Nathan Gaw

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United States Citizen | Clearance: Top Secret/SCI

EDUCATION

- **Industrial Engineering, Ph.D.** 2019
  - Arizona State University
  - *Dissertation*: Novel Semi-Supervised Learning Models to Balance Data Inclusivity and Usability in Healthcare Applications (Chair: Prof. Jing Li)
- **Biomedical Engineering, M.S.** 2014
  - Arizona State University
  - *Thesis*: The Role of Tactile Information in Transfer of Learned Manipulation Following Changes in Degrees of Freedom (Chair: Prof. Marco Santello)
- **Biomedical Engineering, B.S.E.** 2013
  - Arizona State University
  - Barrett Honors College; selected student speaker for the Engineering Convocation

TECHNICAL SKILLS

- **Programming & Tools:** Python, R, Java, JavaScript, HTML, MATLAB
- **Data Systems & Visualization:** Excel, Tableau, SQL, JMP
- **ML/AI Frameworks:** scikit-learn, TensorFlow, PyTorch, pandas, numpy, matplotlib
- **Engineering & DevOps:** Docker, Git, API Development
- **Statistical Methods:** Time Series, Experimental Design, Hypothesis Testing

WORK EXPERIENCE

- **Co-Founder and Technical Advisor**, sudo-rndm.ai — Oct 2025-Present
  AI/ML Consulting
- **Assistant Professor of Data Science**, Department of Operational Sciences, Air Force Institute of Technology (AFIT) — Aug 2021-Sep 2025
- **Courtesy Faculty**, Department of Industrial and Systems Engineering, University of Florida — Aug 2023-Present
- **Postdoctoral Research Fellow**, H. Milton Stewart School of Industrial and Systems Engineering (ISyE), Georgia Institute of Technology — Oct 2020-Aug 2021
- **Research Affiliate**, Department of Radiology, Mayo Clinic — Jan 2017-Aug 2021
- **Postdoctoral Research Fellow**, ASU-Mayo Clinic Center for Innovative Imaging — Sep 2019-Aug 2020
- **Graduate Research Intern,** Martinos Center for Biomedical Imaging, Harvard Medical School/Massachusetts General Hospital — May 2019-Sep 2019
- **Graduate Research Assistant**, School of Computing, Informatics, and Decision Systems Engineering (SCIDSE), Arizona State University — Aug 2014-May 2019

HONORS & AWARDS

- **Distinguished Teaching Professor, Department of Operational Sciences**, AFIT 2023
- **CogPilot Datathon Challenge (hosted by AFWERX),** nationwide challenge to predict flight difficulty and pilot error using multimodal sensor data (e.g., heart rate and eye-tracking), of the 10 awards my team was eligible for, we won 5: 2021
  - Flight Difficulty Prediction (Best Model)
  - Pilot Error Regression (Runner-Up)

  - Most Innovative Approach
  - Most Interpretable Model
  - Best Pitch
- **Best Paper Award (Applied Track)**, INFORMS Data Mining and Decision Analytics Workshop 2019
- **Achievement Awards for College Scientists**, awarded to 35 Ph.D. students in the state of Arizona for excellent scientific research and academic achievement 2019
- **Industrial Engineering Outstanding TA Award**, ASU 2019
- **Excellent Reviewer Recognition**, NeurIPS Machine Learning for Health Workshop, awarded to top 5% rated reviewers 2019
- **ASU-Mayo Clinic Center for Innovative Imaging Travel Grant** 2019
- **INFORMS Principal Cup**, 2nd place, an international challenge hosted by INFORMS using historic data and operations research tools, participants were challenged to develop an objective decision-making process to buy, sell, or hold stocks that experience significant events 2018
- **INFORMS ASU Student Research Presentation Competition**, 2nd place 2018
- **Graduate College Fellowship**, ASU 2018
- **Graduate and Professional Student Association Travel Grant**, ASU 2017, 2018
- **Doctoral Fellowship**, SCIDSE, ASU 2017
- **Headache Trainees Tournament (International Headache Conference)**, conference abstract chosen as the top 3 out of 99 submissions of doctoral students to participate in a presentation tournament at the one of the largest conferences in headache medicine 2017
- **Harold Wolff-John Graham Award (Best Paper)**, American Academy of Neurology 2016
- **Harold G. Wolff Lecture Award (Best Paper)**, American Headache Society 2015
- **Dean's Fellowship**, ASU 2014
- **Tau Beta Pi Fellowship**, ASU 2013-2014

RESEARCH INTERESTS

- My research interests focus on developing new statistical machine learning algorithms to optimally fuse high-dimensional, heterogeneous, and multi-modal data sources to support decision making in the healthcare, remote sensing, and military settings (e.g., telemonitoring, diagnostics, anomaly detection, etc.).
- Specific methodological focuses include **feature extraction/selection** (e.g., tensor decomposition, functional data analysis, etc.), **spatio-temporal neural networks** (e.g., attention-based ConvLSTMs (convolutional long short-term memory), calibration quantification, etc.), and **image registration/fusion** (e.g., convolutional neural networks, etc.).
- Specific application areas in **problems related to defense** include **aviation human factors** (e.g., quantification of pilot cognition), **remote sensing of weather events** (lightning, tornado, etc.), and **cybersecurity** (e.g., detecting malicious cyber attacks).

RESEARCH FUNDING & GRANTS

In total, I have raised **$294,599** of research funding & grants, of which I have managed **$260,584**.

Period of Award	Sponsor	Project Name	PI %	Total Funding	My Share
30 Jun 2024 – 31 Mar 2025	HQ AFMC/A3/6	*AFTE Advanced Statistical Methods (ASM)* (**AFIT Proposal #:** 2024-095)	75%	$64,000	$48,000

1 Feb 2024 – 15 Jul 2024	AFIT Faculty Research Council (FRC)	*Interpretable Machine Learning for United States Air Force Personnel Management* (**AFIT Proposal #:** 2024-049)	70%	$10,000	$7,000
1 Apr 2023 – 30 Jun 2023	AFIT FRC	*Collaborative Cyber Security with Federated Machine Learning* (**AFIT Proposal #:** 2023-032)	50%	$23,330	$11,615
1 Jul 2022 – 30 Sep 2025	Air Force Office of Scientific Research Intramural Program (LRIR)	*Fusion of Scanning Acoustic Microscopy and Eddy Current Images for Materials Analysis* (**AFIT Proposal #:** 2022-129)	100%	$136,269	$136,269
1 Jul 2022 – 30 Sep 2023	Space Operations Command (SpOC)/S9A	*Deep Learning in Multimodal Remote Sensing* (**AFIT Proposal #:** 2022-145)	100%	$50,000	$50,000
1 Jan 2022 – 30 Nov 2022	AFIT FRC	*A Machine Learning Approach to Quantify USAF Pilot Performance through Physiological Signals* (**AFIT Proposal #:** 2022-20)	70%	$11,000	$7,700

TEACHING/OUTREACH FUNDING & GRANTS

In total, I have raised **$522,750** of teaching/outreach funding & grants, of which I directly managed **$518,875**.

Period of Award	Sponsor	Project Name	PI %	Total Funding	My Share
1 Oct 2024 – 30 Sep 2025	Secretary of Air Force for Acquisition (SAF/AQ)	*Test and Evaluation Certificate Program*	100%	$250,000	$250,000
1 Jun 2024 – 31 Dec 2024	AFIT Teaching Excellence Small Grant (TESG)	*Enhancing Teaching Excellence and Faculty Development through the Faculty Success Program*	100%	$5,250	$5,250
1 Mar 2024 – 30 Nov 2024	AFIT Research and Outreach Office (AFIT/CZ)	*Multi-Modal Integration Laboratory (MMI) Seminar Series* (**AFIT Proposal #:** 2024-061)	100%	$12,000	$12,000
1 Oct 2023 – 30 Sep 2024	SAF/AQ	*Test and Evaluation Certificate Program*	100%	$250,000	$250,000

PUBLICATIONS

*denotes student author

Peer-Reviewed Journal Articles

1. Liu J*, Mou S, **Gaw N**, Wang Y (2025). Uni-3DAD: Gan-inversion aided universal 3D anomaly detection on model-free products. *Expert Systems with Applications*, 126665. https://doi.org/10.1016/j.eswa.2025.126665
2. Crino N*, Cox BA, **Gaw N** (2024). Garbage In ≠ Garbage Out: Exploring GAN resilience to image training set degradations. *Expert Systems with Applications*, 250, 123902. https://doi.org/10.1016/j.eswa.2024.123902
3. Wasilefsky D*, Caballero WN, Johnstone C, **Gaw N**, Jenkins PR (2024) Responsible Machine Learning of United States Air Force Pilot Candidate Selection. *Decision Support Systems*, 180, 114198. https://doi.org/10.1016/j.dss.2024.114198
4. Choo N*, Lunday B, Ahner D, **Gaw N**, Little B, McBee B (2024) Investigating Regional Communication Network Robustness of an Asymmetric String-of-Pearls Satellite Constellation Design Framework. *Journal of Spacecraft and Rockets, 61*(3), 798-807. https://doi.org/10.2514/1.A35802
5. **Gaw N**, Yoon H, Li J (2024) A novel semi-supervised learning model for smartphone-based health telemonitoring. *IEEE Transactions on Automation Science and Engineering*. 21(1), 428-441. 10.1109/TASE.2022.3218132
    - Short-paper version received the **INFORMS Data Mining and Decision Analytics (DMDA)Workshop Best Paper (Applied Track)**
6. Caballero WN, **Gaw N**, Jenkins PR, Johnstone C (2023) Toward Automated Instructor Pilots in Legacy Air Force Systems: Physiology-based Flight Difficulty Classification via Machine Learning, *Expert Systems with Applications* 231, 120711. https://doi.org/10.1016/j.eswa.2023.120711
7. Zhao M*, Reisi Gahrooei M, **Gaw N** (2023) Coupled Tensor Decomposition for Robust Feature Extraction. *IISE Transactions on Healthcare Systems Engineering*, 13(2), 117-131. https://doi.org/10.1080/24725579.2022.2141929
    - Short-paper version was a finalist for the **IISE QCRE Best Student Paper Competition**
    - Article featured in **Industrial and Systems Engineering (ISE) Magazine**
8. **Gaw N**, Yousefi S, Reisi Gahrooei M (2022) Multimodal Data Fusion for Systems Improvement: A Review. *IISE Transactions* 54(11), 1098-1116. https://doi.org/10.1080/24725854.2021.1987593
9. Arun NT*, **Gaw N (co-first author)**, Singh P, Chang K*, Aggarwal M*, ... & Kalpathy-Cramer J (2021) Assessing the (Un)Trustworthiness of Saliency Maps for Localizing Abnormalities in Medical Imaging. *Radiology: Artificial Intelligence* 3(6), e200267. https://doi.org/10.1101/2020.07.28.20163899
    - Most cited paper in *Radiology: Artificial Intelligence* in 2022
10. Yoon H, **Gaw N** (2021) A novel multi-task linear mixed model for smartphone-based telemonitoring. *Expert Systems with Applications*, 164, 113809. https://doi.org/10.1016/j.eswa.2020.113809
11. Chang K*, Beers AL, Brink L, Patel JB*, Singh P, Arun NT*, Hoebel KV*, **Gaw N**, ... & Tilkin M (2020) Multi-institutional assessment and crowdsourcing evaluation of deep learning for automated classification of breast density. *Journal of the American College of Radiology*. https://doi.org/10.1016/j.jacr.2020.05.015
12. **Gaw N**, Hawkins-Daarud A, Hu LS, et al. (2019) Integration of machine learning and mechanistic models accurately predicts variation in cell density of glioblastoma using multiparametric MRI. *Nature Scientific Reports* 9(1), 10063. https://doi.org/10.1038/s41598-019-46296-4
13. **Gaw N**, Schwedt TJ, Chong CD, Wu T, Li J (2018) A clinical decision support system using multi-modality imaging data for disease diagnosis. *IISE Transactions on Healthcare Systems Engineering* 8(1): pp. 36-46. https://doi.org/10.1080/24725579.2017.1403520
    - Article featured in **Industrial and Systems Engineering (ISE) Magazine**

14. Chong CD, **Gaw N**, Fu Y, Li J, Wu T, Schwedt TJ (2017) Migraine classification using magnetic resonance imaging resting-state functional connectivity data. *Cephalalgia* 37(9): pp. 828-844. https://doi.org/10.1177/0333102416652091
    - **Received the Harold Wolff-John Graham Award from the American Academy of Neurology**
15. Hu LS, Ning S, Eschbacher JM, Baxter LC, **Gaw N**, et al. (2016) Radiogenomics to characterize regional heterogeneity in glioblastoma. *Neuro-Oncology* 19(1): pp. 128-137. https://doi.org/10.1093/neuonc/now135
16. Hu LS, Ning S, Eschbacher JM, **Gaw N**, et al. (2015) Multi-parametric MRI and texture analysis to visualize spatial histologic heterogeneity and tumor extent in glioblastoma. *PloS One* 10(11). https://doi.org/10.1371/journal.pone.0141506
17. Schwedt TJ, Chong CD, **Gaw N**, Fu Y, Wu T, Li J (2015) Accurate classification of chronic migraine via brain magnetic resonance imaging. *Headache: The Journal of Head and Face Pain* 55(6): pp. 762-777. https://doi.org/10.1111/head.12584
    - **Received the Harold G. Wolff Lecture Award from the American Headache Society**

Submitted Journal Articles

1. Barry G*, Johnstone C, Caballero W, Jenkins P, Chou C, Wang Y, Beauchene C, Rao H, Gaw N (Under Review) Student-Pilot Error Prediction via Multi-modal Physiological Signals and Tree-Based Models. *Decision Support Systems*.
2. Choo N, Ahner D, Lunday B, **Gaw N** (Under Review) Orbital Parameter Determination of Single Satellite Circular Orbits for Regional Coverage Using a Response Surface Methodology. *Acta Astronautica*.
3. Choo N, Ahner D, **Gaw N**, Lunday B (Under Review) Optimal Repeat Parameter Selection for Modifying Orbits from Non-Repeating into Repeating Ground Track Orbits. *The Journal of the Astronautical Sciences*.

Peer-Reviewed Conference Proceedings

1. Johnston N*, **Gaw N**, Wertz J, Cox B, Blasch E, Cherry M, O'Rourke M, Homa L (2024) Novel Deep Learning Image Registration Techniques with Application to Microscopy Images of Metal Alloys. *Dynamic Data Driven Application Systems 2024 (DDDAS-2024)*.
2. Gu H*, **Gaw N**, Wang Y, Johnstone C, Beauchene C, Yuditskaya SC, Rao HM, Chou C (2024) H2G2-Net A Hierarchical Heterogeneous Graph Generative Network Framework for Discovery of Multi-Modal Physiological Responses. *AAAI 2024 Workshop on Human-Centric Representation Learning*.
3. Reid D*, Champagne L, and **Gaw N**. (2023) Implementing Efficient Dynamic Threat Avoidance Routing Based on Dijkstra's Shortest Path Algorithm in the Advance Framework for Simulation, Integration, and Modeling (AFSIM). *Proceedings of the 2023 Winter Simulation Conference*, San Antonio, TX.
4. Wertz J, Blasch E, Cherry M, O'Rourke S, Scarnati T, Lorenzo N, Homa L, **Gaw N** (2022) Methods of Scanning Acoustic Microscopy and Eddy Current Fusion for Materials Analysis. *Signal Processing, Sensor/Information Fusion, and Target Recognition (SPIE) XXXI*, Vol. 12122.
5. Arun NT*, **Gaw N (co-first author)**, Singh P, Chang K, Hoebel KV, Patel J, ... & Kalpathy-Cramer J (2020) Assessing the validity of saliency maps for abnormality localization in medical imaging. *arXiv preprint arXiv:2006.00063*.

Contributed Books

1. **Gaw N**, Pardalos P, Reisi Gahrooei M (2024) Multimodal and Tensor Data Analytics for Industrial Systems Improvement. *Springer Optimization and Its Applications (SOIA)*. Vol. 211. pp. 1-394.

Patents

1. Hu LS, Li J, Swanson KR, Wu T, **Gaw N**, Yoon H, & Hawkins-Daarud A (2024) Methods for using machine learning and mechanistic models for biological feature mapping with multiparametric MRI. *U.S. Patent No. 11,861,475*. Washington, DC: U.S. Patent and Trademark Office.

CONFERENCE & SEMINAR PRESENTATIONS

*denotes student author

1. Barry G*, **Gaw N**, Johnstone C, Ng CS (June 2025) Advancing Decentralized Artificial Intelligence for Data Privacy via Uncertainty Quantification. *Wright-Patterson Air Force Base Data Analytics and Artificial Intelligence Forum*.
2. **Gaw N**, Allsop J* (June 2025) A Non-Stationary Multi-Arm Bandit Approach for Heterogenous Client Selection. *2025 IISE Annual Conference and Expo.*
3. Barry G*, **Gaw N**, Johnstone C, Ng CS (March 2025) FedICP: Federated Learning via Inductive Conformal Prediction. *Flower Labs Artificial Intelligence Summit 2025*.
4. **Gaw N**, Popick B*, Johnstone C, Fitch K, Cox B (November 2024) Assessing the Calibration and Performance of Attention-based Spatiotemporal Neural Networks for Lightning Prediction. NSF/IMSI Workshop on Data-Driven Modeling and Prediction of Rare and Extreme Events 2024.
5. **Gaw N**, Allsop J* (January 2025) A Non-Stationary Multi-Arm Bandit Approach for Heterogenous Client Selection. *Department of Integrated Systems Engineering, Ohio State University*.
6. **Gaw N**, Popick B*, Johnstone C, Fitch K, Cox B (November 2024) Assessing the Calibration and Performance of Attention-based Spatiotemporal Neural Networks for Lightning Prediction. *NSF/IMSI Workshop on Data-Driven Modeling and Prediction of Rare and Extreme Events 2024*.
7. Johnston N*, Luebbering P*, **Gaw N**, Wertz J, Cox B, Blasch B, Cherry M, O'Rourke S, Homa L (November 2024) Automated Image Registration for Titanium Aircraft Components via Resolution-Robust Parallel Neural Networks. *Dynamic Data Driven Application Systems (DDDAS) 2024*.
8. Johnston N*, Luebbering P*, **Gaw N**, Wertz J, Cox B, Blasch B, Cherry M, O'Rourke S, Homa L (October 2024) Automated Image Registration for Titanium Aircraft Components via Resolution-Robust Parallel Neural Networks. *AFRL Discover 2024*.
9. **Gaw N**, Popick B*, Johnstone C, Fitch K, Cox B (September 2024) Assessing the Calibration and Performance of Attention-based Spatiotemporal Neural Networks for Lightning Prediction. *European Network for Business and Industrial Statistics (ENBIS) 2024*.
10. Johnston N*, Luebbering P*, **Gaw N**, Wertz J, Cox B, Blasch B, Cherry M, O'Rourke S, Homa L (July 2024) Automated Image Registration for Titanium Aircraft Components via Resolution-Robust Parallel Neural Networks. *2024 INFORMS Security Conference*.
11. **Gaw N**, Popick B*, Johnstone C, Fitch K, Cox B (July 2024) Assessing the Calibration and Performance of Attention-based Spatiotemporal Neural Networks for Lightning Prediction. *The International Symposium on Business and Industrial Statistics (ISBIS 2024)*.
12. **Gaw N**, Popick B* (June 2024) Assessing the Calibration and Performance of Attention-based Spatiotemporal Neural Networks for Lightning Prediction. *2024 INFORMS/ALIO/ASOCIO International Conference*.
13. Allsop J*, Johnstone C, **Gaw N** (June 2024) Advances in Federated Learning: Using Adaptive Client Selection for Overcoming Challenges with Heterogeneous Clients. *The 92nd MORS Symposium*.
14. Johnston N*, Luebbering P*, **Gaw N**, Wertz J, Cox B, Blasch B, Cherry M, O'Rourke S, Homa L (June 2024) Automated Image Registration for Titanium Aircraft Components via Resolution-Robust Parallel Neural Networks. *The 92nd MORS Symposium*.

15. Meng Z*, Reisi M, **Gaw N** (May 2024) Robust coupled tensor decomposition and feature extraction for multimodal medical data. *2024 IISE Annual Conference and Expo.* **IISE DAIS Special Session: IISE Healthcare Panel & Research. Invited Presentation**.
16. **Gaw N**, Popick B* (April 2024) Assessing the Calibration and Performance of Attention-based Spatiotemporal Neural Networks for Lightning Prediction. *Defense and Aerospace Test and Analysis Workshop (DATAWorks) 2024*. **Invited Presentation**.
17. **Gaw N**, Allsop J*, Johnstone C (April 2024) Advances in Federated Learning: Using Adaptive Client Selection for Overcoming Challenges with Heterogeneous Clients. *Department of Homeland Security Test & Evaluation AI Working Group*. **Invited Presentation**.
18. Allsop J*, Johnstone C, **Gaw N** (April 2024) Advances in Federated Learning: Using Adaptive Client Selection for Overcoming Challenges with Heterogeneous Clients. *2024 Department of Air Force Data, Analytics, and AI Forum*.
19. **Gaw N**#, Allsop J^ (March 2024) Advancing Military Operations: Harnessing Federated Learning for Enhanced Security, Efficiency, and Innovation. *Flower AI Summit 2024*. **Invited Presentation.** Video Link
20. Barry G*, **Gaw N**, Johnstone C (November 2023) FedICP: Federated Learning via Inductive Conformal Prediction. *MIT Lincoln Laboratory*. **Invited Presentation**.
21. **Gaw N**, Popick B* (November 2023) Assessing the Calibration and Performance of Attention-based Spatiotemporal Neural Networks for Lightning Prediction. *2023 IISE DAIS-QCRE Joint Webinar Series*. **Invited Presentation**.
22. **Gaw N**, Popick B* (November 2023) Assessing the Calibration and Performance of Attention-based Spatiotemporal Neural Networks for Lightning Prediction. *Yonsei University*. **Invited Seminar Presentation**.
23. Johnston N*, **Gaw N**, Wertz J, Cox B, Blasch E, Cherry M, O'Rourke S, Homa L (October 2023) Automated Registration of Polarized Light Microscopy Images Using Deep Learning Techniques. *2023 INFORMS Annual Meeting*. **Invited Presentation**.
24. Skelly N*, **Gaw N**, Johnstone J (October 2023) An Improved Saliency Map with Trustworthiness for Localizing Abnormalities in Medical Imaging. *2023 INFORMS Annual Meeting*. **Invited Presentation**.
25. Reid D*, Champagne L, **Gaw N** (October 2023) Efficient Dynamic Threat Avoidance Routing for Combat Aircraft in Advanced Framework for Simulation Integration and Modeling (AFSIM). *2023 INFORMS Annual Meeting*. **Invited Presentation**.
26. **Gaw N**, Johnston N*, Wertz J, Cox B, Blasch E, Cherry M, O'Rourke S, Homa L (September 2023) Automated Registration of Polarized Light Microscopy Images Using Deep Learning Techniques. *European Network for Business and Industrial Statistics (ENBIS) 2023*. **Invited Presentation**.
27. Kim B*, **Gaw N**, Johnstone C (August 2023) A Federated Learning Framework with Uncertainty Quantification to Predict Progression of Post-Traumatic Headache in College Athletes. *2023 Military Health System Research Symposium (MHSRS)*.
28. Johnston N*, **Gaw N**, Wertz J, Cox B, Blasch E, Cherry M, O'Rourke S, Homa L (June 2023) Automated Registration of Polarized Light Microscopy Images Using Deep Learning Techniques. *INFORMS Conference on Quality, Statistics and Reliability (ICQSR) 2023*.
29. **Gaw N,** Barry G*, Johnstone C, Jenkins P, Caballero W (May 2023) A Conformal Prediction Approach to Quantify Student Pilot Error via Multimodal Physiological Signals. *2023 IISE Annual Conference and Expo.* **IISE DAIS Special Session Presentation.**
30. Johnston N*, **Gaw N**, Wertz J, Cox B, Blasch E, Cherry M, O'Rourke S, Homa L (April 2023) Automated Registration of Polarized Light Microscopy Images Using Deep Learning Techniques. *2023 Department of Air Force Data, Analytics, and AI Forum*.
31. Barry G*, **Gaw N**, Johnstone C, Jenkins P, Caballero W (April 2023) A Conformal Prediction Approach to Quantify Student Pilot Error via Multimodal Physiological Signals. *2023 Department of Air Force Data, Analytics, and AI Forum*.

32. Capps J, Green O, Ferrara L, **Gaw N** (January 2023) DAF-MIT AIA Challenges Panel Discussion. *DAF-MIT AI Accelerator Seminar Series*.
33. **Gaw N** (December 2022) Semi-supervised Learning to Balance Data Inclusivity and Usability. *The University of Arizona Systems and Industrial Engineering Seminar Series*. **Invited Presentation.**
34. **Gaw N**, Li J, Yoon H (October 2022) S2SSL: Simultaneous Feature and Instance Selection in Semi-Supervised Learning with Application to Smartphone-based Telemonitoring. *2022 INFORMS Annual Meeting*. **Invited Presentation**.
35. Metzgar G*, **Gaw N** (October 2022) Multimodal Fusion of Satellite and Radar to Predict Future Weather Events. *2022 INFORMS Annual Meeting*. **Invited Presentation**.
36. Barry G*, **Gaw N**, Johnstone C, Jenkins P, Caballero W (October 2022) A Conformal Prediction Approach to Quantify Pilot Error and Flight Difficulty via Multimodal Physiological Signals. *2022 INFORMS Annual Meeting*. **Invited Presentation**.
37. Harvill B*, Johnstone J, **Gaw N** (October 2022) Federated Learning on Telemonitoring of Parkinson's Disease Patients. *2022 INFORMS Annual Meeting*. **Invited Presentation**.
38. Johnston N*, Wertz J, Blasch E, Cherry M, O'Rourke S, Lorenzo N, Homa L, **Gaw N** (October 2022) Data Fusion for Multi-scale Mixed Modality Microstructure Characterization to Find Failure Modes in Titanium Metal Armor of Aircraft. *2022 INFORMS Annual Meeting*. **Invited Presentation**.
39. Byungmoo K*, **Gaw N** (October 2022) Multimodal Modeling for Post-traumatic Headache of Student Athletes. *2022 INFORMS Annual Meeting*. **Invited Presentation**.
40. Barry G***, Gaw N,** Johnstone C, Jenkins P, Caballero WN (August 2022) A Conformal Prediction Approach to Quantify Pilot Error and Flight Difficulty via Multimodal Physiological Signals. *MIT Lincoln Laboratory***.**
41. **Gaw N**, Li J, Yoon H (June 2022) A Novel Semi-supervised Learning Model for Smartphone-based Health Telemonitoring. *European Network for Business and Industrial Statistics (ENBIS) 2023*.
42. **Gaw N**, Jenkins PR, Caballero WN (May 2022) A Machine Learning Approach to Quantify United States Air Force Pilot Performance through Physiological Signals. *2022 IISE Annual Conference and Expo.* **Invited Presentation**.
43. **Gaw N**, Jenkins PR, Caballero WN, Johnstone C, Hoecherl J (April 2022) A Machine Learning Pipeline to Classify Pilot Training Flight Difficulty. *2022 Air Force Operations Research Symposium (AFORS)*.
44. **Gaw N**, Chong CD, Schwedt TJ, Berisha V, Wu T, Ross K, Dumkrieger G, Zhang J, Nikolova S, Li J (October 2021) Multi-modal predictive model for persistent post-traumatic headache. *2021 INFORMS Annual Meeting*. **Invited Presentation**.
45. Shah J, Chong CD, Schwedt TJ, Berisha V, Li J, Ross K, Dumkrieger G, Zhang J, **Gaw N**, Nikolova S, Wu T (October 2021) Interpreting deep learning model predictions using Shapley values. *2021 INFORMS Annual Meeting*. **Invited Presentation**.
46. **Gaw N**, Schwedt TJ, Dumkrieger G, Wu T, Berisha V, Nikolova S, Ross K, Li J, Chong CD (May 2021) Functional brain network alterations in post-traumatic headache: Relationship between the dorsolateral attention network and patient symptoms. *2nd Annual HEAL Initiative Investigator Meeting*.
47. **Gaw N**, Lancaster H, Perdue M, Grigorenko E, Landi N, Li J (November 2020) Bayesian integration of genetic, neuroimaging, and behavior data in studies of reading (dis)ability. *2020 INFORMS Annual Meeting*. **Invited Presentation**.
48. Arun NT, **Gaw N**, Singh P, Chang K, Hoebel KV, Patel J, Gidwani M, Kalpathy-Cramer J (July 2020) Assessing the validity of saliency maps for abnormality localization in medical imaging. *Medical Imaging with Deep Learning (MIDL) 2020*.
49. **Gaw N**, Yoon H, Li J (November 2019) Simultaneous feature and instance selection in semi-supervised regression for smartphone-based telemonitoring of Parkinson's Disease patients. *2019 INFORMS Annual Meeting*. **Invited presentation.**
50. **Gaw N**, Li J (November 2019) Active learning for spatial brain tumor cell density prediction using multiparametric magnetic resonance imaging. *2019 INFORMS Annual Meeting*. **Invited presentation.**

51. **Gaw N** (September 2019) Novel Semi-Supervised Learning Models to Balance Data Inclusivity and Usability in Healthcare Applications. Roche Pharmaceuticals, Ventana Medical Systems, Tucson, AZ.
52. **Gaw N**, Li J (May 2019) Feature and instance selection in semi-supervised learning (s2SSL) for smartphone-based telemonitoring of Parkinson's Disease. *2019 IISE Annual Conference and Expo*. **Invited presentation.**
53. **Gaw N**, Hu LS, Swanson KR, Li J (May 2019) Integration of machine learning and mechanistic models for spatial brain tumor density prediction using multiparametric magnetic resonance imaging. *2019 IISE Annual Conference and Expo*. **Invited presentation.**
54. Hu LS, **Gaw N**, Yoon H, et al. (November 2018) Radiogenomics on Venus and Mars: Impact of sex-differences on MRI and genetic correlations in glioblastoma. *23rd Annual Scientific Meeting of the Society for Neuro-Oncology*.
55. **Gaw N**, Hu LS, Swanson KR, Li J (November 2018) Integration of machine learning and mechanistic models for spatial brain tumor density prediction using multiparametric magnetic resonance imaging. *2018 INFORMS Annual Meeting*. **Invited presentation.**
56. **Gaw N**, Hu LS, Swanson KR, Li J (November 2018) Integration of Machine Learning and Mechanistic Models for Spatial Brain Tumor Density Prediction Using Multiparametric Magnetic Resonance Imaging. *Mayo Clinic Arizona*. **Invited seminar.**
57. Swanson KR, **Gaw N**, Hawkins-Daarud A, et al. (November 2017) Radiomics of tumor invasion 2.0: combining mechanistic tumor invasion models with machine learning models to accurately predict tumor invasion in glioblastoma patients. *22nd Annual Scientific Meeting of the Society for Neuro-Oncology*.
58. Jackson P, **Gaw N**, Hawkins-Daarud A, et al. (November 2017) P53 amplification modifies the glioblastoma microenvironment: differentiating the contribution of cells vs edema in the T2 weighted MRI signal. *22nd Annual Scientific Meeting of the Society for Neuro-Oncology*.
59. Wu T, **Gaw N**, et al. (2017) Quantitative Imaging System for Cancer Diagnosis and Treatment Planning: An Interdisciplinary Approach. *INFORMS TutORials in Operations Research 2017*: pp. 153-177.
    - **Tutorial for the 2017 INFORMS Annual Meeting**
60. **Gaw N**, Schwedt TJ, Chong CD, Wu T, Li J (September 2017) A clinical decision support system using multi-modality imaging data for migraine classification. *18th Congress of the International Headache Society*.
    - This abstract was chosen as the **top 3 out of 99 submitted abstracts** by doctoral students to participate in the **IHC Trainees Presentation Tournament.**
61. Chong CD, **Gaw N**, Fu Y, Li J, Wu T, Schwedt TJ (April 2016) Identifying migraine: building classifiers using resting-state fMRI data. *68th American Academy of Neurology Annual Meeting*.
62. Schwedt TJ, Chong CD, Wu T, **Gaw N**, Fu Y, Li J (June 2015) Accurate classification of chronic migraine via brain magnetic resonance imaging. *57th Annual Scientific Meeting of the American Headache Society*.
63. Kleim JA, **Gaw N**, Laitano J, Santello M (November 2013) The hand therassist to enhance upper extremity motor rehabilitation after stroke. *Society for Neuroscience*.
64. Bosco A, Fu Q, **Gaw N**, Fattori P, Santello M (November 2012) Role of online visual feedback on digit force-position coordination for dexterous manipulation. *Society for Neuroscience*.

TEACHING EXPERIENCE

Summary: I have taught 13 four-credit courses with at least 3 individuals enrolled and have received an average of 4.58 rating on my instruction. A summary table of the courses and ratings is provided below.

Course Title	Quarters Taught	Average Rating
OPER 679: Empirical Modeling	WI22, WI23, SP23, SP24, SP25	3.9
OPER 684: Quantitative Forecasting	WI24	5
OPER 683: Response Surfaces Methodology	FA22, FA23	4.5
OPER/STAT 699: Machine Learning of Temporal/Dynamic Modeling	WI23	5
OPER 688: Operational Experimentation	SU22	4.3
OPER 699/899: Federated Learning	SU22, SP23	4.5
OPER 685: Machine Learning I	SP22	4.5
OPER 699: Neural Networks Specialization	SP23, SP24, SP25	N/A (No Ratings Provided)

I have additionally taught other **full courses/independent studies** on the following topics:

Full Courses:

- **OPER 655: Text Mining** (AFIT) (2023-present), primary instructor, introductory course to machine learning techniques to perform analytics and inference on text data

Independent Studies:

- **OPER 899: Advanced Federated Learning (**AFIT) (2023-present)
- **OPER 699: Ensembling Approaches** (AFIT) (2023-present)
- **OPER 899: Machine Learning Feature Selection Techniques** (AFIT) (2022-present)

The following are **new courses** I have developed:

- **OPER/STAT 699: ML for Temporal/Dynamic Modeling** (AFIT) (2023-present), primary instructor, topical course recent machine learning techniques for temporal/dynamic data
- **OPER 699: Neural Networks Specialization** (AFIT) (2023-present), primary instructor, introduction course on neural networks
- **OPER/STAT 699: Federated Learning** (AFIT) (2022-present), primary instructor, introduction to federated learning (FL)
    - Developed project involving actual federated learning using Raspberry Pi (RPi) edge devices to train a model on human detection.
    - Developed a handbook and lecture materials that cover various fundamental methods in FL.

The following are **short courses** I have taught:

- **Introduction to Bayesian Data Analytics for Air Force Test & Evaluation**, two-part short course given to members of the Air Force Test and Evaluation Community (2025)
- **Introduction to Machine Learning for Air Force Test & Evaluation**, two-part short course given to members of the Air Force Test and Evaluation Community (2025)
- **Docker Tutorial**, AFIT Department of Operational Sciences, Fall Short Course (2023)
- **Data Manipulation**, AFIT Department of Operational Sciences, Fall Short Course (2022)
- **Introduction to Artificial Intelligence**, U.S. Joint Artificial Intelligence Center (2022)

MENTEES

Ph.D. Students

Committee Chair for 3 PhD Students (3 current):

1. **Gregory Barry** (AFIT, 2023-2025): Federated and Deep Learning Techniques for Aerospace Safety
2. **Jennifer Allsop** (AFIT, 2022-2025): Advancing Healthcare through Federated Learning: A Study in Medical Prediction and Intervention
3. **Brian Popick** (AFIT, 2021-2025): Spatiotemporal Prediction of Atmospheric Events through Deep Learning Models
    - Poster from Dissertation received 2nd Place in the *2024 OR/MS Mini-Poster Competition*

Committee Member for 3 PhD Students (3 graduated):

1. **Meng Zhao** (University of Florida, 2023): Tensor Analytics for System Monitoring and Modeling with High-dimensional Data
2. **Nathaniel Choo** (AFIT, 2023): Design and Analysis of Asymmetric "String-of-Pearls" Common Repeating-Ground-Track Satellite Constellations for Missions Requiring Regional Coverage
3. **Lujia Wang** (Georgia Tech, 2022): Uncertainty Mitigation in Image-Based Machine Learning Models for Precision Medicine

M.S. Students

Committee Chair for 14 MS Students (5 current, 9 graduated):

1. **Benjamin Hepner** (AFIT, 2024-2025): Computer Vision-enabled Digital Dashboard for T-38 Airplanes
2. **Kara Witgen** (AFIT, 2024-2025): A Modern Approach to Setting Enlisted Career Field Qualification Standards for the United States Air Force
3. **Sydney Wekamp** (AFIT, 2024-2025): Machine Learning Techniques for Automatic Drift Detection of Sensors in T-38 Airplanes
4. **Haley Traub** (AFIT, 2024-2025): Machine Learning Techniques to Predict Solar Particle Events and Radiation of Aircrew
5. **David Liu** (AFIT, 2022-2025): Automated Brain Tumor Segmentation in Medical Imaging Using Machine Learning Algorithms
6. **Alex Milham** (AFIT, 2023-2024): Predicting and Understanding USAF Pilot Attrition: A Machine Learning Approach to Analyzing Retention Factors
7. **Paige Luebbering** (AFIT, 2023-2024): Automated Image Registration for Titanium Aircraft Components via Resolution-Robust Parallel Neural Networks
    - Thesis won the *MORS Dr. James T. Moore Graduate Research Prize* for best application of operations research methodology to a military problem
8. **Nolan Skelly** (AFIT, 2023): An Improved Saliency Map that Shows Trustworthiness for Localizing Abnormalities in Medical Imaging
    - Poster from Thesis received 1st Place in the *2023 OR/MS Mini-Poster Competition*
9. **Matthew Sauer** (AFIT, 2023): Federated Active Learning for Network Intrusion Detection
10. **Gregory Barry** (AFIT, 2022-2023): A Conformal Prediction Approach to Quantify Student Pilot Error via Multimodal Physiological Signals
    - Research featured in *AFIT FY22 Graduate School Annual Report* and *December 2022 AFIT Engineer on Student Outcomes*
11. **Nathan Johnston** (AFIT, 2022-2023): Automated Registration of Polarized Light Microscopy Images Using Deep Learning Techniques.

- Thesis won the *MORS Dr. James T. Moore Graduate Research Prize* for best application of operations research methodology to a military problem

12. **Byungmoo Kim** (AFIT, 2022-2023): Uncertainty Quantification in Federated Learning for Persistent Post-traumatic Headache
13. **Grace Metzgar** (AFIT, 2022-2023): Inducing Sparsity within High-Dimensional Remote Sensing Modalities for Lightning Prediction
    - Research featured in *AFIT FY22 Graduate School Annual Report* and *December 2022 AFIT Engineer on Student Outcomes*
14. **Brandon Harvill** (AFIT, 2022-2023): Hierarchical Federated Learning On Healthcare Data: An Application To Parkinson's Disease; Co-advised with Maj Chancellor Johnstone, Ph.D.

Reader for 10 MS Students (10 graduated):

1. **Gregory Buchanan** (AFIT, 2023-2024): Machine Learning-Based Prediction of Terrestrial Gamma-Ray Flashes: Enhancing Understanding of Atmospheric Phenomena
2. **Andrew Gibson** (AFIT, 2023-2024): Impact of Operational Ladar Occlusions on Point Cloud Instance Segmentation
3. **Connor Oswald** (AFIT, 2023-2024): Pilots Who Stay: A Machine Learning Approach to Aircrew Retention
4. **Jacob Bryant** (AFIT, 2023-2024): Federated Medical Scoring Systems
5. **Sung O** (AFIT, 2023-2024): Federated Analysis of Wearables Data for United States Air Force Mental and Physical Readiness
6. **Dante Reid** (AFIT, 2022-2023): Simulation and Analysis of Dynamic Threat Avoidance Routing in an Anti-Access Area Denial (A2AD) Environment
7. **Seth Allen** (AFIT, 2022-2023): Impact of Drone Autonomy on High Value Airborne Asset Defense Using High Energy Lasers
8. **Todd Campo** (AFIT, 2022-2023): Prediction of Persistent Post-Traumatic Headache with Long Short-Term Memory Networks
9. **Franklin Sun** (AFIT, 2022-2023): Analysis and Optimization of Contract Data Schema
10. **Nicholas Crino** (AFIT, 2022-2023): Garbage In ≠ Garbage Out: Exploring GAN Resilience to Image Training Set Degradations

Undergraduate Students

1. **Ella Furlong** (U.S. Air Force Academy Cadet Summer Research Program, Summer 2023): Automated Registration of Titanium Metal Imaging of Aircraft Components using Deep Learning Techniques
2. **Matthew LaRosa** (U.S. Air Force Academy Cadet Summer Research Program, Summer 2022): Dynamic Bayesian Networks for Pilot Maneuver Identification

PROFESSIONAL SERVICE

Society Activities

- **President (2025-2026)**, Data Analytics & Information Systems (DAIS) Division, Institute of Industrial and Systems Engineers (IISE)
- **Council Member (2024-2026)**, Data Mining (DM) Society, Institute for Operations Research and the Management Sciences (INFORMS)
- **Chair (2023-2024)**, Data Mining (DM) Society, Institute of Operations Research and the Management Sciences (INFORMS)

- **President Elect & Standing President (2024-2025)**, Data Analytics & Information Systems (DAIS) Division, Institute of Industrial and Systems Engineers (IISE)
- **Session Chair (2024)**, *Reliability and Safety*, European Network for Business and Industrial Statistics (ENBIS) 2024
- **Poster Sessions Chair (2024)**, INFORMS Security Conference
- **Track Chair (2024)**, National Security Track, INFORMS Security Conference
- **Invited Judge**, 2024 IISE Case Study Competition
- **Subcommittee Member (2023-Present)**, INFORMS QSR Public Communications Subcommittee (2023-Present)
- **Vice Chair/Chair Elect (2022-2023)**, Data Mining (DM) Society, Institute for Operations Research and the Management Sciences (INFORMS)
- **President (2023-Present)**, INFORMS Cincinnati-Dayton Regional Chapter
- **Cluster Chair (2023)**, Data Mining Society, 2023 INFORMS Annual Meeting
- **Council Member (2021-2022)**, Data Mining (DM) Society, Institute for Operations Research and the Management Sciences (INFORMS)
- **Director/Board Member (2021-2023)**, Data Analytics & Information Systems (DAIS) Division, Institute of Industrial and Systems Engineers (IISE)
- **Primary Co-Chair (2022-2023)**, Data Analytics and Information Systems Track, IISE Annual Conference & Expo
- **Invited Judge (2023)**, IISE QCRE Process Miner Data Challenge
- **Invited Junior Faculty Panelist (2023)**, IISE Future Faculty Fellows (F3) Pre-Conference Workshop
- **Vice President (2022)**, INFORMS Cincinnati-Dayton Regional Chapter
- **Co-Chair (2021-2022)**, Workshop on Data Mining & Decision Analytics (DMDA), INFORMS Annual Meeting
- **Subcommittee Member (2021-2023)**, INFORMS QSR Membership Growth Subcommittee (2021-2023)
- **Panel Discussion Moderator (2022)**, *Fairness and Interpretability in AI/ML*, DMDA and QSR Workshops, INFORMS Annual Meeting
- **Panel Discussion Moderator (2021)**, *Emerging Trends in Data Mining and Decision Analytics: Deep Learning, Reinforcement Learning, and Beyond*, DMDA Workshop, INFORMS Annual Meeting
- **Invited Reviewer (2021)**, DAIS Best Track Paper Competition, IISE Annual Conference & Expo
- **Invited Judge (2020)**, Best Paper Competition (Theoretical Track), Workshop on Data Mining & Decision Analytics (DMDA), INFORMS Annual Meeting

Conference Session Organizing

- **Panelist (2025)**, AI/Tech Industry Panel, *Swagath Leadership Institute, University of North Texas*.
- **Organizer and Panelist (2024)**, Neurips Faith and AI Panel, *2024 Neurips Conference.*
- **Organizer and Panel Moderator (2023)**, Neurips Faith and AI Panel. *2023 Neurips Conference*.
- **Panel Moderator (2023)**, Federated Learning: Methodologies and Applications. *Data Mining (DM) Society & Quality, Statistics and Reliability (QSR) Section. INFORMS Annual Meeting*.
- **Session Chair (2023)**, Multimodal Data Analysis for Systems Improvement. *Data Analytics & Information Systems (DAIS) Division, Institute of Industrial and Systems Engineers (IISE)*.
- **Panel Moderator (2022)**, *Fairness and Interpretability in AI/ML*, DMDA Workshop, INFORMS Annual Meeting.
- **Session Chair (2022)**, Multimodal Fusion with Application to Medicine, Military, and Beyond (Parts 1 and 2). *Data Mining (DM) Society. INFORMS Annual Meeting*.
- **Session Chair (2022)**, Applications of Spatial and Temporal Modeling. *Data Analytics & Information Systems (DAIS) Division, Institute of Industrial and Systems Engineers (IISE)*.

- **Session Chair (2022)**, Human-computer/Human-Machine Interaction. *Data Analytics & Information Systems (DAIS) Division, Institute of Industrial and Systems Engineers (IISE)*.
- **Session Chair (2022)**, Deep Learning in Smart Manufacturing Session. *Data Analytics & Information Systems (DAIS) Division, Institute of Industrial and Systems Engineers (IISE)*.
- **Panel Moderator (2021**), *Emerging Trends in Data Mining and Decision Analytics: Deep Learning, Reinforcement Learning, and Beyond*, DMDA Workshop, INFORMS Annual Meeting
- **Session Chair (2021)**, Multimodal Data Fusion for Healthcare Applications. *Quality, Statistics & Reliability (QSR) Section. INFORMS Annual Meeting*.
- **Session Chair (2021)**, Data Science for Complex Data in Healthcare. *Data Mining (DM) Society. INFORMS Annual Meeting*.
- **Session Chair (2020)**, Integrating Heterogeneous Data in Healthcare Applications. *Quality, Statistics & Reliability (QSR) Section. INFORMS Annual Meeting*.
- **Session Chair (2020)**, Data Analytics for Modeling and Prediction in Healthcare. *Data Mining (DM) Society. INFORMS Annual Meeting*.
- **Session Chair (2019)**, Data Science for Complex Data in Healthcare. *Data Mining (DM) Society. INFORMS Annual Meeting*.
- **Co-organizer (2018)**, INFORMS Annual Meeting Student Mixer.

Editorial Services

- **Guest Editor (2023-2024)**, Frontiers in Physiology, Special Issue: *Artificial Intelligence for Smart Health*
- **Review Editor (2023-Present)**, Frontiers in Aging Neuroscience
- **Reviewer (42 papers in total):**
  - IEEE Transactions on Automation Science and Engineering (IEEE-TASE) (12 reviews)
  - Annals of Operations Research (ANOR) (5 reviews)
  - Military Operations Research Journal (MOR) (4 reviews)
  - IISE Transactions (UIIE) (3 reviews)
  - Quality Engineering (LQEN) (3 reviews)
  - Scientific Reports (SciRep) (2 reviews)
  - Computer Methods and Programs in Biomedicine (CMPB) (2 reviews)
  - INFORMS Journal on Computing (1 review)
  - Pattern Recognition (PR) (1 review)
  - Technometrics (TCH) (1 review)
  - Journal of Defense Analytics and Logistics (JDAL) (1 review)
  - Engineering Reports (ENG) (1 review)
  - Omega (OMEGA) (1 review)
  - IEEE Conference on Robotics and Automation (1 review)
  - Journal of Neurotrauma (NEU) (1 review)
  - Discover Oncology (DO) (1 review)
  - Journal of Headache and Pain (1 review)
  - Neuro-Oncology (1 review)

University-wide Services

- **Test and Evaluation Graduate Certificate Program, AFIT (2023-2025)**: Director
- **Omega Rho Honor Society, AFIT (2023-2024)**: Faculty Advisor
- **AFIT Multi-Model Integration Group Seminar Series (2024):** Main organizer; hosted 5 researchers from universities and military labs
- **AFIT Department of Operational Sciences Awards Committee (2024)**

- **AFIT-AFRL/RX: Multimodal Fusion for Microstructure Characterization Invited Talks (2023):** Main organizer; hosted eight researchers from military labs, universities, and industry
- **AFIT Faculty Handbook Revision Committee, Operational Sciences Representative (2022)**
- **Dean's Representative, School of Engineering and Management, AFIT (2022)**
- **AFIT Department of Operational Sciences Awards Committee (2022)**
- **Founder, INFORMS ASU Pro Bono Analytics (2017-2020),** Developed optimization algorithms that automatically match students and mentors to projects based on skills, expertise, schedule availability, etc.; I led this project with two professors and three PhD students to improve operations of EPICS, a national organization that matches engineering students to projects that help non-profit organizations
- **President (2017), INFORMS ASU Student Chapter,** Under my leadership, the student chapter received the INFORMS 2018 Student Chapter Award at the Cum Laude level—an award given to recognize achievements of student chapters at the international INFORMS Annual Meeting

Professional Affiliations

- Institute for Operations Research and the Management Sciences (INFORMS)
- Institute of Industrial and Systems Engineers (IISE)
- Institute of Electrical and Electronics Engineers (IEEE)
- European Network for Business and Industrial Statistics (ENBIS)
- Tau Beta Pi, Engineering Honor Society (TBP)
- Biomedical Engineering Society (BMES)
- Alpha Eta Mu Beta, Biomedical Engineering Honor Society (AEMB)