

ANA WOOLEY

Assistant Professor, The University of Alabama in Huntsville
Department of Industrial and Systems Engineering and Engineering Management
OKT N136 5000 Technology Drive NW, Huntsville, Alabama 35899
+1 (334) 444-2199 ana.wooley@uah.edu



EDUCATION

Auburn University, Auburn, AL, USA

Ph.D. Industrial and Systems Engineering Summer 2023
Dissertation: Simulation and Digital Twin: Contrasting the Capabilities and Bridging the Gap
Advisor: Daniel Silva
Green Belt Certification November 2022
Graduate Certificate of Automotive Manufacturing Systems August 2021
M.S. Industrial and Systems Engineering December 2020

Universidade Federal de Itajuba (UNIFEI), Itabira, Brazil

B.S. in Industrial Engineering December 2018

EXPERIENCE

Assistant Professor, *The University of Alabama in Huntsville – Huntsville, AL* August 2023 – Current
Industrial and Systems Engineering and Engineering Management (ISEEM) Department

Graduate Research Assistant, *Honda Manufacturing of Alabama - Lincoln, AL* August 2019 – August 2023

- Led the creation of 3 complete Value Stream Mappings (VSM) across 218 machines throughout the engine plant, analyzing processes, identifying sources of waste and inefficiencies, and driving process improvement.
- Collaborated effectively as the technical interface within cross-functional teams, contributing to the design, implementation, and application of 2 complex simulation models to improve operational efficiency that resulted in a 29% reduction in annual engine impregnation cost.
- Provided weekly updates to stakeholders on simulation and VSM projects as well as prepared project reports.
- Awarded the Honda fellowship of \$15,000 for 3 consecutive years by performing at a high level and by committing to the sustainability of the Auburn University- Honda partnership.

Graduate Research Assistant, *Auburn University - Auburn, AL* January 2019 – May 2022

- Successfully managed 5 concurrent research projects, resulting in the publication of 4 innovative papers in the field of simulation. Presented findings to diverse audiences at multiple national conferences and showcases.
- Led and collaborated with project teams on 3 research projects. Facilitated team-building activities and conducted systematic literature reviews, reading over 300 journal articles.

Head Counselor, *Auburn Youth Programs - Auburn, AL* May 2019 – July 2019

- Successfully managed 11 lead counselors and oversaw 36 camps, expertly coordinating all activities while facilitating seamless communication between counselors and directors to ensure the program's mission and goals were met. Developed and nurtured strong relationships with students, parents, and campus partners and directors, consistently displaying a positive and encouraging attitude and caring for the needs of all stakeholders.

English Teacher, *Fluent- Itabira, Brazil* January – December 2018 and 2016

- Outstanding training and mentoring skills, as well as advanced interpersonal skills, and experience teaching English to Brazilian college students (online and in-person), preparing coursework, training other teachers, impacting over 35 students.

Process Improvement Engineer Intern, Siemens Energy - Jundiaí /Brazil

January 2017 – December 2017

- Collaborated closely with safety and quality departments to develop more than 20 safety tools and 60 Standard Operating Procedures (SOPs) that laid the foundation for a safe and efficient work environment. Identified, documented, and reported risks associated with these tools and procedures.
- Managed relationships with 5+ suppliers, including timely ordering and efficient management of parts delivery, and the ability to adapt quickly to changing circumstances.
- Developed, analyzed, and executed plans for 2 Lean Manufacturing projects: Times & Methods and Total Productive Maintenance (TPM). Analyzed the technical and budget aspects, resulting in a 38% cost reduction. Collected information and procedures for over 30 processes, participated in more than 50 Gemba walks, and developed a systematic inventory procedure for over 100 tools.

Management Consultant, UP Consulting - Itabira/Brazil

January 2013 – December 2013

- Excellent organizational skills, including organizing events, selecting personnel for each event, and holding weekly meetings, coordinating four events in the 2013 calendar.
- Strong analytical skills obtained by leading a Times & Methods project at marble factory's macro processes, resulting in the identification of 2 major bottlenecks of the area.

Undergraduate Research Assistant, Universidade Federal de Itajuba, Itabira, Brazil

January 2012 – May 2013

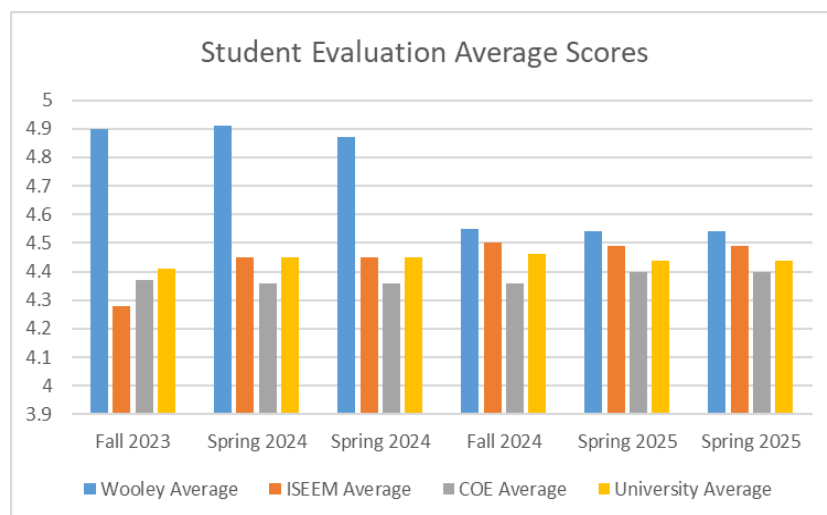
- Performed scientific research called: "Quantification of Retained Austenite in supermartensitic stainless steel by metallographic analyses" to determine the amount of retained austenite in super martensitic steel by quantitative metallography, optical scanning, and electron microscopy. Carried out Vickers micro hardness measurements and analyzed the effect of steel hardness with varying temperatures.
- Performed research called "The use of CAPDO cycle quality tool to reduce waste in an exhaust system of an insulation material factory".

TEACHING

Courses Taught at UAH: 7

2023: 1
2024: 3
2025: 3

Note: Student Evaluation Scores (SIE) are represented in average with a scale from 0 to 5.



The University of Alabama in Huntsville, Huntsville, AL

ISE 447/547

Introduction to Systems Simulation

Fall 2025 📅 No responses yet – In progress

Fall 2024 📅 Wooley SIE: **4.55**

📅 ISEEM Average: 4.50

📅 COE Average: 4.36

👤 Course Audience: 58 students

👤 Response ratio: 90%

Fall 2023 📅 Wooley SIE: **4.9**

📅 ISEEM Average: 4.28

📅 COE Average: 4.37

👤 Course Audience: 52 students

👤 Response ratio: 54%

ISE 433/533

Production and Inventory Control

Spring 2025	📅 Wooley SIE: 4.54 👤 Course Audience: 29 students 👤 Response ratio: 100%	📅 ISEEM Average: 4.49	📅 COE Average: 4.40
Spring 2024	📅 Wooley SIE: 4.91 👤 Course Audience: 40 students 👤 Response ratio: 38%	📅 ISEEM Average: 4.45	📅 COE Average: 4.36

ISE 439/539

Digital Engineering

Spring 2025	📅 Wooley SIE: 4.87 👤 Course Audience: 13 students 👤 Response ratio: 38%	📅 ISEEM Average: 4.45	📅 COE Average: 4.36
Spring 2024	📅 Not enough Responses 👤 Course Audience: 14 students		

Note: The offerings for 2025 and 2024 are a Special Topics class. The ISEEM department is working to convert this class into a required course.

Auburn University, Auburn, AL

INSY 4700 Manufacturing and Systems II (Teaching Assistant)	Spring 2022
INSY 4700 Manufacturing and Systems II (Teaching Assistant)	Fall 2021
INSY 4700 Manufacturing and Systems II (Teaching Assistant)	Spring 2021
INSY 4700 Manufacturing and Systems II (Teaching Assistant)	Fall 2020
ENGR 1110 Introduction to Industrial and Systems Engineering (Teaching Assistant)	Fall 2019
STAT 3600 Probability and Statistics (Teaching Assistant)	Spring 2019

FUNDING

Total Funding: \$1874,398.00

PI: \$504,398.00

Co-PI: \$137,000.00

Total Number of Grants: 6

PI: 4

Co-PI: 2

Funding Sources

Government: MxD, Army, NSF

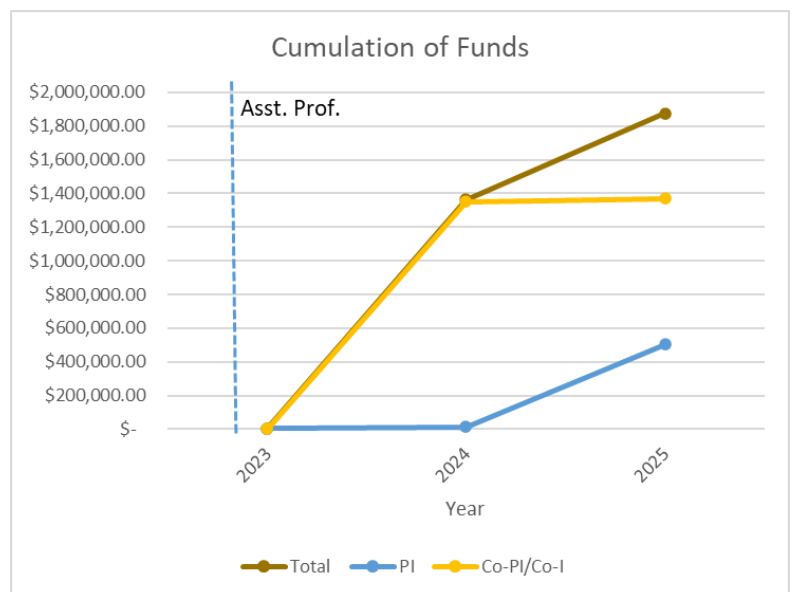
University: UAH

📅 Period of Performance

📅 Contract/Sponsor Award

📅 Funds Awarded

📅 UAH Account



Awarded as PI: \$504,398.2

G4. Digital Twin Toolbox for Mass Adoption

Manufacturing X Digital (MxD)

📅 August 2025 - August 2026



📅 2024-14


📅 \$487,398.20

📅 23552G2D3BW, 23521115901 (cost share), 23552H2D3C5 (vendor)

PI: Ana Wooley. Co-PI: Allison Ledford

G3. Digital Manufacturing
Research or Creative Experience for Undergraduates (RCEU) program at UAH

 May 2025 - August 2025  \$4,000.00



 Paid directly to the student

PI: Ana Wooley

G2. Strategies for Integrating Digital Engineering Concepts into Engineering Programs

New Faculty Research Award from UAH

 July 2024 - July 2026  \$10,000.00


 FY24 NFR Ana Wooley  235342

PI: Ana Wooley

G1. A Cyber-Physical System (CPS) approach for Industry 4.0

College of Engineering Undergraduate Research Program from UAH

 Nov 2023 - July 2024  \$3,000.00



 PI account

PI: Ana Wooley

Awarded as Co-PI: \$1,370,000

CoPI2. Center for Smart Manufacturing using AI-based Revolutionary Technologies (SMART)

National Science Foundation (NSF)



 May 2025 - May 2026  \$20,000

 2435441  00275500001 and 23657P2D3BD

PI: Judith Schneider. Co-PI: Ana Wooley, Howard Chen, Nicholas Loyd, Cheng Chen, Vineetha Menon

CoPI1. Advancements in Human-Systems Integration Analysis and Artificial Intelligence

Research or Creative Experience for Undergraduates (RCEU) program at UAH

 July 2024 - July 2027  \$1,350,000



 W911NF-24-2-0158  23552E2D2WV


PI: Bryan Mesmer. Co-PIs: Ana Wooley, Vineetha Menon, Kristin Weger, Lisa Vangsness, Hanumanthrao Kannan, Howard Chen

Startup Funding: \$350,000

ST1. Wooley Assistant Professor Startup

The University of Alabama in Huntsville

 August 2023 - August 2026  \$350,000.00

 235338

PUBLICATIONS

Journal Articles 11 Published

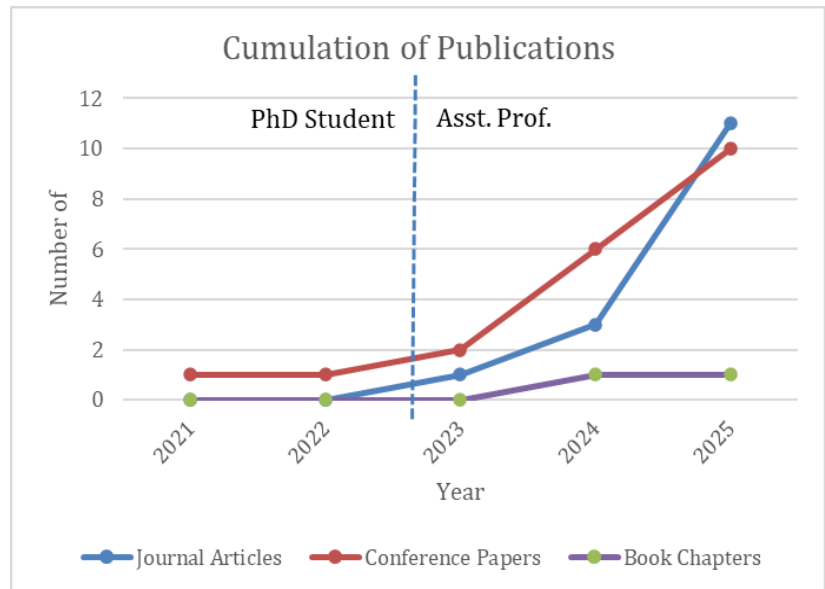
 2 In Process

International Journal of Production Research,
Journal of Computing and Information Science in
Engineering, Systems, Manufacturing Letters,
Journal of Management & Engineering Integration,
Energy Reports, Sustainable Development

Conference 10 Published

Institute of Industrial and Systems Engineers (IISE),
North American Manufacturing Research
Conference (NAMRC), Industrial Engineering and
Operations Management (IEOM), American Society
for Engineering Management (ASEM), INFORMS,
Winter Simulation Conference (WSC)

Book Chapter 1 Published



Journal Articles Published: 11

Note: Supervised students underlined

- J11. Lussier, J., Hua, E. Y., Ledford, A., Thomas, D., Van Bossuyt, D. L., & **Wooley, A.** (2025). Differentiating Between Digital Twins and Control Systems for Complex Systems. *Journal of Computing and Information Science in Engineering*, 1-52. <https://doi.org/10.1115/1.4070329>
- J10. **Wooley, A.**, & Womack, L. (2025). Digital Engineering: A Systematic Literature Review of Strategies, Components, and Implementation Challenges. *Systems*, 13(12), 1046. <https://doi.org/10.3390/systems13121046>
- J9. **Wooley, A.** (2025). Designing a digital engineering curriculum for manufacturing education: Industry-aligned course development. *Manufacturing Letters*. <https://doi.org/10.1016/j.mfglet.2025.10.001>
- J8. Click, N., **Wooley, A.**, Badger, T. (2025). Pivotal Strategy of the Circular Economy: A Five-Pillar Framework for Sustainable Transformation. *Sustainable Development*. <https://doi.org/10.1002/sd.70275>
- J7. **Wooley, A.**, Bitencourt, J., & Silva, D. (2025). Bridging the gap between discrete event simulation and digital twin: A manufacturing case study. *Manufacturing Letters*, 44, 1274-1284. <https://doi.org/10.1016/j.mfglet.2025.06.147>
- J6. Van Bossuyt, D. L., Allaire, D., Bickford, J. F., Bozada, T. A., Chen, W., Cutitta, R. P., ... **Wooley, A.**, Zeng, Z. (2025). The Future of Digital Twin Research and Development. *Journal of Computing and Information Science in Engineering*, 25(8), 080801. <https://doi.org/10.1115/1.4068082>
- J5. Tetty, A., Pham, H., Wud, D., Chen, H., **Wooley, A.** (2025). A Decision Support Framework for Electric Demand Planning in Power Distribution Systems During Extreme Temperatures. *Electric Power Systems Research*. *Energy Reports*, 11, 1137-1148. <https://doi.org/10.1016/j.egyr.2025.06.020>
- J4. Bitencourt, J., Osho, J., **Wooley, A.**, & Harris, G. (2025). Do you trust digital twins? A framework to support the development of trusted digital twins through verification and validation. *International Journal of Production Research*, 1-21. <https://doi.org/10.1080/00207543.2025.2524516>
- J3. Bitencourt, J., **Wooley, A.**, & Harris, G. (2024). Verification and validation of digital twins: a systematic literature review for manufacturing applications. *International Journal of Production Research*, 63(1), 342–370. <https://doi.org/10.1080/00207543.2024.2357741>
- J2. Thomas, T., **Wooley, A.** (2024). Smart Factory integration in industrial engineering curriculum: Preparing students for industry 4.0 challenges. *Journal of Management & Engineering Integration*, 17(2), 92-99. <https://doi.org/10.62704/10057/28468>
- J1. **Wooley, A.**, Silva, D., Bitencourt, J. (2023). When is Simulation a Digital Twin? A Systematic Literature Review. *Manufacturing letters*. <https://doi.org/10.1016/j.mfglet.2023.08.014>

Journal Articles In Process: 2

Note: Supervised students underlined

1. Santos, C., **Wooley, A.**, Romano, A. Digital Twins in Sustainability Initiatives: a Review from Life Cycle Assessment Perspective. *IEEE Access*. (Submitted Fall 2025)
2. **Wooley, A.**, Dimson, G., Bitencourt, J. Digital Twins Across Domains: A Cross-Industry Umbrella Review of Systematic Literature Reviews. *Systems Engineering*. (Submitted Summer 2025)

Conference Publications: 10

Note: Supervised students underlined

- C.10 Schrimpscher, V.A., Pham, H., **Wooley, A.**, Gholston, S., Tetty, A. (2025). Tracking the Unseen: Autonomous Multi-object Motion Analysis in Complex Environments. In: Florez, H., Rabelo, L., Diaz, C. (eds) Industrial Engineering and Operations Management. IEOM-CS 2025. Communications in Computer and Information Science, vol 2557. Springer, Cham. https://doi.org/10.1007/978-3-031-98235-4_8
- C9. Schrimpscher, V.A., Pham, H., **Wooley, A.**, Gholston, S., Tetty, A. (2025). Bridging the Black Box: Data Mining Enhanced Machine Learning Interpretability for Exoplanet Discovery. In: Florez, H., Rabelo, L., Diaz, C. (eds) Industrial Engineering and Operations Management. IEOM-CS 2025. Communications in Computer and Information Science, vol 2557. Springer, Cham. https://doi.org/10.1007/978-3-031-98235-4_18
- C8. Schrimpscher, A., Pham, H., **Wooley, A.**, Tetty, A. (2025). Anticipatory Systems in Supply Chain Management: The Role of Artificial Intelligence and Predictive Analytics. *American Society for Engineering Management (ASEM) 2025 International Annual Conference*, September 24-27, 2025.
- C7. Schrimpscher, A., Pham, H., **Wooley, A.**, Tetty, A. (2025). Strategic Responses to Disruption in Supply Chains: Introducing a Hierarchical Model of Robustness, Resilience, Adaptability, and Antifragility. *American Society for Engineering Management (ASEM) 2025 International Annual Conference*, September 24-27, 2025.
- C6. Hudson, M., Pham, H., Tan, Yi., **Wooley, A.** (2024). Large language models to improve defense acquisition. *INFORMS Annual Meeting Conference*, Seattle, WA, October 20-23, 2023.
- C5. Schrimpscher, A., Pham, H., Gholston, S., **Wooley, A.**, Tetty, A. (2024). Antifragile in Supply Chains: Unveiling Enablers for Resilience Enhancement. *American Society for Engineering Management (ASEM) 2024 International Annual Conference*, Virginia Beach, VA, November 6-9, 2024.
- C4. Campo, K., Kacerek, E., Allen, J., **Wooley, A.** (2024). Digital Aggregation of a Digital Thread: A systematic Literature Review. *American Society for Engineering Management (ASEM) 2024 International Annual Conference*, Virginia Beach, VA, November 6-9, 2024.
- C3. Honcak, R., **Wooley, A.** A MBSE approach for Virtual Verification & Validation of E-Drives with Digital Twins. (2024). *1st International Conference on Engineering Digital Twins (EDTconf 2024)*, Linz, Austria, September 23-24.
- C2. Bitencourt, J., Osho, J., Harris, G., Purdy, G., **Moreira, A.** (2023). Building Trust in Digital Twin through Verification and Validation. In *Proceedings of the 2023 Institute of Industrial and Systems Engineers (IISE) Conference*.
- C1. **Moreira, A. C. M.**, Silva, D. (2021). Applying Discrete-Event Simulation and Value Stream Mapping to Reduce Waste in an Automotive Engine Manufacturing Plant. *2021 Winter Simulation Conference (WSC)*, Phoenix, AZ, USA, pp. 1-12, doi: [10.1109/WSC52266.2021.9715477](https://doi.org/10.1109/WSC52266.2021.9715477)

Book Chapter: 1

- B1. **Wooley, A.**, & Silva, D. F. (2024). Contrasting Capabilities: A Comparative Analysis of Simulation and Digital Twin Technologies. In *Digital Twins, Simulation, and the Metaverse: Driving Efficiency and Effectiveness in the Physical World through Simulation in the Virtual Worlds* (pp. 33-49). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-69107-2_2

PRESENTATIONS

Conference

 **15 Presented**

The Reliability, Availability, and Maintainability (RAM), Space & Missile Defense (SMD) Symposium, Institute of Industrial and Systems Engineers (IISE), MBSE Symposium, Engineering & Management Systems (IEMS) North American Manufacturing Research Conference (NAMRC), INFORMS, Winter Simulation Conference (WSC), Auburn Research Showcase

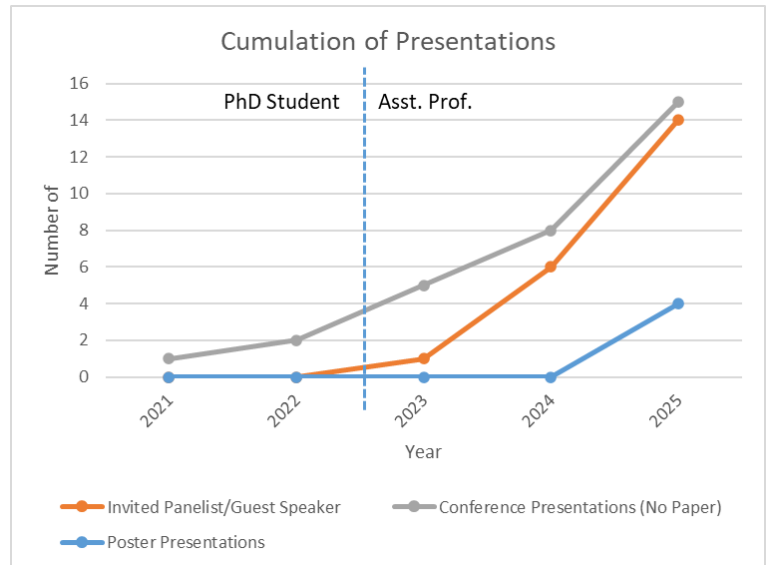
Poster

 **4 Presented**

UAH Research Horizons, Research or Creative Experience for Undergraduates (RCEU), Von Braun Space Exploration Symposium

Invited Presentations

 **14 Presented**



Conference Presentations (no paper): 15

Note: Supervised students underlined

- PC15. Leder, S., **Wooley, A.** (2025). Leveraging Value Stream Mapping for Effective Digital Transformation. *The Reliability, Availability, and Maintainability (RAM) XVII Training Summit*. Huntsville, AL, November 5-6, 2025.
- PC14. Womack, L., **Wooley, A.** (2025). Digital Engineering: A Systematic Literature Review of Strategies, Components, and Implementation Challenges Post-2018 DoD Strategy. *The Reliability, Availability, and Maintainability (RAM) XVII Training Summit*. Huntsville, AL, November 5-6, 2025.
- PC13. Womack, L., **Wooley, A.** (2025). Digital Engineering: A Systematic Literature Review of Strategies, Components, and Implementation Challenges Post-2018 DoD Strategy. *Space & Missile Defense (SMD) Symposium*. Huntsville, AL, August 5-7, 2025.
- PC12. SureshKumar, M., Johnson, H., Kannan, H., **Wooley, A.**, Thomas, L. (2025). Ensuring Semantic Consistency in Digital Twin Composition: An Ontology-Based Approach. *Space & Missile Defense (SMD) Symposium*. Huntsville, AL, August 5-7, 2025.
- PC11. SureshKumar, M., Johnson, H., Kannan, H., **Wooley, A.**, Thomas, L. (2025). Ensuring Semantic Consistency in Digital Twin Composition: An Ontology-Based Approach. *Space and Missile Defense Symposium*, Huntsville, AL, August 11–13, 2025.
- PC10. Leder, S., **Wooley, A.** (2025). Leveraging Value Stream Mapping for Effective Digital Transformation. *Institute of Industrial and Systems Engineering (IISE) Annual Conference*, May 31–June 3, 2025.
- PC9. SureshKumar, M., Johnson, H., Kannan, H., **Wooley, A.**, Thomas, L. (2025). A Formal Ontological Framework for Composing Heterogeneous Digital Twin Models. *MBSE Symposium 2025*, Huntsville, AL, May 21–22, 2025.
- PC8. **Wooley, A.**, Silva, D. (2024). Simulation and Digital Twin: Bridging the Gap. *Institute of Industrial and Systems Engineering (IISE) Annual Conference*, Montreal, Canada, May 18–21.
- PC7. **Wooley, A.**, Thomas, T. (2024). Enhancing Industrial & Systems Engineering Education with Smart Factory CPS Integration. *Institute of Industrial and Systems Engineers (IISE) Annual Conference*, Montreal, Canada, May 18-21, 2024.
- PC6. **Wooley, A.**, Thomas, T. (2024). Enhancing Industrial & Systems Engineering Education with Smart Factory CPS Integration. *Industry, Engineering & Management Systems (IEMS) Conference*, Orlando, FL, March 3–5 (Virtual), 2024.
- PC5. **Wooley, A.** (2023). Simulation and Digital Twin: Bridging the Gap. *INFORMS Annual Meeting*, Phoenix, AZ, October 15–18, 2023.
- PC4. **Wooley, A.** (2023). When Is a Simulation a Digital Twin? A Systematic Literature Review. *Institute of Industrial and Systems Engineering (IISE) Annual Conference*, New Orleans, LA, May 20–23, 2023.

- PC3. **Wooley, A.** (2023). When Is a Simulation a Digital Twin? A Systematic Literature Review. *Auburn Research Showcase*, Huntsville, AL, March 23, 2023.
- PC2. **Wooley, A.** (2022). Applying Discrete-Event Simulation and Value Stream Mapping to Reduce Waste in an Automotive Engine Manufacturing Plant. *Auburn Research Showcase*, Huntsville, AL, March 29, 2022.
- PC1. **Wooley, A.** (2021). Applying Discrete-Event Simulation and Value Stream Mapping to Reduce Waste in an Automotive Engine Manufacturing Plant. *Winter Simulation Conference Doctorial Colloquium*, Phoenix, AR, December 13-15, 2021.

Poster Presentations: 4

Note: Supervised students underlined

- B4. Womack, L., **Wooley, A.** (2025). DTAF: Digital Twin Analytical Framework. *Von Braun Space Exploration Symposium*, Huntsville, AL, October 27–28, 2025.
- B3. Rodgers, S., **Wooley, A.** (2025). Digital Manufacturing: Integrating Load Cell Sensors into a Manual Assembly Line. *UAH Summer Community of Scholars (SCS) event of Research or Creative Experience for Undergraduates (RCEU)*. Huntsville, AL. September 25, 2025. *Second place winner
- B2. Campo, K., Kacerek, E., **Wooley, A.** (2025). Weaving the Future: A Systematic Literature Review of Digital Thread Creation in Aerospace Systems. *UAH Research Horizons*. Huntsville, AL, March 3, 2025.
- B1. Dimson, G. **Wooley, A.** (2025). Towards a comprehensive understanding of Digital Twins: A meta-analysis of systematic literature reviews. *UAH Research Horizons*. Huntsville, AL, March 3, 2025.

Invited Presentations: 14

(Panelist and Guest speaker)

- I14. **Wooley, A.** (2025). Invited speaker, Human Machine Systems Design Class. Lecture on digital twin research for psychology-focused applications. *University of Alabama in Huntsville*, Huntsville, AL, October 21, 2025.
- I13. **Wooley, A.** (2025). Invited speaker, Introduction to Industrial and Systems Engineering Class. Lecture on digital twin research and simulation components. *University of Alabama in Huntsville*, Huntsville, AL, September 28, 2025.
- I12. **Wooley, A.** (2025). Invited speaker, The Use of Artificial Intelligence in Universities in Alabama. *II Encontro Internacional sobre Competências Profissionais no Ensino Superior (II EICPES)*, Brazil, September 24, 2025.
- I11. **Wooley, A.** (2025). Invited speaker, Evolving Theory of Engineering Management/Industrial and Systems Engineering Class. Lecture on research methodologies and experiences to doctoral students. *University of Alabama in Huntsville*, Huntsville, AL, September 28, 2025.
- I10. **Wooley, A.** (2025). Invited speaker, Faculty Panel Discussion during New Faculty Orientation. *University of Alabama in Huntsville*, Huntsville, AL, August 18, 2025.
- I9. **Wooley, A.** (2025). Invited panelist, Research Methods for Exploring AI and Human-in-the-Loop Systems. *U.S. Space & Rocket Center AI Symposium*, Huntsville, AL, January 22, 2025.
- I8. **Wooley, A.** (2025). Invited speaker, Digital Twin Research Seminar. *California Polytechnic State University*, San Luis Obispo, March 10, 2025.
- I7. **Wooley, A.** (2025). Invited speaker, Computer Science Department Seminar at UAH. *University of Alabama in Huntsville*, February 17, 2025.
- I6. **Wooley, A.** (2024). Invited panelist, Women in Engineering Panel. *SRE Huntsville Chapter RAM XVI Training Summit*, Huntsville, AL, November 6, 2024.
- I5. **Wooley, A.** (2024). Invited speaker, Simulation Class. Lecture on simulation work with Honda for senior ISE Manufacturing Systems II students. *Auburn University*, Auburn, AL, February 29, 2024.
- I4. **Wooley, A.**, Greer, M., Frayret, JM., Bechard, V., Meller, R. (2024). Invited panelist, What Is the Future of Digital Twins? Perspectives from Academia and Industry. *Institute of Industrial and Systems Engineering (IISE) Annual Conference*, Montreal, Canada, May 18–21.

- I3. **Wooley, A.** (2024). Invited speaker, Webinar: When Is Simulation a Digital Twin? *Auburn University*, July 23, 2024.
- I2. **Wooley, A.** Aloisio, D. (2024). Invited panelist, Leveraging Digital Transformation and Digital Engineering to Unlock Value. *UAH Executive Summit: The Future of Work in the Digital Era*, Huntsville, AL. March 26, 2024.
- I1. **Wooley, A.** McLarney, E., Hutchinson, V., Keesing, R., Wilbur, L., (2023). Invited panelist, Digital Transformation Toolbox: Panel Talk. *Von Braun Space Exploration Symposium*, Huntsville, AL, October 25–27, 2025.

RESEARCH AREAS

- Advanced Manufacturing Systems
- Digital Manufacturing
- Continuous Improvement Methodologies and Implementation
- Simulation
- Digital Twin
- Digital Engineering

STUDENT MENTORSHIP

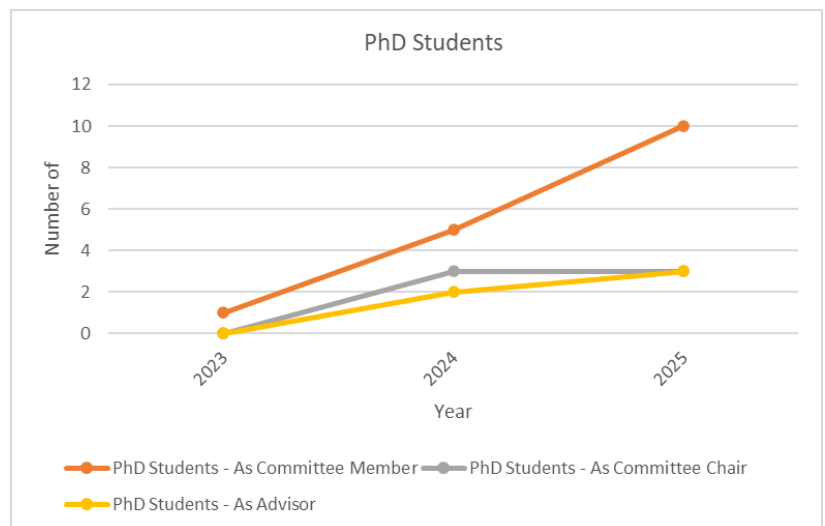
PhD Students

PhD Actively researching

- 3 PhD Students – As Primary Advisor
- 10 PhD Students – As Committee Member
- 3 PhD Students – As Committee Chair

PhD Graduated











- 1 PhD Student – As Committee Member






PhD Students as Primary Advisor – Actively Researching: 3

- | | | |
|---|-------------------------|--|
| <p>PHD1. Landon Womack-----</p> <p>Topic: Digital Twin Analytical Framework</p> <p><i>Engineering Management Program</i></p> <p>🔍 Full Time UAH Graduate Research Assistant</p> | <p>📅 MxD</p> | <p>📅 Fall 2025 – Present</p> <p>🎓 Expected Spring 2028</p> |
| <p>PHD2. Sheri Leder-----</p> <p>Topic: Systematic Approach to Digital Transformation</p> <p><i>Engineering Management Program</i></p> <p>🔍 Full Time UAH Graduate Research Assistant</p> | <p>📅 Startup, LWI</p> | <p>📅 Fall 2024 – Present</p> <p>🎓 Expected Spring 2027</p> |
| <p>PHD3. Jake Keplinger-----</p> <p>Topic: Systems Thinking approach to Digital Twins</p> <p><i>Systems Engineering Program</i></p> <p>🔍 NASA</p> | <p>📅 Company Funded</p> | <p>📅 Spring 2024 – Present</p> <p>🎓 Expected Spring 2028</p> |


PhD Student as Committee Member– Actively Researching: 10

PA10.	Gelayon Nazarmohammad----- <i>Civil and Environmental Engineering – Primary Advisor Mike Anderson</i>	 Fall 2025 – Expected Fall 2026
PA9.	Khalid Sharfi----- <i>Civil and Environmental Engineering – Primary Advisor Mike Anderson</i>	 Fall 2025 – Expected Fall 2026
PA8.	Ali Sleiman----- <i>Systems Engineering Program – Primary Advisor Nicholas Loyd</i>	 Fall 2025 – Expected Fall 2027
PA7.	Veronica Schrimsher----- <i>Engineering Management Program – Primary Advisor Hue Pham</i>	 Fall 2025 – Expected Fall 2027
PA6.	Mohammed Taufeed----- <i>Engineering Management Program – Primary Advisor Nicholas Loyd</i>	 Spring 2025 – Expected Fall 2026
PA5.	Vishwa Kumar----- <i>Engineering Management Program – Primary Advisor Nicholas Loyd</i>	 Spring 2025 – Expected Fall 2026
PA4.	Justin Brown----- <i>Engineering Management Program – Primary Advisor Nicholas Loyd</i>	 Fall 2024 – Expected Fall 2026
PA3.	Jason Parcus----- <i>Engineering Management Program – Primary Advisor Nicholas Loyd</i>	 Fall 2024 – Expected Fall 2026
PA2.	Peter Oyewale----- <i>Engineering Management Program – Primary Advisor Nicholas Loyd</i>	 Fall 2024 – Expected Fall 2027
PA1.	Michael Santelangelo----- <i>Engineering Management Program – Primary Advisor Nicholas Loyd</i>	 Fall 2024 – Expected Fall 2027

PhD Student as Committee Chair– Actively Researching: 3







PAC3.	Veronica Schrimsher----- <i>Engineering Management Program – Primary Advisor Hue Pham</i>	 Summer 2024 – Expected Fall 2027
PAC2.	Anyama Tettey----- <i>Engineering Management Program – Primary Advisor Hue Pham</i>	 Summer 2024 – Expected Fall 2028
PAC1.	Maurice Hudson----- <i>Engineering Management Program – Primary Advisor Hue Pham</i>	 Fall 2024 – Expected Fall 2028

PhD Student as Committee Member– Graduated: 1





































GS1.	Casey Eaton----- Topic: Selection and Impact of Technical Measures in Large-Scale Complex Engineered Systems Design Graduated Summer 2024 <i>Systems Engineering Program – Primary Advisor Bryan Mesmer</i>	 Fall 2023 – Summer 2024
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Undergraduate Students

Undergraduate Research as Primary Advisor – Actively Researching: 3

BA3.	Molly Keagle, <i>Industrial and Systems Engineering</i> -----  LWI	 Fall 2025 – Present
BA2.	Hannah Wiseman, <i>Industrial and Systems Engineering</i> -----  MxD	 Fall 2025 – Present
BA1.	Sarah Rodgers, <i>Industrial and Systems Engineering</i> -----  RCEU, Startup	 Summer 2025 – Present





Undergraduate Research Assistant as Primary Advisor – Research Completed: 18

BC18.	Elizabeth Kacerek, <i>Industrial and Systems Engineering</i> -----  New Faculty Research Award UAH	 Fall 2024 – Spring 2025
BC17.	Landon Womack-----  Startup (Digital X Lab)	 Fall 2024 – Spring 2025
BC16.	Colin Holt, <i>Industrial and Systems Engineering</i> -----  Startup (Digital X Lab)	 Fall 2024 – Spring 2025
BC15.	Laurn Worthington, <i>Industrial and Systems Engineering</i> -----  Startup (Digital X Lab)	 Fall 2024 – Spring 2025
BC14.	Taylor Painter, <i>Industrial and Systems Engineering</i> -----  Startup (Digital X Lab)	 Fall 2024 – Spring 2025
BC13.	Matthew Allmon, <i>Mechanical and Aerospace Engineering</i> -----  Startup (Digital X Lab)	 Fall 2024 – Spring 2025
BC12.	Jackson O'Connor, <i>Information Systems</i> -----  Startup (Digital X Lab)	 Fall 2024 – Spring 2025
BC11.	Kylon Cryer, <i>Industrial and Systems Engineering</i> -----  Startup (Digital X Lab)	 Fall 2024 – Fall 2024
BC10.	Maia Toro, <i>Industrial and Systems Engineering</i> -----  Startup (Digital X Lab)	 Fall 2024 – Fall 2024
BC9.	Rayden Gray, <i>Industrial and Systems Engineering</i> -----  Startup (Digital X Lab)	 Fall 2024 – Fall 2024
BC8.	Rebecca Phillips, <i>Industrial and Systems Engineering</i> -----  Startup (Digital X Lab)	 Fall 2024 – Fall 2024
BC7.	Eliza Wilson, <i>Industrial and Systems Engineering</i> ----- -  Startup (Digital X Lab)	 Fall 2024 – Fall 2024
BC6.	Astin Starr, <i>Industrial and Systems Engineering</i> -----  Startup (Digital X Lab)	 Fall 2024 – Fall 2024
BC5.	Paul Johns, <i>Electrical and Computer Engineering</i> -----  Startup (Digital X Lab)	 Fall 2024 – Fall 2024
BC4.	Ikechukwu Sunny-Odio, <i>Mechanical and Aerospace Engineering</i> -----  Startup (Digital X Lab)	 Fall 2024 – Fall 2024
BC3.	Catherine Baggett, <i>Industrial and Systems Engineering</i> -----  Startup (Digital X Lab)	 Fall 2024 – Fall 2024
BC2.	Garrett Dimson, <i>Industrial and Systems Engineering</i> -----  Startup (Digital X Lab)	 Fall 2023 – Spring 2025
BC1.	Tyler Thomas, <i>Industrial and Systems Engineering</i> -----  UAH COE Undergraduate Research Program	 Fall 2023 – Fall 2024



SERVICE

UAH University Service




Search Committees: 4

ISEEM Industrial Engineering Assistant Professor: Committee Member	 Fall 2025 – Current
ISEEM Department Chair: Committee Member	 Fall 2024 – Summer 2025
CEE Civil Engineering Assistant Professor: Committee Member	 Spring 2024 – Summer 2024
ISEEM Systems Engineering Assistant Professor: Committee Member	 Fall 2023 – Summer 2024



University Committees: 2

Dean Reappointment Committee: Committee Member	 Spring 2025 - Summer 2025
Student Conduct Board: Member	 Fall 2023 – Fall 2025




















ISEEM Department Representative: 3

Assessment 101 for Academic Program Training Workshop: Representative	 Fall 2025 – Current
ABET Representative: Representative	 Fall 2025 – Current
Undergraduate Committee Member: Representative	 Fall 2024 – Current

Student Chapter Advisor: 2

Institute of Industrial and Systems Engineering Student Chapter: Advisor	 Spring 2024 – Current
Society of Women Engineering Student chapter: Advisor	 Spring 2024 – Current

College and University Events: 19

2025 SCS RCEU Poster Session at UAH: Volunteer	 September 2025
2025 Welcome Back Video for Instagram for COE: Volunteer	 August 2025
2025 COE Welcome Back Event: Volunteer	 August 2025
2025 Welcome Back Graduate Luncheon: Volunteer	 August 2025
2025 Research Horizons Poster Judge: Volunteer	 March 2025
2025 Research Horizons – Digital X Lab Demo: Volunteer	 March 2025
2025 UAH Graduate Poster Judge: Volunteer	 March 2025
2025 Engineering Week (E-Week) Poster session: Volunteer	 February 2025
2024 FYE 101E Engineering Grand Challenge Poster session: Volunteer	 August 2024
2024 FYE 101E-Engineering Instant Challenge Celebrity Judge: Volunteer	 August 2024
2024 Rocket City INCOSE Student Division Resume Workshop: Volunteer	 September 2024
2024 MAE Faculty Candidates – Lunch interview: Volunteer	 March 2024
2024 Rocket City INCOSE Student Chapter Resume Workshop: Volunteer	 March 2024
2024 Rocket City INCOSE Student Chapter Mock Interview: Volunteer	 March 2024
2023 Discovery Days: Volunteer	 November 2023
2023 FYE 101E Instant Challenge Celebrity Judge: Volunteer Judge	 August 2023
2023 FYE 101E Engineering Grand Challenge Poster session: Volunteer	 August 2023
2023 Welcome event to COE students (WOW event): Volunteer Judge	 August 2023
2023 Convocation Event: Volunteer	 August 2023

Journal Reviewer and Guest Editor: 3

- MDPI Systems (Fall 2025 – Present)
- Co-Guest Editor for MDPI Systems Journal Special Issue on Digital Engineering (Spring 25 – Current)
- International Journal of Production Research (Spring 2025 – Present)

Conference Session Chair: 3

- Session Chair – Digital Twin Session at NAMRC 54, Greenville, South Carolina, June 2024
- Session Chair – Institute of Industrial and Systems Engineering (IISE) Annual Conference, Montreal, Canada. May 2024.
- Session Chair – Winter Simulation Conference, Phoenix, AR, December 13-15, 2021.










Conference Paper Reviewer: 5

- CSER 2026 Conference
- NAMRC 2025 Conference
- IISE 2025 Conference
- NAMRC 2024 Conference
- IISE 2024 Conference

Professional Community Service: 1

- Reviewer of the online customer portal of Simio (Simulation software used in my class ISE 447/547) (Fall 2024)

Workshop Participation: 9

- National Science Foundation (NSF)
 - Workshop for early-career faculty: DCC CAREER Mock-up Panels. NSF, CMMI division, Virtual  Spring 2025
 - DOE-NSF Workshop on Digital Twins for Manufacturing. Virtual.  Fall 2024
 - Engineering EPSCoR Engagement Convocation Workshop, Alexandria, VA.  Summer 2024
 - NSF Engineering CAREER Proposal Workshop, Virtual. Spring 2024  Spring 2024
- UAH
 - NSF CAREER Workshop. Hosted by Office of Program Development at UAH. Huntsville, AL.  Summer 2024
 - Strategy and Tactics for Writing Winning Grant Proposals Workshop. Hosted by Office of Program Development at UAH. Huntsville, AL.  Summer 2024
- Others
 - In-Space Servicing, Assembly, and Manufacturing (ISAM) road mapping Workshop, Hosted by NIST Manufacturing USA Technology Roadmap (MfgTech) Program. Huntsville, AL  Fall 2023
 - PI Intensive for New Faculty and Researchers: Building the Tools for Your Career in Research. Research Administrators International (SRA International), Seattle, WA.  Fall 2023
 - New Faculty Colloquium (NFC) at INFORMS Annual Meeting, Phoenix, AR.  Fall 2023

PROFESSIONAL SOCIETIES

- PS5. **Society of Manufacturing Engineers (SME)**----- 📅 Fall 2024 - Current
📄 Regular Member
Reviewer:
 - 2025 SME North American Manufacturing Research Conference (NAMRC)54.
 - 2024 SME North American Manufacturing Research Conference (NAMRC)53.**Conference Session Chair:**
 - 2025 SME NAMRC 54 – Digital Twin session, Greenville, SC
- PS4. **Institute of Industrial and Systems Engineering (IISE)**----- 📅 Spring 2024 – Current
📄 Regular Member
Reviewer:
 - 2024 Institute of Industrial and Systems Engineers (IISE) Conference.
 - 2023 Institute of Industrial and Systems Engineers (IISE) Conference.**Conference Session Chair:**
 - 2025 IISE, Atlanta, GA
 - 2024 IISE, Montreal, Canada**Student Group Advisor:**
 - Student Chapter at UAH, Spring 24- Current
- PS3. **Society of Women Engineers**----- 📅 Fall 2023 – Fall 2024
📄 Regular Member
Student Group Advisor:
 - Student Chapter at UAH, Spring 24- Current**Conference Attendance:**
 - 2024 SWE, Chicago, IL.
- PS2. **American Astronautical Society**----- 📅 Fall 2023 – Fall 2024
📄 Regular Member
- PS1. **INFORMS Society**----- 📅 Fall 2023 – Fall 2024
📄 Regular Member

MEDIA FEATURE

Media Feature: 5

(Website, Newspaper, Magazine Articles)

- M5. “UAH, UA receive NSF planning grant for SMART center to help manufacturers incorporate advanced tech”. October 6, 2025. <https://www.uah.edu/news/news/uah-ua-receive-nsf-planning-grant-for-smart-center-to-help-manufacturers-incorporate-advanced-tech>
- M4. “Women Advancing Manufacturing: The importance of role models, mentors and ceiling smashers”. January 10, 2025. https://www.advancedmanufacturing.org/smart-manufacturing/women-advancing-manufacturing/article_1e090bfc-cf92-11ef-8eb1-5799ac042be2.html
- M3. “Meet the Professor | Dr. Ana Wooley - ISEEM | E-week 2024”. February 23, 2024. <https://www.youtube.com/watch?v=re7P9qWrASY>
- M2. “Recent graduates passing on ISE knowledge to students”. November 8, 2023. <https://www.eng.auburn.edu/news/2023/11/recent-graduates-passing-on-ise-knowledge-to-students.html>
- M1. “Five new faculty members join UAH College of Engineering”. August 2, 2023. <https://www.uah.edu/eng/engineering-news/17941-five-new-faculty-members-join-uah-college-of-engineering>

AWARDS AND SCHOLARSHIP

Ana Wooley Awards

- A5. Alabama Defense Advanced Manufacturing Community Grant of \$3,000 to perform research in manufacturing
📍 Auburn University 📅 Spring 2023
- A4. IISE Annual Conference Doctoral Colloquium
📍 Institute of Industrial and Systems Engineers 📅 Summer 2023
- A3. Winter Simulation Conference (WSC) diversity award and cash prize given by INFORMS
📍 WSC 📅 Fall 2021
- A2. Honda Fellowship of \$15,000 for 3 consecutive years
📍 Honda and Auburn University 📅 Fall 2021
- A1. Scholarship of \$46,762 from the Brazilian government to study engineering abroad at Auburn University through the Science Without Borders program for 18 months
📍 Auburn University 📅 Fall 2014- Fall 2015

Advised Students Awards

- SA4. 2nd Place 2025 UAH Poster Session – RCEU Program: **Sarah Rodgers**
📍 UAH - RCEU 📅 Fall 2025
- SA3. 1st Place 2025 Graduate Student Presentation: **Landon Womack**
Womack, L., Wooley, A. (2025). Digital Engineering: A Systematic Literature Review of Strategies, Components, and Implementation Challenges Post-2018 DoD Strategy. The Reliability, Availability, and Maintainability (RAM) XVII Training Summit. Huntsville, AL, November 5-6, 2025.
📍 Society of Reliability Engineers 📅 Fall 2025 💰 \$750
- SA2. 1st Place 2025 Graduate Student Presentation: **Sheri Leder**
Leder, S., Wooley, A. (2025). Leveraging Value Stream Mapping for Effective Digital Transformation. The Reliability, Availability, and Maintainability (RAM) XVII Training Summit. Huntsville, AL, November 5-6, 2025.
📍 Society of Reliability Engineers 📅 Fall 2025 💰 \$500
- SA1. National Defense Industrial Association Missile Defense Working Group - 2025 Fellow: **Charles Maranich**
📍 NDIA 📅 Spring 2025 💰 \$5,000


















PROFESSIONAL DEVELOPMENT

Professional Development: 2

- UAH 2025 Hanover Grant Academy. Individualized proposal support and training provided by Hanover Grant Academy 📅 Spring 2025 – Current
- Mentorship Program from INFORMS 📅 Fall 2023 - Fall 2024

Conference and Symposium Attendance: 23

- The Reliability, Availability, and Maintainability (RAM) Symposium. Huntsville, AL 📅 Fall 2025
- Von Braun Symposium. Huntsville, AL. 📅 Fall 2025
- Southern Automotive Conference, Huntsville, AL. 📅 Fall 2025
- NAMRC53 Manufacturing Conference, Greenville, SC. 📅 Summer 2025
- NDIA-TVC Digital Engineering and MBSE Symposium, Huntsville, AL 📅 Summer 2025
- IISE Annual Meeting Conference 2025. Atlanta. GA. 📅 Summer 2025

- NDIA-TVC Digital Engineering and MBSE Symposium, Huntsville, AL  Summer 2025
- 2025 Space and Missile Defense Symposium, Huntsville, AL.  Summer 2025
- U.S. Space & Rocket Center AI Symposium, Huntsville, AL  Spring 2025
- Auburn Engineering Research Symposium, Huntsville, AL.  Spring 2025
- Aerospace Materials & Manufacturing Digital Summit, SAE International. Virtual.  Spring 2025
- The Reliability, Availability, and Maintainability (RAM) Symposium. Huntsville, AL  Fall 2024
- ASEM Conference 2024. Virginia, VA.  Fall 2024
- Von Braun Symposium. Huntsville, AL.  Fall 2024
- 2024 Society of Women in Engineering Conference  Fall 2024
- IISE Annual Meeting Conference 2024. Montreal, Canada.  Summer 2024
- NDIA-TVC Digital Engineering and MBSE Symposium, Huntsville, AL  Summer 2024
- AI and Cybersecurity Safeguarding Tomorrow: Ensuring Security Across Software and Hardware. Hosted by Sonatype and Carahsoft. Huntsville, AL.  Summer 2024
- UAH Executive Summit: The Future of Work in the Digital Era, Huntsville, AL.  Summer 2024
- IEMS Conference 2024. Virtual.  Spring 2024
- Making The Connection: VR and AR in Alabama. Huntsville, AL.  Fall 2023
- Von Braun Symposium. Huntsville, AL.  Fall 2023
- INFORMS 2023, Phoenix AR.  Fall 2023