Tanvir Arafin

Department of Cyber Security Engineering
George Mason University, Fairfax, VA 22030

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Academic Degrees

University of Maryland **Collage Park, MD**
Ph.D., Electrical Engineering *2018*
Dissertation: Hardware-Based Authentication for the Internet of Things

University of Maryland **Collage Park, MD**
M.Sc., Electrical Engineering *2016*

Bangladesh University of Engineering & Technology **Dhaka, Bangladesh**
B.Sc., Electrical & Electronic Engineering *2011*

Academic Positions

George Mason University **Fairfax, VA**
Tenure-Track Assistant Professor *2022 – present*
Department of Cyber Security Engineering
Affiliate Faculty
Center of Excellence in C5I

Morgan State University **Baltimore, MD**
Tenure-track Assistant Professor *2019 – 2022*
Electrical and Computer Engineering Department
Assistant Director
Cybersecurity Assurance and Policy (CAP) Center

Bangladesh University of Engineering & Technology **Dhaka, Bangladesh**
Lecturer *2011 – 2012*
Electrical and Electronic Engineering Department

Industrial, Consulting, and Summer Positions;

Bloomberg **New York, NY**
Software Engineer *2018 – 2019*

Cyber Innovation Group, Philips **Andover, MA**
Vulnerability Research Intern *2016 – 2017*

Security & Privacy Group, Bosch **Pittsburgh, PA**
Research Intern *2016*

Honors, Awards, & Professional Recognitions

Best Poster/Demo Award
ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec) *2025*

Best Hardware Demo Award: 2nd Place
IEEE International Symposium on Hardware Oriented Security and Trust (HOST) *2024*

Thank-a-Teacher
Stearns Center for Teaching and Learning, George Mason University *2024, 2023*

Featured Paper of the Month
IEEE Transactions on Computers (TC) *2022*

Best Paper Award
IEEE Asian Hardware Oriented Security and Trust Symposium (Asian HOST) *2018*

Best Paper Candidate
ACM Great Lakes Symposium on VLSI (GLSVLSI) *2017*

Goldhaber Travel Grant
University of Maryland, College Park *2015*

A. James Clark School of Engineering Distinguished Graduate Fellowship
University of Maryland, Graduate School *2012*

University Merit Scholarship
Bangladesh University of Engineering and Technology *2011*

Students' Honors and Awards

Best Paper Award
8th Annual Sage Memorial Capstone Design Competition,
Undergraduate Students: Justin Rockwell, Max Bedewi, Mack Bartsch,
Bisesh Acharya, Craig Kimbal *2025*
George Mason University

Daniel R. Bannister PhD Retention Fellowship
College of Engineering & Computing,
Ph.D. Student: Yanze Wu *2024*
George Mason University

First Place
National Transportation Cybersecurity Competition 2024,
Undergraduate Student: Finn Schafer *2024*
George Mason University

Second Place
National Transportation Cybersecurity Competition 2024,
Undergraduate Students: Noor Mohammed, Sonia Shaukat, Caleb Hughston, Kayleigh Batchos *2024*
George Mason University

Third Place
National Transportation Cybersecurity Competition 2024,
Undergraduate Student: Navraj Singh Gill *2024*
George Mason University

Best Paper Award
7th Annual Sage Memorial Capstone Design Competition,
Undergraduate Students: Blake E Todorowski, Harris Laing, Michael Fox, Rohit Engala *2024*
George Mason University

Student Travel Grant Award
2024 IEEE International Conference on Mobility: Operations, Services, and Technologies,
Undergraduate Student: Harris Laing *2024*
George Mason University

Publications

I have authored/co-authored **4** book chapters, **7** journal articles, and **26** conference papers.

Citation Count (Google Scholar): 592, based on the data collected on Aug 1, 2025
h-Index: 14, i10-index: 16
Erdős Number: 6

Publications after joining GMU

The names of GMU students under my supervision are underlined.
$*$ represents GMU Ph.D. students.

Book Chapters

[1] Ahmed, Fahim* and **Arafin, Md Tanvir**. 2025. "Attack Detection and Countermeasures at Edge Devices". In: *Smart Cyber-Physical Power Systems*. John Wiley Sons, Ltd. Chap. 20, pp. 539–553. DOI: 10.1002/9781394191529.ch20.

Articles in Refereed Journals

[1] Wu, Yanze* and **Arafin, Md Tanvir**. 2025. "ArKANe: Accelerating Kolmogorov Arnold Networks on Reconfigurable Spatial Architectures". In: *IEEE Embedded Sytems Letter*. DOI: 10.1109/LES.2025.3567918. [**Impact Factor = 2**].

[2] Lu, Z., Wang, X., **Arafin, Md Tanvir**, Yang, H., Liu, Z., Zhang, J., and Qu, G. 2024. "An RRAM-Based Computing-in-Memory Architecture and Its Application in Accelerating Transformer Inference". In: *IEEE Transactions on Very Large Scale Integration (VLSI) Systems* 32.03, pp. 485–496. DOI: 10.1109/TVLSI.2023.3345651. [**Impact Factor = 2.312**].

[3] Pan, Yuqian, Lu, Zhaojun, Zhang, Haichun, Zhang, Haoming, **Arafin, Md Tanvir**, Liu, Zhenglin, and Qu, Gang. 2023. "ADLPT: Improving 3D NAND Flash Memory Reliability by Adaptive Lifetime Prediction Techniques". In: *IEEE Trans. Computers* 72.6, pp. 1525–1538. DOI: 10.1109/TC.2022.3214115. [**Impact Factor = 3.7**].

Articles in Refereed Conference Proceedings

[1] Lebaku, Prathyush Kumar Reddy, Gao, Lu, Zhang, Yunpeng, Li, Zhixia, Liu, Yongxin, and **Arafin, Md Tanvir**. "Cybersecurity-Focused Anomaly Detection in Connected Autonomous Vehicles Using Machine Learning". In: *International Conference on Transportation and Development 2025*, pp. 566–580. DOI: 10.1061/9780784486191.051.

[2] Somavarapu, Sreenithya, Chaudhari, Harshita, Aidlaid, Nour El Houda, Adchariyavivit, Nona, Dib, Qais, Hossain, Moinul, Shah, Vijay K, and **Arafin, Md Tanvir**. 2025. "Radio Unit Activity Fingerprinting through Electromagnetic Side-Channel Analysis in O-RAN Networks". In: *18th ACM Conference on Security and Privacy in Wireless and Mobile Networks*, pp. 304–305. DOI: 10.1145/3734477.3736152. [**Best Poster/Demo Award, 1/14 submissions**].

[3] Wu, Yanze* and **Arafin, Md Tanvir**. 2025. "ATHENA: Accelerating Torus Fully Homomorphic Encryption on Energy-Efficient Heterogeneous Architecture". In: *Proceedings of the 43rd IEEE International Conference on Computer Design*. ICCD '25. Dallas, TX, USA: IEEE. [**Acceptance Rate = 25.5%**].

[4] Wu, Yanze* and **Arafin, Md Tanvir**. 2025. "Energy-Efficient Acceleration of Hash-Based Post-Quantum Cryptographic Schemes on Embedded Spatial Architectures". In: *Proceedings of the 2025 International Conference on Parallel Architectures and Compilation Techniques* (*PACT*). PACT '25. Irvine, California, USA: ACM. [**Acceptance Rate = 27.87% (34 out of 122)**].

[5] Ahmed, Fahim* and **Arafin, Md Tanvir**. 2024. "SANTA: A Spatial Accelerator Design for Efficient Number Theoretic Transform (NTT) on Heterogeneous System-on-Chips". In: *Proceedings of the 2024 Workshop on Attacks and Solutions in Hardware Security*. CCS-ASHES '24. Salt Lake City, UT, USA: ACM, pp. 2–10. DOI: 10.1145/3689939.3695781. [**Acceptance Rate = 32.26%**].

[6] Todorowski, Blake E, Fox, Michael Lane, Laing, Harris E, Gaddam, Kirthan, Mian, Anosh, Ferrari, Jair, and **Arafin, Md Tanvir**. 2024. "Poster: Address Resolution Protocol Based Attacks for Multi-Robot Systems". In: *2024 IEEE International Conference on Mobility: Operations, Services, and Technologies* (*MOST*). IEEE Computer Society, pp. 281–282. DOI: 10.1109/MOST60774.2024.00041.

[7] Wu, Yanze* and **Arafin, Md Tanvir**. 2024. "Ising Model Processors on a Spatial Computing Architecture". In: *2024 IEEE 67th International Midwest Symposium on Circuits and Systems* (*MWSCAS*). IEEE, pp. 1383–1387. DOI: 10.1109/MWSCAS60917.2024.10658926. [**Late Breaking Result**].

Publications prior to joining GMU

Book Chapters

[1] **Arafin, Md Tanvir**, Xu, Qian, and Qu, Gang. 2022. "Voltage Overscaling Techniques for Security Applications". In: *Approximate Computing*. Springer, pp. 287–311. DOI: 10.1007/978-3-030-98347-5_12.

[2] Xu, Qian, **Arafin, Md Tanvir**, and Qu, Gang. 2022. "Approximation on Data Flow Graph Execution for Energy Efficiency". In: *Approximate Computing*. Springer, pp. 207–232. DOI: 10.1007/978-3-030-98347-5_9.

[3] **Arafin, Md Tanvir** and Qu, Gang. 2021. "Hardware-Based Authentication Applications". In: *Authentication of Embedded Devices*. Springer, pp. 145–181. DOI: 10.1007/978-3-030-60769-2_6.

Articles in Refereed Journals

[1] Zhang, Jiliang, Shen, Chaoqun, Su, Haihan, **Arafin, Md Tanvir**, and Qu, Gang. 2022. "Voltage Over-Scaling-Based Lightweight Authentication for IoT Security". In: *IEEE Transactions on Computers*. DOI: 10.1109/TC.2021.3049543. **[Impact Factor =3.7, Featured Paper of the Month, February 2022]**.

[2] **Arafin, Md Tanvir** and Qu, Gang. 2018. "Memristors for Secret Sharing-Based Lightweight Authentication". In: *IEEE Transactions on Very Large Scale Integration Systems* (*TVLSI*) 26.12, pp. 2671–2683. DOI: 10.1109/TVLSI.2018.2823714. [**Impact Factor = 2.3**].

[3] Gao, Mingze, Wang, Qian, **Arafin, Md Tanvir**, Lyu, Yongqiang, and Qu, Gang. 2017. "Approximate Computing for Low Power and Security in the Internet of Things". In: *IEEE Computer* 50.6, pp. 27–34. DOI: 10.1109/MC.2017.176. [**Impact Factor = 2.1**].

[4] **Arafin, Md Tanvir**, Islam, Nazifah, Roy, Sourav, and Islam, Saiful. 2012. "Performance Optimization for Terahertz Quantum Cascade Laser at Higher Temperature Using Genetic Algorithm". In: *Optical and Quantum Electronics* 44.15, pp. 701–715. DOI: 10.1007/s11082-012-9590-z. [**Impact Factor = 1.1**].

Articles in Refereed Conference Proceedings

[1] **Arafin, Md Tanvir**. 2022. "Computation-in-Memory Accelerators for Secure Graph Database: Opportunities and Challenges". In: *27th IEEE/ACM Asia and South Pacific Design Automation Conference* (*ASP-DAC*). IEEE. **[Invited Paper]**.

[2] Wang, Shuangbao Paul, **Arafin, Md Tanvir**, Osuagwu, Onyema, and Wandji, Ketchiozo. 2022. "Cyber Threat Analysis using Artificial Intelligence and Machine Learning". In: *IEEE 6th International Conference on Cryptography, Security and Privacy* (*CSP 2022*). IEEE.

[3] **Arafin, Md Tanvir** and Kornegay, Kevin. 2021. "Attack Detection and Countermeasures for Autonomous Navigation". In: *2021 55th IEEE Annual Conference on Information Sciences and Systems* (*CISS*). IEEE, pp. 1–6. DOI: 10.1109/CISS50987.2021.9400224.

[4] Lu, Zhaojun, **Arafin, Md Tanvir**, and Qu, Gang. 2021. "RIME: A Scalable and Energy-Efficient Processing-In-Memory Architecture for Floating-Point Operations". In: *2021 26th IEEE/ACM Asia and South Pacific Design Automation Conference* (*ASP-DAC*). IEEE, pp. 120–125. DOI: 10.1145/3394885.3431524. [**Acceptance Rate = 30%**].

[5] Xu, Qian, **Arafin, Md Tanvir**, and Qu, Gang. 2021. "Security of Neural Networks from Hardware Perspective: A Survey and Beyond". In: *2021 26th IEEE/ACM Asia and South Pacific Design Automation Conference* (*ASP-DAC*). IEEE, pp. 449–454. DOI: 10.1145/3394885.3431639.

[6] **Arafin, Md Tanvir** and Lu, Zhaojun. 2020. "Security Challenges of Processing-in-Memory Systems". In: *Proceedings of the 2020 ACM Great Lakes Symposium on VLSI* (*GLSVLSI*), pp. 229–234. DOI: 10.1145/3386263.3411365.

[7] Gao, Jiabao, Wang, Jian, **Arafin, Md Tanvir**, and Jinmei, Lai. 2020. "FABLE-DTS: Hardware-Software Co-Design of a Fast and Stable Data Transmission System for FPGAs". In: *2020 IEEE 33rd International System-on-Chip Conference* (*SOCC*). IEEE. DOI: 10.1109/SOCC49529.2020.9524764.

[8] Xu, Qian, **Arafin, Md Tanvir**, and Qu, Gang. 2020. "MIDAS: Model Inversion Defenses Using an Approximate Memory System". In: *2020 IEEE Asian Hardware Oriented Security and Trust Symposium* (*AsianHOST*). IEEE, pp. 1–4. DOI: 10.1109/AsianHOST51057.2020.9358254. [**Acceptance Rate = 27%**].

[9] Yimer, Tsion, **Arafin, Md Tanvir**, and Kornegay, Kevin. 2020. "Securing Industrial Control Systems Using Physical Device Fingerprinting". In: *2020 7th IEEE International Conference on Internet of Things: Systems, Management and Security* (*IOTSMS*). IEEE, pp. 1–6. DOI: 10.1109/IOTSMS52051.2020.9340160.

[10] **Arafin, Md Tanvir**, Shen, Haoting, Tehranipoor, Mark M, and Qu, Gang. 2019. "LPN-based Device Authentication Using Resistive Memory". In: *Proceedings of the 2019 ACM Great Lakes Symposium on VLSI* (*GLSVLSI*), pp. 9–14. DOI: 10.1145/3299874.3317970. [**Acceptance Rate = 27%**].

[11] Jain, Shalabh, Wang, Qian, **Arafin, Md Tanvir**, and Guajardo, Jorge. 2018. "Probing Attacks on Physical Layer Key Agreement for Automotive Controller Area Networks". In: *2018 IEEE Asian Hardware Oriented Security and Trust Symposium* (*AsianHOST*). IEEE, pp. 7–12. DOI: 10.1109/AsianHOST.2018.8607166. [**Best Paper Award**].

[12] **Arafin, Md Tanvir**, Anand, Dhananjay, and Qu, Gang. 2017. "A Low-Cost GPS Spoofing Detector Design for Internet of Things (IoT) Applications". In: *Proceedings of the 2017 ACM Great Lakes Symposium on VLSI 2017* (*GLSVLSI*), pp. 161–166. DOI: 10.1145/3060403.3060455. [**Best Paper Nominee, Acceptance Rate 24%**].

[13] **Arafin, Md Tanvir**, Gao, Mingze, and Qu, Gang. 2017. "VOLtA: Voltage Over-Scaling Based Lightweight Authentication for IoT Applications". In: *2017 22nd IEEE/ACM Asia and South Pacific Design Automation Conference* (*ASP-DAC*). IEEE, pp. 336–341. DOI: 10.1109/ASPDAC.2017.7858345. [**Acceptance Rate = 30%**].

[14] **Arafin, Md Tanvir**, Stanley, Andrew, and Sharma, Praveen. 2017. "Hardware-based Anti Counterfeiting Techniques for Safeguarding Supply Chain Integrity". In: *2017 IEEE International Symposium on Circuits and Systems* (*ISCAS*). IEEE, pp. 1–4. DOI: 10.1109/ISCAS.2017.8050605.

[15] **Arafin, Md Tanvir**, Anand, DM, and Qu, Gang. 2016. "Detecting GNSS Spoofing using a Network of Hardware Oscillators". In: *Proceedings of the 47th Annual Precise Time and Time Interval Systems and Applications Meeting* (*PTTI*), pp. 74–79. DOI: 10.33012/2016.13135.

[16] **Arafin, Md Tanvir** and Qu, Gang. 2016. "Secret Sharing and Multi-User Authentication: From Visual Cryptography to RRAM Circuits". In: *Proceedings of the 26th ACM Great Lakes Symposium on VLSI* (*GLSVLSI*), pp. 169–174. DOI: 10.1145/2902961.2903039. [**Acceptance Rate = 25%**].

[17] **Arafin, Md Tanvir**, Dunbar, Carson, Qu, Gang, McDonald, N, and Yan, L. 2015. "A Survey on Memristor Modeling and Security Applications". In: *Sixteenth IEEE International Symposium on Quality Electronic Design* (*ISQED*). IEEE, pp. 440–447. DOI: 10.1109/ISQED.2015.7085466.

[18] **Arafin, Md Tanvir** and Qu, Gang. 2015. "RRAM Based Lightweight User Authentication". In: *2015 IEEE/ACM international conference on Computer-Aided Design* (*ICCAD*). IEEE, pp. 139–145. DOI: 10.1109/ICCAD.2015.7372561. [**Acceptance Rate = 26%**].

[19] **Arafin, Md Tanvir** and Islam, Saiful. 2012. "Exploring the Electronic Properties of Relaxed Bilayer Nitrogen-Graphene Alloy using Density Functional Theory". In: *2012 7th IEEE International Conference on Electrical and Computer Engineering*. IEEE, pp. 373–376. DOI: 10.1109/ICECE.2012.6471565.

Ph.D. Thesis

[1] **Arafin, Md Tanvir**. 2018. "Hardware-Based Authentication for the Internet of Things". PhD thesis. University of Maryland, College Park. DOI: 10.13016/M2HH6C88R.

Patents

[1] Jain, Shalabh, Wang, Qian, **Arafin, Md Tanvir**, and Merchan, Jorge Guajardo. Mar. 2021. *Method to Mitigate Voltage Based Attacks on Key Agreement Over Controller Area Network (CAN)*. US Patent 10,958,680.

[2] Jain, Shalabh, Wang, Qian, **Arafin, Md Tanvir**, and Merchan, Jorge Guajardo. Feb. 2020. *Method to Mitigate Transients Based Attacks on Key Agreement Schemes Over Controller Area Network*. US Patent 10,554,241.

Awarded Grants, Contracts, & Donations

I have received grants and contracts as PI/Co-PI for over **$9.4M**, out of which my share is over **$1.9M**.

At George Mason University
Total Award: $5,752,964
Total Awarded to Mason: $4,622,964
My Share: $1,460,587

[1] National Science Foundation
Project: Collaborative Research: CISE Crosscutting Small: SaTC: SAGE: Secure Accelerators for Next-Generation Foundation Models,
Role: **PI**
Total Award : $600,000, Award to Mason: $275,000 My Share: $275,000 *2025 – 2028*
Other Investigators: Wenjie Che (Howard University)

[2] National Science Foundation
Project: Collaborative Research: CyberSTAR: CyberTraining for Secure Transportation and Reliable Autonomy,
Role: **Lead PI**
Total Award : $500,000, Award to Mason: $200,000 My Share: $200,000 *2025 – 2028*
Other Investigators: Lu Gao (UH), Qian Wang (UC-Merced)

[3] National Science Foundation
Project: CyberCorps Scholarship for Service: EAGLE: Empowering American Government Leadership in Cybersecurity through Education,
Role: **Co-PI**
Total Award Amount to Mason: $3,952,971, My Share: $790,594 *2025 – 2029*
Other Investigators: Kun Sun (PI, GMU), Paulo Costa (GMU), Jianli Pan (GMU), Peggy Brouse (GMU)

[4] National Science Foundation
Project: Collaborative Research: An Edge-Based Approach to Robust Multi-Robot Systems in Dynamic Environments,
Role: **PI**
Total Award: $600,000, Amount to Mason: $95,000, My Share: $95,000 *2022 – 2026*
Other Investigators: Kewei Sha (UNT), Bin Tang (CSUDH), Lily Ma(CUNY), Pooyan Fazli (ASU)

[5] Virginia Innovation Partnership Authority
Project: Securing Chiplet-based Semiconductor Manufacturing from Untrusted Supply Chains,
Role: **PI**
Total Award Amount to Mason: $50,000, My Share: $50,000 *2024 – 2025*

[6] Virginia Innovation Partnership Authority
Fingerprinting Technology for Enhancing 5G/NextG O-RAN Supply Chain Risk Management,
Role: **PI**
Total Award Amount to Mason: $49,993, My Share: $45,383 *2024 – 2025*
Transferred from Vijay Shah (former PI, NCSU)

Prior Joining Geroge Mason University

Total Award: ***$3,659,625***
My Share: ***$462,500***

[7] Maryland Industrial Partnerships(MIPS)
Project: VISPR: A Verified Instruction Secure Processor,
Role: **PI**, Total Award Amount: $130,000, My Share: $110,000 *2022*
Institution: Morgan State University

[8] National Science Foundation (NSF)
Project: CyberCorps Scholarship for Service (SFS),
Role: **Co-PI**, Total Award Amount: $3,184,625, My Share: $265,000 *2021 – 2022*
Other Investigators: Kevin Kornegay (PI, MSU), Michel Kornegay (MSU),
Onyema Osuagwu (MSU), Ketchiozo Wandji (MSU)
Institution: Morgan State University

[9] Applied Research Laboratory for Intelligence and Security (ARLIS)
Project: Cyber-Assessment of AI/ML Tools,
Role: **Co-PI**, Total Award Amount: $150,000, My Share: $37,500 *2020 – 2021*
Other Investigators: Kevin Kornegay (PI, MSU)
Institution: Morgan State University

[10] NCAE-C Cyber Curriculum and Research Program
Project: Secure Autonomous Navigation Under Adversarial Attacks,
Role: **Co-PI**, Total Award Amount:$150,000, My Share: $50,000 *2020 – 2021*
Other Investigators: Kevin Kornegay (PI, MSU)
Institution: Morgan State University

[11] NASA Jet Propulsion Lab (NASA-JPL)
Project: Specification-based Anomaly Detection for Embedded Devices,
Role: **Co-PI**, Total Award Amount: $45,000, My Share: $0 *2020*
Other Investigators: Kevin Kornegay (PI, MSU)
Institution: Morgan State University

Invited Talks, Workshops, & Presentation

1. **Ghosts in the Shell: Security Issues in Robotic Operating System**, Hardware Demonstration, *Whiskey and Widgets event for College of Engineering and Computing*, George Mason University, 2024.
2. **Hardware Security @ C5I Center**, Hardware Demonstration, *Center Connect event for College of Engineering and Computing*, George Mason University, 2024.
3. **Cyber Security Issues in Modern Robotics**, *EdgeRobot Research Seminar* , California State University - Dominguez Hills, 2023.
4. **Hardware for Secure Autonomy**, *EdgeRobot Summer Research Seminar*, California State University - Dominguez Hills, 2022.
5. **Design of Secure and Efficient Processing-In-Memory Systems for Large-Scale Applications**, Tutorial Presentation, *34th International System-on-Chip Conference (SOCC)*, 2021.
6. **Hardware Lottery and the Perils of Computer Security**, Invited Talk, Computer Science Department, IT University of Copenhagen, Denmark, 2021.
7. **Autonomous Navigation Under Adversarial Attack**, Abstract Presentation, *49th Annual IEEE Applied Imagery Pattern Recognition (AIPR) Workshop*, 2020.
8. **Physical Unclonable Functions for Security Applications**, Invited Talk, COSC Colloquium Series, Computer Science Department, Morgan State University, 2020.
9. **Guided Reinforcement Learning and Imitation Learning: GRILL-SPICE**, (with Terry Stewart) Telluride Neuromorphic Workshop, 2020.
10. **Hardware Security for IoT devices**, Amazon Graduate Research Symposium, Seattle, Washington, 2017.
11. **Security Data Science: Improving Security with Big Data Techniques**, (with Tudor Dumitras), Maryland Cybersecurity Center(MC2) Annual Symposium, 2014.

Teaching

Courses Taught

George Mason University

- CYSE 499/580: Hardware and Cyber-Physical Systems — *SP 2023*
- CYSE 465: Transportation System Design — *F 24, F 23, F 22, SP 24*
- CYSE 211: Operating Systems and Lab — *F 2024*

Morgan State University

- EEGR 760: Advanced Topics in Computer Engineering — *SP 2020*
- EEGR 745: Advanced Digital VLSI Design — *F 2021*
- EEGR 480: Introduction to Cyber Security — *F 2019, F 2020*
- EEGR 463: Digital Electronics — *SP 2022, SP 2021, F 2020, SP 2020, F 2019*

Bangladesh University of Engineering & Technology

- Introduction to Electrical Engineering — *SP 2012*
- VLSI I Laboratory — *SP 2012, F 2011*
- Microprocessor & Interfacing Laboratory — *F 2011*

- Electronics Laboratory *F 2011*

Mentoring & Advisement

Ph.D. Thesis Advisement

George Mason University

- Yanze Wu
- Suhrid Ghosh
- Alan Devkota

Undergraduate Senior Design Project Sponsor

George Mason University

- Project: Securing Robust Multi-Robot Systems in Dynamic Environments
  Students: Blake E Todorowski; Michael Lane Fox ; Harris E Laing; Kirthan Gaddam; Anosh A Mian *2024 – 2023*
- Project: Émpistos: Trusted Embedded Processing and Optimizations for Edge AI Security
  Students: Zack Francis Wagner; AlRaheeq Al Rawas; Anay Gulati; Maximilian A Karen; Bradford Williams *2024 – 2023*

Doctoral Thesis Committee Member

Morgan State University

- Latha Suravasi, Khir Henderson, Greig Richmond, Edmund Smith, Tsion Yimer

Undergraduate Senior Design Project Supervisor

Morgan State University

- Maryline Ivana Happy; Jose Dominguez-Cortez; Robert Hill *2022 – 2021*
- Ashia Mccalla; Gerald Amory *2022 – 2021*
- Antwaan Thomas; Faizat Kaffo *2021 – 2020*
- Malik Smith; Anthony Turner *2021 – 2020*
- Fitsum Tadasse; Reuben Macintosh *2021 – 2020*

Professional Service

Grant Review Committee Member

Panelist, National Science Foundation (NSF) *2024 – 2022*
Technical Reviewer, Maryland Industrial Partnerships (MIPS) *2021*

Conference Organizing Committee Member

TPC Chair, Section 2, IEEE Design and Automation Conference (DAC) *2025*
Publication Chair, IEEE Asian Hardware Oriented Security and Trust Symposium *2025 – 2021*

Conference Technical Program Committee Member

IEEE Design and Automation Conference (DAC) *2024 – 2023*
IEEE Asia and South Pacific Design Automation Conference (ASP-DAC) *2023 – 2021*

IEEE International System-on-Chip Conference (SOCC) *2024, '23, '21, '20*
IEEE Asian Hardware Oriented Security and Trust Symposium (AsianHOST) *2024 – 2021*

Conference Session Chair

IEEE Asia and South Pacific Design Automation Conference (ASP-DAC) *2022, '20*
IEEE International System-on-Chip Conference (SOCC) *2021, '20*
IEEE Asian Hardware Oriented Security and Trust Symposium *2021*

Journal Reviewer

IEEE Transactions on Computer-Aided Design of ICs and Systems (TCAD)
IEEE Transactions on Very Large Scale Integration Systems (TVLSI)
IEEE Network Magazine
Integration, the VLSI Journal (Elsevier)
Computer & Security (Elsevier)
Journal of Hardware and Systems Security (Springer)

Departmental Service

George Mason University
Chair, Ph.D. Proposal Committee , CYSE Department *2024 – 2023*
Member, Department Handbook Committee , CYSE Department *2024 – 2023*
Member, Grievance Committee, CYSE Department *2024 – 2023*
Chair, Graduate Committee, CYSE Department *SP 2023*
Member, Advertisement Committee, CYSE Department *SP 2023*
Member, Departmental Tenure-Track Hiring Committee, CYSE Department *2023 – 2022*
Member, Departmental Term-Track Hiring Committee, CYSE Department *2023 – 2022*
Chair, Colloquium Committee, CYSE Department *F 2022*
Member, Graduate Committee, CYSE Department *F 2022*

Morgan State University
Graduate Coordinator, ECE Department, Morgan State University *2020 – 2022*
Undergraduate Coordinator, ECE Department, Morgan State University *2019 – 2020*
Member, Curriculum Development Committee, Ph.D. in Secure Embedded Systems *2020*
Member, Faculty Development Committee,ECE Department, *2019 – 2022*
Member, Cyber Defense Education (CAE-CDE) Re-designation Committee *2020, 2021*
USENIX Campus Representative, Morgan State University *2020 – 2022*

Affiliation

Member, Institute of Electrical and Electronics Engineers (IEEE) *current – 2008*
Member, USENIX: The Advanced Computing Systems Association *2022 – 2020*
Member, Sigma Xi, the Scientific Honorary Society *2023 – 2019*
Student Member, IEEE Communication Society *2015 – 2010*

In the Media

1. *Cybersecurity students prepare for the inaugural DistrictCon Hacker Conference*, The George, 2025.
2. *Arafin conducting research aimed at securing chiplet-based semiconductor manufacturing from untrusted supply chains*, Chiplet Marketplace, 2024.