in Embedded Systems," in 2023 24th International Symposium on Quality Electronic Design (ISQED), Apr. 2023, pp. 1–7.

C. Mourning, H. Chenji, A. Hallman-Thrasher, S. Kaya, N. Abukamail, D. Juedes, A. Karanth, "Reflections of Cybersecurity Workshop for K-12 Teachers," in Proceedings of the 54th ACM Technical Symposium on Computer Science Education (SIGCSE) 2023

M. Atakora, H. Chenji, "A Link Quality Indicator for Topology Control in MEMS-based FSO Networks", ICC 2022-IEEE International Conference on Communications, 3802-3807, 2022

D. Juedes, A. Hallman-Thrasher, H. Chenji, C. Mourning, S. Kaya, A. Karanth, "Reflections of Cybersecurity Workshop for K-12 Teachers and High School Students", the 53rd ACM Technical Symposium on Computer Science Education (SIGCSE), 2022

T. Canan, S. Kaya, H. Chenji, A. Karanth, "Reconfigurable Gates with Sub-10nm Ambipolar SB-FinFETs for Logic Locking & Obfuscation", IEEE 63rd International Midwest Symposium on Circuits & Systems (MWSCAS), 2020

M. Atakora*,H. Chenji, "Fast Neighbor Discovery in MEMS FSO Networks," 2020 International Conference on Computing, Networking and Communications (ICNC), 2020.

A. Tiwari*, H. Chenji, V. Devabhaktuni, "Comparison of Statistical Signal Processing and Machine Learning Algorithms for Spectrum Sensing", in IEEE Global Communications Conference (Globecom), 2018.

A. Saadou*, H. Chenji, "A Network-centric Model of Situational Awareness," in 36th Military Communications Conference (MILCOM), 2017

M. Atakora*, H. Chenji, "Overcoming Alignment Delay in RF+FSO Networks," in 13th International Wireless Communications and Mobile Computing Conference (IWCMC), Optical Wireless Networking Symposium, 2017

M. Atakora*, H. Chenji, "Optimal Multicasting in Hybrid RF/FSO DTNs", in IEEE Global Communications Conference (Globecom), 2016

H. Chenji, G. Stewart, Z. Wu, A. Javaid, V. Devabhaktuni, K. Bhasin, B. Wang, "An architecture concept for cognitive space communication networks," in 34th AIAA International Communications Satellite Systems Conference and Exhibition (ICSSC), 2016

Z. Wu, H. Chenji, G. Stewart, A. Javaid, V. Devabhaktuni, K. Bhasin and B. Wang, "Intelligent Channel Sensing based Secure Cross Layer Cognitive Networking for Resilient Space Communication," in IEEE National Aerospace and Electronics Conference (NAECON), 2016

H. Chenji, Z. J. Haas, P.Xue, "Low Complexity QoE-aware Bandwidth Allocation for Wireless Content Delivery," in IEEE Military Communications Conference (MILCOM), 2015

H. Chenji, Z. J. Haas, "Enhancement of Wireless Bandwidth Utilization through User's QoE," in IEEE Wireless Communications and Networking Conference (WCNC), 2015

H. Chenji, R. Stoleru, "Pareto Optimal Cross Layer Lifetime Optimization for Disaster Response Networks," in 6th International Conference on Communication Systems and Networks (COMSNETS), 2014 (17.6% acceptance rate)

H. Chenji, L. Smith, R. Stoleru, E. Nikolova, "Raven: Energy Aware QoS Control for DRNs," in 9th IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob), 2013

H. Chenji, W. Zhang, M. Won, R. Stoleru and C. Arnett, "A Wireless System for Reducing Response Time in Urban Search & Rescue,"
in 31st IEEE International Performance Computing and Communications Conference (IPCCC), 2012

H. Chenji, and R. Stoleru, "Mobile Sensor Network Localization in Harsh Environments,"
in 6th IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS), 2010

M. Won, R. Stoleru, H. Chenji, and W. Zhang, "On Optimal Connectivity Restoration in Segmented Sensor Networks," in 10th European Conference on Wireless Sensor Networks (EWSN), 2013

R. Stoleru, H.Wu, H. Chenji, "Secure Neighbor Discovery in Mobile Ad Hoc Networks,"
in 8th IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS), 2011

D. Wang, H. Ahmadi, T. Abdelzaher, H. Chenji, R. Stoleru, C. Aggarwal, "Optimizing Quality of Information in Cost-sensitive Sensor Data Fusion,"

in 7th IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS), 2011

H. Chenji, P. Barooah, R. Stoleru, T. Kalmár-Nagy, "Distributed Cut Detection in Wireless Sensor Networks,"
in 6th ACM International Conference on Embedded Networked Sensor Systems (SenSys), 2008

J. Y. Kim, W. Song, H. Schulzrinne, W. Magnussen, H. Chenji et al., "Next Generation 9-1-1 Proof-Of-Concept System," in ACM Special Interest Group on Data Communication (SIGCOMM), 2008

Other

C. Liao, H. Chenji, P. Barooah, R. Stoleru, T. Kalmár-Nagy, "Detecting Separation in Robotic and Sensor Networks," arXiv:1102.3396 [cs.RO], 2011

H. Chenji, A. Hassanzadeh, M. Won, Y. Li, W. Zhang, X. Yang, R. Stoleru, G. Zhou, "A Wireless Sensor, AdHoc and Delay Tolerant Network System for Disaster Response,"
Technical Report, Texas A&M University, Dept. of Computer Science and Engg., TR-2011-9-2, 2011

Teaching Summary

Ohio University

Quantum Information Processing Systems (G/UG)	F23
Information Theory (G)	F24,F23,F22
Introduction to Computer Networks (UG)	Spring 2024-2016
Computer Organization (UG)	S24, F22, S23, F17, S15
Digital Signals and Systems (UG)	Fall 2019
Internet Engineering (G+UG)	Fall 2018, '16
Wireless Networking and the Internet of Things (G+UG)	Spring 2016
Microprocessors/Microcontrollers (UG)	Fall 2015, Spring 2015

Professional Service

Editorial Activities

Associate Editor (Optical Communications and Networks) Frontiers in Communications and Networks	2020
Guest Editor, Special Issue on Optical Wireless Communications Physical Communication (Elsevier)	2017

Chair Positions

Session Chair, IEEE WCNC	2015

Grant and Proposal Reviews

National Science Foundation (USA)	2022, 2020, 2019, 2018, 2016
Ministry of Science, Technology and Space, State of Israel	2015
Technology Foundation STW (Netherlands)	2015

Technical Program Committee Member for Various Conferences

Journal Reviewer for Various Journals

University-level Service

Ohio University

University Curriculum Council's Program Review Committee	2023

Russ College of Engineering & Technology, Ohio University

Dean's Faculty Advisory Committee	2019-2024
Library Committee	2019-21

School of Electrical Engineering & Computer Science, Ohio University

Promotion & Tenure (Associate) Committee	2021-2024
Various faculty hiring committees	2015-2024
B.S. in Cybersecurity Program Design Committee	2021-2024
Research Committee	2021
Social Media & Outreach Committee	2021
EECS Fund Allocation Committee	
Space Planning Committee	
CpE/EE 2017 Faculty Search Committee	Spring/Summer 2018
Curriculum Committee	Oct 2016 - 19
WWW Committee	Oct 2016 - 19
Assessment and Accreditation (EE ABET)	AY 2015-2016
Graduate Admissions Committee	Aug 2015 – June 2018
Senior Design Steering Committee	Aug 2015 – June 2016
Russ College Best Paper Nomination Committee	Spring 2016
EE 3954 Redesign Effort	2016-17
EE 2244 and Cybersecurity Course Design Committee	2016-17