Roger A. Hallman

Crypto Asset Technology (C.A.T.) Labs

✉ roger@catlabs.io • 🌐 sites.dartmouth.edu/rahallman/

Education

Thayer School of Engineering, Dartmouth College　　　　　　　**Hanover, New Hampshire**
PhD Candidate in Engineering Science, Admitted to Candidacy in May 2021　　　*2018–Present*
(On a Leave of Absence to support C.A.T. Labs.)

Faculty Supervisor: Professor George Cybenko

Proposed Research Focus: Generative Deep Learning and Neural Cryptanalysis

School of Mathematical and Statistical Sciences, Arizona State University　　**Tempe, Arizona**
BSc in Mathematics　　　　　　　　　　　　　　　　　　　　　　　　　　　　*2013*

Professional Experience

Executive Experience

Crypto Asset Technology (C.A.T.) Labs, Inc.　　　**Remote, based in San Diego, California**
Head of Research & Development　　　　　　　　　　　　　　　　　　　　　*2023–Present*
- Oversee research activities and develop knowledge-based products for the company.
- Develop research programs incorporating current developments to improve existing products and study the potential of new products.
- Act as Principal Investigator for government sponsored projects.
- Work closely with engineering team to inform product build.
- Develop content and research for intellectual property.
- Contribute to blog content creation based on research.
- Miscellaneous ad hoc duties, as needed.

Professional Experience in the United States Department of Defense

Naval Information Warfare Center (NIWC) Pacific　　　　　　**San Diego, California**
Civilian Computer Research Scientist　　　　　　　　　　　　　　　　　　　*2014–2023*
- Hired through SPAWAR Systems Center Pacific New Professionals Program.
- Technical accomplishments include: decision support algorithm development, homomorphic encryption applications, resilient cloud services, cybersecurity cost/benefit analysis tools, and malware analysis research.
- Contracting Officer's Representative and Technical Agent for the DARPA Brandeis Program from 2015–2018.
- Principal Investigator (PI) or Co-PI on multiple technical and collaborative research efforts.
- Served as Acting Branch Head (first-line supervisor) on an ad hoc basis.
- Mentored college and high school student interns.

United States Marine Corps

Enlisted Marine, 2000–2005 (Active Duty), 2005–2008 (Individual Ready Reserve)   *2000–2008*

- **Military Awards:** Combat Action Ribbon, Presidential Unit Citation, Naval Unit Commendation, Good Conduct Medal, National Defense Medal, Iraq Campaign Medal (with two bronze star devices), Global War on Terror Expeditionary Medal, Global War on Terror Service Medal, Sea Service Deployment Ribbon (with one bronze star device), two Letters of Appreciation
- **Sergeant of the Guard** at 'Camp Korean Village', Al Anbar Province, Iraq: responsible for leading a squad of 12 Marines and overseeing physical installation security.
- **Chief Cook** (equivalent to Sous Chef/first-line supervisor): responsible for supervising 3–7 subordinates and ensured timely preparation of meals for up to 1,000 Marines, both in garrison and in theater.
- Separated from active service with the rank of Corporal in 2005 and was promoted to Sergeant while a member of the Individual Ready Reserve until receiving an Honorable Discharge in 2008.

Professional Experience in Academia

Thayer School of Engineering, Dartmouth College   **Hanover, New Hampshire**

Graduate Teaching Assistant

- ENGS 27: Discrete and Probabilistic Systems | Fall 2019

First-Year Graduate Student Mentor   *2020-2021*

- Mentored first-year PhD and MS students.

Scottsdale Community College   **Scottsdale, Arizona**

Mathematics Tutor   *2008–2014*

- Tutored socio-economically diverse groups of students in a variety mathematics courses ranging from remedial arithmetic and algebra to university-level subjects (e.g., Calculus, Differential Equations, and Linear Algebra).

Adjunct Instructor   *2012–2013*

- CUL 120: Food Costing, Purchasing and Inventory Control
- CUL 103: Breakfast and Cold Foods

Intellectual Property

Awarded Patents

2022:

- US Patent No.: 11,297,505 (April 5, 2022); San Miguel, J., Kline, M., **Hallman, R.A.**, Romero-Mariona, J., Phan, J., Slayback, S.M., Weeden, C., "System and Method for Aggregated Machine Learning on Indicators of Compromise on Mobile Devices" | US Navy Case No.: 108,745

2020:

- US Patent No.: 10,684,909 (July 16, 2020); August, M., Diallo, M.H., Glasser, D., Graves, C., **Hallman, R.A.**, Slayback, S.M., "Anomaly Detection for the Purpose of Preserving Availability of Virtualized Cloud Services" | US Navy Case No.: 107,938

2019:

- US Patent No.: 10,439,799 (October 8, 2019); Diallo, M.H., **Hallman, R.A.**, August, M., Kline, M., Au, H., "System and Method for Automating Indirect Fire Protocol Using Fully Homomorphic

Encryption" | US Navy Case No.: 104,345

- US Patent No.: 10,375,169 (August 6, 2019); Diallo, M.H., August, M., Kline, M., Slayback, S.M., **Hallman, R.A.**, "System and Method for Automatically Triggering the Live Migration of Cloud Services and Automatically performing the Triggered Migration" | US Navy Case No.: 104,117

Publications

Online Presence

ORCID ID: 0000-0002-0971-2077

Google Scholar: https://scholar.google.com/citations?user=hJ7oOFsAAAAJ&hl=en

Scopus ID: 57188548104

Refereed Journal Articles

2021:

- **Hallman, R.A.**, Major, M., Romero-Mariona, J., Phipps, R., Romero, E., Tacliad, F., Slayback, S.M., San Miguel, J., "Determining a Return on Investment for Cybersecurity Technologies in Networked Critical Infrastructures," in *International Journal of Organizational and Collective Intelligence (IJOCI)*, Volume 11, Issue 2, pp. 91–112, IGI Global (DOI:10.4018/IJOCI.2021040105)

2020:

- Cifranic, N., **Hallman, R.A.**, Romero-Mariona, J., Souza, B., Calton, T., Coca, G., "Decepti-SCADA: A Cyber Deception Framework for Active Defense of Networked Critical Infrastructures," in *Internet of Things*, Volume 12, Elsevier (DOI: 10.1016/j.iot.2020.100320)

2017:

- Diallo, M.H., August, M., **Hallman, R.A.**, Kline, M., Slayback, S.M., Graves, C., "AutoMigrate: A Framework for Developing Intelligent, Self-Managing Cloud Services with Maximum Availability", in *Cluster Computing*, Volume 20, Issue 3, pp. 1995–2012, Springer (DOI: 10.1007/s10586-017-0900-x)

Refereed Conference & Workshop Proceedings

2023:

- Monje, A., Monje, A., **Hallman, R.A.**, Cybenko, G., "Being a Bad Influence on the Kids: Malware Generation in Less Than Five Minutes Using ChatGPT," submitted to the *18th International Conference on Availability, Reliability and Security (ARES 2023)* | *Submitted*

- **Hallman, R.A.**, San Miguel, J., Lu, A., Monje, A., Alam, M., Cybenko, G., "Generative Deep Learning for Solutions to Data Deconflation Problems in Information and Operational Technology Networks," in *Proceedings of the 8th International Conference on Internet of Things, Big Data and Security (IoTBDS 2023)*, Prague, Czech Republica, April 2023 | *Accepted, In Press*

2022:

- **Hallman, R.A.**, "EveGAN: Using Generative Deep Learning for Cryptanalysis," in *Proceedings of the 2022 ACM SIGSAC Conference on Computer and Communications Security (ACM CCS 2022)*, Los Angeles, California, USA, November 2022 (DOI: 10.1145/3548606.3563493)

2021:

- **Hallman, R.A.**, Cybenko, G., "The Data Deconflation Problem: Moving from Classical to

Emerging Solutions," in *Special Session on Artificial Intelligence for Emerging IoT Systems: Open Challenges and Novel Perspectives, Proceedings of the 6th International Conference on Internet of Things, Big Data and Security (IoTBDS 2021)*, *Virtual event due to COVID-19 Pandemic*, April 2021 (DOI: 10.5220/0010530403750380)

- Cybenko, G., **Hallman, R.A.**, "Attritable Multi-Agent Learning," in *Prococeedings of SPIE 11751, Disruptive Technologies in Information Sciences V, 117510L, SPIE Defense + Commercial Sensing, Virtual event due to COVID-19 Pandemic*, April 2021, SPIE (DOI: 10.1117/12.2588607)

2020:

- **Hallman, R.A.**, Chikkula, A., Prioleau, T., "Predicting Criticality in COVID-19 Patients" in *Proceedings of the 11th ACM International Conference on Bioinformatics, Computational Biology and Health Informatics (ACM BCB 2020), Virtual event due to COVID-19 Pandemic*, September 2020 (DOI: 10.1145/3388440.3412463)

- **Hallman, R.A.**, Major, M., Romero-Mariona, J., Phipps, R., Romero, E., San Miguel, J., "Return on Cybersecurity Investment in Operational Technology Systems: Quantifying the Value that Cybersecurity Technologies Provide After Integration", in *Proceedings of the 5th International Conference on Complexity, Future Information Systems and Risk (COMPLEXIS 2020), Virtual event due to COVID-19 Pandemic*, May 2020 (DOI: 10.5220/0009416200430052) | **Best Student Paper**

- Cifranic, N., Romero-Mariona, J., Souza, B., **Hallman, R.A.**, "Decepti-SCADA: A Framework for Actively Defending Networked Critical Infrastructures", in *Proceedings of the 5th International Conference on Internet of Things, Big Data and Security (IoTBDS 2020), Virtual event due to COVID-19 Pandemic*, May 2020 (DOI: 10.5220/0009343300690077)

- Major, M., Romero-Mariona, J., Phipps, R., Tacliad, F., Slayback, S.M., Romero, E., **Hallman, R.A.**, "Towards Quantifying Energy Resiliency Through Return on Cyber Investment Modeling", in *2020 HICSS Symposium on Cybersecurity Big Data Analytics*, Maui, Hawaii, USA, January 2020

2018:

- **Hallman, R.A.**, Laine, K., Dai, W., Gama, N., Malozemoff, A., Polyakov, Y., Carpov, S., "Building Applications with Homomorphic Encryption", in *Proceedings of the 2018 ACM SIGSAC Conference on Computer and Communications Security (ACM CCS 2018)*, Toronto, Ontario, Canada, October 2018 (DOI: 10.1145/3243734.3264420)

- San Miguel, J., Kline, M., **Hallman, R.**, Rogers, A., Slayback, S., Chang, S., "Aggregated Machine Learning on Indicators of Compromise in Android Devices", in *Proceedings of the 2018 ACM SIGSAC Conference on Computer and Communications Security (ACM CCS 2018)*, Toronto, Ontario, Canada, October 2018 (DOI: 10.1145/3243734.3278494) | *Citation count: 2*

- **Hallman, R.A.**, Diallo, M.H., August, M., Graves, C., "Homomorphic Encryption for Secure Computation on Big Data", in *Special Session on Recent Advances on Security, Privacy, Big Data and Internet of Things, Proceedings of the 3rd International Conference on Internet of Things, Big Data and Security (IoTBDS 2018)*, Funchal, Madeira, Portugal, March 2018 (DOI: 10.5220/0006823203400347)

2017:

- DiVita, J., **Hallman, R.A.**, "An Approach to Botnet Malware Detection Using Nonparametric Bayesian Methods", in *2nd International Workshop on Malware Analysis, Proceedings of the 12th International Conference on Availability, Reliability and Security (ARES 2017)*, Reggio Calabria, Italy, August 2017 (DOI: 10.1145/3098954.3107010)

- **Hallman, R.A.**, Bryan, J., Palavicini, G., Divita, J., Romero-Mariona, J., "IoDDoS — The Internet

of Distributed Denial of Service Attacks: A case study of the Mirai Malware and IoT-based botnets", in *Proceedings of the 2nd International Conference on Internet of Things, Big Data and Security (IoTBDS 2017)*, Porto, Portugal, April 2017 (DOI: 10.5220/0006246600470058)

2016:

o Diallo, M.H., August, M., **Hallman, R.A.**, Kline, M. and Slayback, S.M., "AutoMigrate: A Framework for Developing Intelligent, Self-Managing Cloud Services with Maximum Availability", in *Proceedings of the 2016 IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2016)*, Augsburg, Germany, September 2016 (DOI: 10.1109/ICCAC.2016.19) | **SSC Pacific Publication Award**

o Romero-Mariona, J., **Hallman, R.A.**, Kline, M., San Miguel, J., Major, M. and Kerr, L., "Security in the Industrial Internet of Things - The C-SEC Approach", in *Proceedings of the International Conference on Internet of Things and Big Data (IoTBD 2016)*, Rome, Italy, April 2016 (DOI: 10.5220/0005877904210428)

o Kerr, L., Romero-Mariona, J., **Hallman, R.A.**, Coronado, B., Bryan, J., Palavicini, G., Kline, M., Major, M., San Miguel, J., "TMT: Technology Matching Tool for SCADA Network Security", in *Proceedings of the 2016 Cybersecurity Symposium*, Coeur d'Alene, Idaho , USA, April 2016 (DOI: 10.1109/CYBERSEC.2016.014)

o Diallo, M.H., August, M., **Hallman, R.A.**, Kline, M., Au, H. and Beach, V., "CallForFire: A Mission-Critical Cloud-Based Application Built Using the Nomad Framework", in *4th Workshop on Encrypted Computing and Applied Homomorphic Cryptography, International Conference on Financial Cryptography and Data Security (FC 2016)*, Christ Church, Barbados, February 2016 (DOI: 10.1007/978-3-662-53357-4_21)

2015:

o Diallo, M.H., August, M., **Hallman, R.A.**, Kline, M., Au, H. and Beach, V., "Nomad: A Framework for Developing Mission-Critical Cloud-Based Applications", in *Workshop on Security and Privacy in Cloud-based Applications, Proceedings of the 10th International Conference on Availability, Reliability and Security (ARES 2015)*, Toulouse, France, August 2015 (DOI: 10.1109/ARES.2015.94)

Refereed Book Chapters

2021:

o Cybenko, G., **Hallman, R.A.**, "Resilient Distributed Adaptive Cyber-Defense using Blockchain" (DOI: 10.1002/9781119723950.ch23), in *Game Theory and Machine Learning for Cyber Security*, Chapter 23, pp. 485–498, 2021, Wiley-IEEE Press (ISBN: 978-1-119-72392-9) | **NIWC Pacific Publication Award**

2017:

o Diallo, M.H., August, M., **Hallman, R.A.**, Kline, M., Au, H., Slayback, S., "Nomad: A Framework for Ensuring Data Confidentiality in Mission-critical Cloud-based Applications" (DOI: 10.1049/PBSE007E_ch2), in *Data Security in Cloud Computing*, Chapter 2, pp. 19–44, 2017, The Institute of Engineering and Technology (ISBN: 978-1-785-61220-6)

o Romero-Mariona, J., **Hallman, R.A.**, Kline, M., Palavicini, G., Bryan, J., San Miguel, J., Kerr, L., Major, M., Alvarez, J., "An Approach to Organizational Cybersecurity Acquisition" (DOI: 10.1007/978-3-319-54380-2_9), in *Enterprise Security (LNCS 10131)*, Chapter 9, pp. 203–222, 2017, Springer (ISBN: 978-3-319-54379-6)

Posters

2022:

o Alam, M., **Hallman, R.A.**, Lu, A., Cybenko, G., "Machine Learning for Data Deconflation: Adopting GANs for Generalized Source Separation," in 6th *Annual Workshop on Naval Applications of Machine Learning*, Virtual Event, March 2022

2021:

o Cybenko, G., **Hallman, R.A.**, "Resilient Distributed Adaptive Cyber-Defense using Blockchain," in 5th *Annual Workshop on Naval Applications of Machine Learning*, Virtual Event, March 2021

2019:

o Cybenko, G., **Hallman, R.A.**, "Learning to Deconvolve Complex Behaviors", in 3rd *Annual SSC Pacific Workshop on Naval Applications of Machine Learning*, San Diego, Ca, USA, February 2019

2018:

o Diallo, M.H., Rana, V., August, A., Slayback, S., Graves, C. and **Hallman, R.A.**, "Secure Computation as a Service", in 3rd *Homomorphic Encryption Standardization Workshop*, Toronto, Ontario, Canada, October 2018

o DiVita, J., **Hallman, R.A.**, Morris, R., "An Approach to Botnet Malware Detection Using Non-parametric Bayesian Methods", in 2nd *Annual SSC Pacific Workshop on Naval Applications of Machine Learning*, San Diego, Ca, USA, February 2018

Non-Refereed Technical Documents

2019:

o San Miguel, J., Kline, M., **Hallman, R.A.**, Phan, J., Slayback, S.M., Weeden, C., Romero-Mariona, J., "NIWC Technical Document 3390: Aggregated Machine Learning on Indicators of Compromise", Defense Technical Information Center, July. 2019 | **SSC Pacific Publication Award**

2017:

o Archer, D., Chen, L., Cheon, J.H., Gilad-Bachrach, R., **Hallman, R.A.**, Huang, Z., Jiang, X., Kumaresan, R., Malin, B.A., Sofia, H., Song, Y., Wang, S., "Appliations of Homomorphic Encryption", Homomorphic Encryption Standardization Workshop (Draft Paper), July 2017

o **Hallman, R.A.**, Romero-Mariona, J., Major, M., Kline, M., Kerr, L., Palavicini, G., San Miguel, J., Bryan, J., "SPAWAR Technical Document 3316: Standardized and Repeatable Technology Evaluation for Cybersecurity Acquisition", Defense Technical Information Center, February 2017

o **Hallman, R.A.**, Kline, M., "SPAWAR Technical Report 3061: Risk Metrics for Android Devices", Defense Technical Information Center, February 2017

2016:

o **Hallman, R.A.**, Coronado, B., "SPAWAR Technical Report 3021: DITEC Technology Matching Tool (TMT)", Defense Technical Information Center, August 2016

2014:

o **Hallman R.A.**, Romero-Mariona J., Kline M., San Miguel J., "SPAWAR Technical Document 3288: DITEC User Priority Designation (UPD) Algorithm: An Approach to Prioritizing Technology Evaluations", Defense Technical Information Center, December 2014

Other Non-Refereed Publications

2016:

- Diallo, M.H., August, M., **Hallman, R.A.**, Kline, M., Au, H., Slayback, S., Petrie, P., "The Nomad Project: Targeting Security and Availability in the Cloud", in *CHIPS: The Department of the Navy's Information Technology Magazine*, October - December 2016

- Diallo M.H., August M., **Hallman R.A.**, Kline M., Au H. and Beach V., "The Nomad Project: Targeting Security and Availability Issues in the Cloud", in *US Cybersecurity Magazine*, Volume 4, Number 11, pp. 30–32, May 2016

- Diallo M.H., August M., **Hallman R.A.**, Kline M., Au H. and Beach V., Petrie, P., "SSC Pacific's Nomad Technology Targets Cloud Security, Cloud Availability Issues", in *SSC PAC Spotlight*, February 2016

Invited Talks & Panel Participation

2022:

- Hallman, R.A., Kline, M., Keynote Presentation: *"A Navy of Things: The Role of IoT at War"*, the 22nd Annual High Confidence Software and Systems Conference Series (HCSS 2022), Virtual Event due to COVID-19 Pandemic

2018:

- *"Industry and Government Applications of Homomorphic Encryption"* a panel discussion at the Homomorphic Encryption Standardization Workshop Spring Meeting, Massacheusetts Institute of Technology, Cambridge, Massachusetts

2017:

- *"IoDDoS — The Internet of Distributed Denial of Service Attacks: A case study of the Mirai Malware and IoT-based botnets"*, PhD Colloquium, University of Coimbra, Portugal

- *"The Convergence Between Cloud, IoT, Big Data and Security"* a panel discussion at the 2nd International Conference on Internet of Things, Big Data and Security (IoTBDS 2017), Porto, Portugal

In The News

The following are press articles covering my work.

2018:

- Choi, Y., "Big Data, encrypted as is analysis ... Block private sources of information", in *Donga Science*, March 23, 2018 | *Published in Korean*

2016:

- Conner, K., "C-SEC: Securing Critical Infrastructure" in *CHIPS: The Department of the Navy's Information Technology Magazine*, October - December 2016.

- Petrie, P., "SSC Pacific's Nomad Technology Targets Cloud Security, Cloud Availability Issues", in *United States Navy News Release*, January 13, 2016

Professional Service

Source Selection & Evaluation Boards:

o *I have participated in project proposal reviews and source selection evaluation boards for large federal cybersecurity and data privacy programs. More details can be provided when appropriate.*

Journals:

o *Future Generation Computer Systems*, Elsevier
o *Information & Communications Technology Express*, Elsevier
o *International Journal of Critical Infrastructure Protection*, Elsevier
o *Journal of King Saud University – Computer and Information Sciences*, Elsevier
o *Internet of Things*, Elsevier
o Journal of Grid Computing, Springer

Books:

o *Novel AI and Data Science Advancements for Sustainability in the Era of COVID-19*, Elsevier Academic Press, 2022
o *Game Theory and Machine Learning for Cyber Security*, Wiley-IEEE, 2021
o *Data Analytics for Cybersecurity: Trends, Methodologies and Applications*, Springer, 2017

Conferences & Workshops

2023:

o Hot Topics in the Science of Security Symposium (HoTSoS 2023), Virtual event due to COVID-19 Pandemic | *Reviewer*

2021:

o 17th EAI International Conference on Security and Privacy in Communication Networks (SecureComm 2021) (ISBN 978-3-030-90018-2), Virtual event due to COVID-19 Pandemic | *Poster and PhD Track Chair*
o The 6th International Conference on Internet of Things, Big Data and Security (IoTBDS 2021), Virtual event due to COVID-19 Pandemic | *Publicity Chair*

2020:

o The 3rd International Workshop on Multimedia Privacy and Security (MPS 2020) (ISBN: 978-3-0306-6503-6), co-located with the 25th European Symposium on Research in Computer Security (ESORICS 2020), Virtual event due to COVID-19 Pandemic | *Workshop General Co-Chair, Program Co-Chair*

2019:

o Special Session on Inter-Disciplinary Research (IDR 2019) co-located with the 4th International Conference on Complexity, Future Information Systems and Risk (COMPLEXIS 2019), Heraklion, Crete, Greece | *Workshop Co-Chair*

2018:

o The 2nd International Workshop on Multimedia Privacy and Security (MPS 2018) (ISBN: 978-1-4503-5988-7) co-located with the 25th ACM Conference on Computer and Communications Security (ACM CCS 2018), Toronto, Ontario, Canada | *Workshop General Co-Chair, Program Co-Chair*

- Workshop on Security and Privacy-Enhanced Big Data (SPEBD 2018) co-located with the 13th International Conference on Availability, Reliability and Security (ARES 2018), Hamburg, Germany | *Workshop Chair*
- Recent Advances on Security, Privacy, Big Data and Internet of Things (SPBDIoT 2018), a special session of the 3rd International Conference on Internet of Things, Big Data and Security (IoTBDS 2018), Funchal, Madeira, Portugal | *Special Session Co-Chair*
- 2nd Annual Workshop on Naval Applications of Machine Learning (NAML 2018), San Diego, California, USA | *Reviewer*

2017:
- The 1st International Workshop on Multimedia Privacy and Security (MPS 2017) (ISBN: 978-1-4503-5206-2), co-located with the 24th ACM Conference on Computer and Communications Security (ACM CCS 2017), Dallas, Texas, USA | *Workshop Chair*
- The 1st International Workshop on Autonomics and Cloud Security co-located with the IEEE International Conference on Cloud and Autonomic Computing (ICCAC 2017), Tucson, Arizona, USA | *Program Committee*
- The 12th International Conference on Availability, Reliability and Security (ARES 2017), Reggio Calabria, Italy | *Session Chair*
- The 3rd International Workshop on Data Analytics and Emerging Services (DAES 2017) in conjunction with the International Conference on Engineering and Technology 2017 (ICET 2017), Antalya, Turkey | *Publicity Chair, Program Committee*
- Innovative CyberSecurity and Privacy for Internet of Things, a special session of the 2nd International Conference on Internet of Things, Big Data and Security (IoTBDS 2017), Porto, Portugal | *Session Chair*

2016:
- Enterprise Security Workshop: Risk Analysis and Financial Management, co-located with the 33rd Euro-Asia Management Studies Association (EAMSA) Annual Conference, Suzhou, China | *Workshop Co-Chair*

Standards Development

2017 - Present:
- Homomorphic Encryption Standardization Consortium: An Open Industry / Government / Academic Consortium to Advance Secure Computation | *Use Case and Application Development Working Group*

Advisory Board Membership

2016 - 2018:
- Advisory Board Member, New Jersey Institute of Technology Cybersecurity Research Center

Outreach

2020:
- SMART Scholarship Ambassador

2018:
- *"Tales from the Cryptographer"*, AP Computer Science Class Industry Talk, Helix Charter High School, La Mesa, California

Honors & Awards

2023:
- **NIWC Pacific Calendar Year 2021 Publication Award Honorable Mention** for "Resilient Distributed Adaptive Cyber-Defense Using Blockchain"

2020:
- **Best Student Paper** at the 5th International Conference on Complexity, Future Information Systems and Risk (COMPLEXIS 2020)

2019:
- **Career Service Award** for 10 years of service to the Department of the Navy and the United States Government, Naval Information Warfare Center Pacific
- **Science Mathematics And Research for Transformation (SMART) Scholarship** Award, U.S. Department of Defense

2018:
- **SPAWAR Systems Center Pacific Science & Technology Department 1st Quarter FY'19 Best Technical Document Award** for "Aggregated Machine Learning on Indicators of Compromise"
- **'On-The-Spot' Award** for outreach efforts and presentations to Helix Charter High School, La Mesa, California

2017:
- **SPAWAR Systems Center Pacific Calendar Year 2016 Publication Award Honorable Mention** for "AutoMigrate: A Framework for Developing Intelligent, Self-Managing Cloud Services with Maximum Availability"

2016:
- **SPAWAR 'Lightning Bolt' Award** for supporting the United States Naval Institute/Armed Forces Communication and Electronics Association (USNI/AFCEA) West 2016 Information Warfare Pavilion
- **'On-The-Spot' Award** for supporting the USNI/AFCEA West Conference 2016

2012:
- **Marines' Memorial Tribute Scholarship**
- **Arizona State University Veterans' Scholarship**

Skills & Certifications

Computer Skills

Basic: JAVA, PYTHON (e.g., scikit-learn, Scapy, PyTorch), MATLAB, Blockchain (e.g., Ethereum)

Intermediate: LATEX, Microsoft Office

Professional Certifications

DAWIA: Systems Engineering (Level I), Science & Technology Management (Level I)

DAU: Contracting Officer's Representative

SPAWAR: Quality Assurance Practitioner

Memberships

2023: The International Association for Cryptologic Research – IACR

2022–2023: The Association for Computing Machinery, Special Interest Group on Security, Audit and Control – ACM-SIGSAC

2021–Present: The International Society for Optics and Photonics – SPIE

2020–Present: European Alliance for Innovation - EAI

2018–2019: The Student Veterans Association of Dartmouth College

2018–2019: Dartmouth College Principal Investigator Club

2018–2020: New York Academy of Sciences

2016–2019: IEEE Computer Society

2016–Present: Institute for Systems and Technologies of Information, Control and Communication – INSTICC

2012–2020: Marines' Memorial Association

2011–2013: Association for Women in Mathematics, Arizona State University Chapter (Charter Member)

2008 (Inducted): Phi Beta Kappa Honor Society