# ANA WOOLEY

**Assistant Professor,** The University of Alabama in Huntsville
Department of Industrial and Systems Engineering and Engineering Management
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## 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.

**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

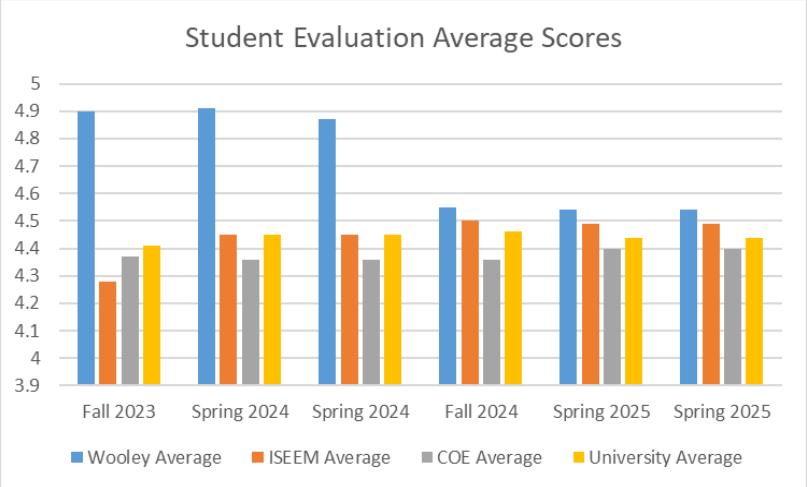
- Performed scientific research called: "Quantification of Retained Austenite in supermartensitic stainless steel by metallographic analyses" to determine the amount of retained austenite in super martensitic steel by quantitative metallography, optical scanning, and electron microscopy. Carried out Vickers micro hardness measurements and analyzed the effect of steel hardiness 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**

2024: 3
2025: 3
2023: 1

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




**The University of Alabama in Huntsville, Huntsville, AL**

**ISE 447/547 Introduction to Systems Simulation**

| | | | |
|---|---|---|---|
| Fall 2026 | Currently Teaching | | |
| Fall 2025 | Wooley SIE: **4.48**<br>Course Audience: 37 students<br>Response ratio: 84% | ISEEM Average: 4.46 | COE Average: 4.22 |
| Fall 2024 | Wooley SIE: **4.55**<br>Course Audience: 58 students<br>Response ratio: 90% | ISEEM Average: 4.50 | COE Average: 4.36 |
| Fall 2023 | Wooley SIE: **4.9**<br>Course Audience: 52 students<br>Response ratio: 54% | ISEEM Average: 4.28 | COE Average: 4.37 |

**ISE 433/533 Production and Inventory Control**

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|---|---|---|---|
| Spring 2026 | Wooley SIE: **4.55**<br>Course Audience: 23 students<br>Response ratio: 83% | ISEEM Average: 4.24 | COE Average: 4.25 |
| Spring 2025 | Wooley SIE: **4.54**<br>Course Audience: 29 students<br>Response ratio: 100% | ISEEM Average: 4.49 | COE Average: 4.40 |
| Spring 2024 | Wooley SIE: **4.91**<br>Course Audience: 40 students<br>Response ratio: 38% | ISEEM Average: 4.45 | COE Average: 4.36 |

**ISE 439/539 Digital Engineering**

| | | | |
|---|---|---|---|
| Spring 2026 | Wooley SIE: 4.51<br>Course Audience: 13 students<br>Response ratio: 90% | ISEEM Average: 4.24 | COE Average: 4.25 |
| Spring 2025 | Not enough Responses<br>Course Audience: 14 students | | |
| Spring 2024 | Wooley SIE: 4.87<br>Course Audience: 13 students<br>Response ratio: 38% | ISEEM Average: 4.45 | COE Average: 4.36 |

*Note: The offerings for 2026, 2025 and 2024 are a Special Topics class. The ISEEM department is in the process of converting this class into a required course.*

**ISE/EM 799 Doctoral Dissertation**

| | |
|---|---|
| Summer 2026 | Course Audience: 4 students |
| Spring 2026 | Course Audience: 4 students |
| Fall 2025 | Course Audience: 4 students |
| Summer 2025 | Course Audience: 2 students |
| Spring 2025 | Course Audience: 3 students |
| Fall 2024 | Course Audience: 3 students |

**Auburn University, Auburn, AL**

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

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# FUNDING

| **Total Funding: $2,127,122.20** | **Total Number of Grants: 6** | **Funding Sources:** |
|---|---|---|
| PI: $753,123.2 | PI: 4 | Government: MxD, Army, NSF, DoW, SERC |
| Co-PI: $1,373,999.00 | Co-PI: 2 | University: UAH |

**Awarded as PI: $753,123.2**

5. **Department of War – Subcontract through Systems Engineering Research Center (SERC):** Advancing the Understanding and Adoption of Digital Twins across the Department of War (WRT 2618)
   - Period of Performance: August 2026 - August 2027
   - Funds Awarded: $248.725,00 (Base: $88,540, Option: $160,185)
   - Contract/Sponsor Award: TBD
   - UAH Account: TBD
   - ***PI: Ana Wooley**. Co-PI: Bryan Mesmer (UAH)*
4. **The Digital Manufacturing and Cybersecurity Institute (MxD):** Digital Twin Toolbox for Mass Adoption
   - Period of Performance: August 2025 - August 2026
   - Funds Awarded: $487,398.20
   - Contract/Sponsor Award: 2024-14
   - UAH Account: 23552G2D3BW, 23521115901 (cost share), 23552H2D3C5 (vendor)
   - ***PI: Ana Wooley**. Co-PI: Allison Ledford (Auburn University)*
3. **Research or Creative Experience for Undergraduates (RCEU) program at UAH:** Digital Manufacturing
   - Period of Performance: May 2025 - August 2025
   - Funds Awarded: $4,000.00
   - Contract/Sponsor Award: Paid directly to the student
   - UAH Account:
   - ***PI: Ana Wooley**.*
2. **New Faculty Research Award from UAH:** Strategies for Integrating Digital Engineering Concepts into Engineering Programs
   - Period of Performance: July 2024 - July 2026
   - Funds Awarded: $10,000.00
   - Contract/Sponsor Award: FY24 NFR Ana Wooley
   - UAH Account: 235342
   - ***PI: Ana Wooley***
1. **College of Engineering Undergraduate Research Program from UAH**: A Cyber-Physical System (CPS) approach for Industry 4.0
   - Period of Performance: Nov 2023 - July 2024
   - Funds Awarded: $3,000.00
   - UAH Account: PI account
   - ***PI: Ana Wooley***

**Awarded as Co-PI: $1,373,999**

2. **National Science Foundation (NSF):** Center for Smart Manufacturing using AI-based Revolutionary Technologies (SMART)
   - Period of Performance: May 2025 - May 2026
   - Funds Awarded: $23,999
   - Contract/Sponsor Award: 00275500001 and 23657P2D3BD
   - UAH Account: 2435441
   - *PI: Judith Schneider. **Co-PI: Ana Wooley**, Howard Chen, Nicholas Loyd, Cheng Chen, Vineetha Menon*

1. **Department of the Army:** Advancements in Human-Systems Integration Analysis and Artificial Intelligence

   Period of Performance: July 2024 - July 2027

   Funds Awarded: $1,350,000

   Contract/Sponsor Award: W911NF-24-2-0158

   UAH Account: 23552E2D2WV

   *PI: Bryan Mesmer.* ***Co-PIs: Ana Wooley,*** *Vineetha Menon, Kristin Weger, Rao Kannan, Howard Chen*

**Startup Funding: $350,000**

1. **The University of Alabama in Huntsville:** Wooley Assistant Professor Startup

   Period of Performance: August 2023 - August 2026 – Extended until Spring 2027

   Funds Awarded: $350,000.00

   UAH Account: 235338

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# PUBLICATIONS

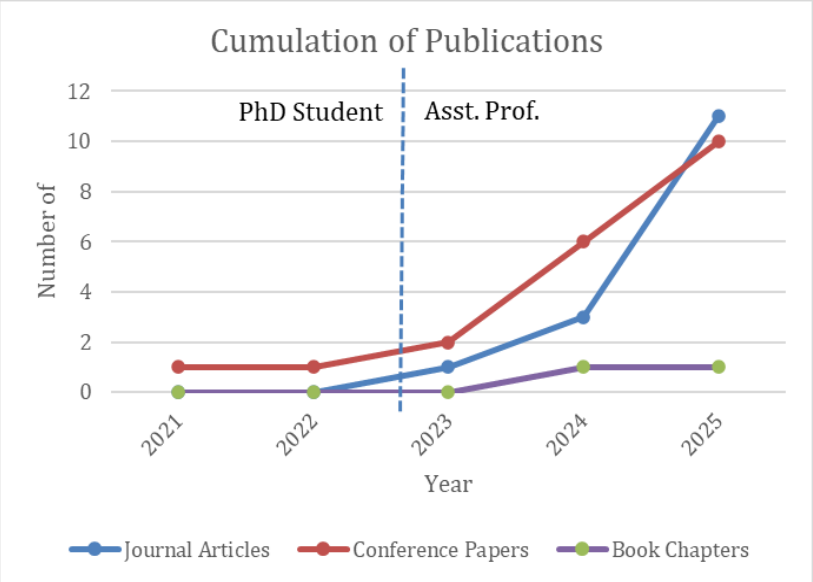
**Journal Articles** **14 Published**

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** **14 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), Conference on Systems Engineering Research (CSER)

**Book Chapter** **1 Published**




**Journal Articles Published: 14**

*Note: Supervised students underlined*

14. Womack, L., **Wooley, A.**, Ledford, A. Bitencourt, J. (2026 DTAF: A Path Toward an Integrated Approach for Digital Twin Adoption. *Manufacturing Letters*, *49*, 1249-1262, October 2026. https://doi.org/10.1016/j.mfglet.2026.08.032
13. **Wooley, A.**, Dimson, G., Bitencourt, J. (2026) Digital Twins Across Domains: A Cross-Industry Umbrella Review of Systematic Literature Reviews. *Systems Engineering,* February 2026. https://doi.org/10.1002/sys.70049Digital Object Identifier (DOI)
12. Dos Santos, C. H., **Wooley, A.**, & Romano, A. L. (2026). Digital Twins in Sustainability Initiatives: A Review From Life Cycle Assessment Perspective. *IEEE Access*, 14, 7062-7078, January 2026. doi: 10.1109/ACCESS.2026.3652173.
11. 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, December 2025. https://doi.org/10.1115/1.4070329
10. **Wooley, A**. (2025). Designing a digital engineering curriculum for manufacturing education: Industry-aligned course development. *Manufacturing Letters*, December 2025 https://doi.org/10.1016/j.mfglet.2025.10.001
9. **Wooley, A.**, & Womack, L. (2025). Digital Engineering: A Systematic Literature Review of Strategies, Components, and Implementation Challenges. *Systems*, *13*(12), 1046, November 2025. https://doi.org/10.3390/systems13121046

8. Click, N., **Wooley, A.,** Badger, T. (2025). Pivotal Strategy of the Circular Economy: A Five-Pillar Framework for Sustainable Transformation. *Sustainable Development*, no. 1: 457–468, September 2025 https://doi.org/10.1002/sd.70275
7. **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, August 2025. https://doi.org/10.1016/j.mfglet.2025.06.147
6. 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, April 2025. https://doi.org/10.1115/1.4068082
5. Tettey, 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, December 2025. https://doi.org/10.1016/j.egyr.2025.06.020
4. 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, July 2025. https://doi.org/10.1080/00207543.2025.2524516
3. 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, May 2024. https://doi.org/10.1080/00207543.2024.2357741
2. 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, October 2024. https://doi.org/10.62704/10057/28468
1. **Wooley, A.**, Silva, D., Bitencourt. J. (2023). When is Simulation a Digital Twin? A Systematic Literature Review. *Manufacturing letters,* August 2023. https://doi.org/10.1016/j.mfglet.2023.08.014

## Journal Articles in Process: 5

*Note: Supervised students underlined*

5. Leder, S., **Wooley, A**., Meller, R. Insights into Digital Twin Adoption and Integration Across Industrial Sectors: An Exploratory Survey. Journal of Industrial Information Integration. (In submission)
4. Tettey, A., Pham, H., **Wooley, A**. Enhancing Power System Resilience to Extreme Temperatures through Proactive Demand Planning: A Systematic Review. Applied Energy (In submission)
3. Tettey, A., Pham, H., Can, E., Schrimpsher, V., **Wooley, A**. A Two-Stage Predictive-Prescriptive Framework for Utility-Scale Battery Energy Storage Systems Peak Shaving. Computers & Industrial Engineering. (In submission)
2. Schrimpsher, V., Pham, H., Patnayakuni, R., Tettey, A., Wooley, A. Reconstructing Antifragility for Supply Chain Research: A Mechanism-Based Framework and Systematic Review. Transportation Research Part E. (In Submission)
1. Schrimpsher, V., Pham, H., Yildizbasi, A., **Wooley, A**. Strategic Antifragile Architectures for Autonomous Supply Chain Systems: A Framework for Volatility Governance. Transactions on Engineering Management (In Submission)

## Conference Publications: 14

*Note: Supervised students underlined*

14. Leder, S., **Wooley, A**., Loyd, N. (2026). Synthesizing Barriers to Digital Transformation: An Umbrella Review and Comparative Framework with Lean Transformation. *Institute of Industrial and Systems Engineering (IISE) Annual Conference*. Arlington, TX, May 16-19, 2026.
13. Sleiman, A., Mesmer, B., Loyd, N., Eaton, C., **Wooley, A**. (2026). Lifecycle-Integrated Digital Twin Verification: A Dual-Axis Evaluation Framework Using the Validation Fidelity Ladder (VFL) and Integration Maturity Model (IM2). *Conference on Systems Engineering Research (CSER).* Arlington, VA, April 6-9, 2026.
12. Womack, L., **Wooley, A.,** Bitencourt, J. (2026). A Capability-Based Verification and Validation Study of an Additive Manufacturing Digital Twin. *Conference on Systems Engineering Research (CSER).* Arlington, VA, April 6-9, 2026.
11. Bitencourt, J., **Wooley, A**., Harris, G. (2026). Uncertainty Quantification in Digital Twins: A Metric of Trust to Support Decision Making. *Conference on Systems Engineering Research (CSER).* Arlington, VA, April 6-9, 2026.

10. Schrimpsher, V.A., Pham, H., **Wooley, A**., Gholston, S., Tettey, 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. August 2025, Springer, Cham. https://doi.org/10.1007/978-3-031-98235-4_8
9. Schrimpsher, V.A., Pham, H., **Wooley, A**., Gholston, S., Tettey, 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. August 2025, Springer, Cham. https://doi.org/10.1007/978-3-031-98235-4_18
8. Schrimpsher, A., Pham, H., **Wooley, A.,** Tettey, 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.
7. Schrimpsher, A., Pham, H., **Wooley, A.,** Tettey, 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.
6. 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.
5. Schrimpsher, A., Pham, H., Gholston, S., **Wooley, A.,** Tettey, 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.
4. 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.
3. 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.
2. 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*.
1. **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

## Book Chapter: 1

1. **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

## Conferences Submitted – Not presented yet

*Note: Supervised students underlined*

1. Keplinger, J. SureshKumar, M., **Wooley, A.,** Kannan, H. (2027). Toward a Formal Theory of Information Propagation in Digital Twins. *AIAA SciTech*. Orlando, Florida. January 11-15.
2. Farhadi, P., Echeverry, M., Weger, K., **Wooley, A**., Loyd, N. (2026). Lean Leadership Attributes for Digital Transformation. *American Society for Engineering Management (ASEM) 2026 International Annual Conference*, Madison, WI, October 7-10, 2026.

# PRESENTATIONS

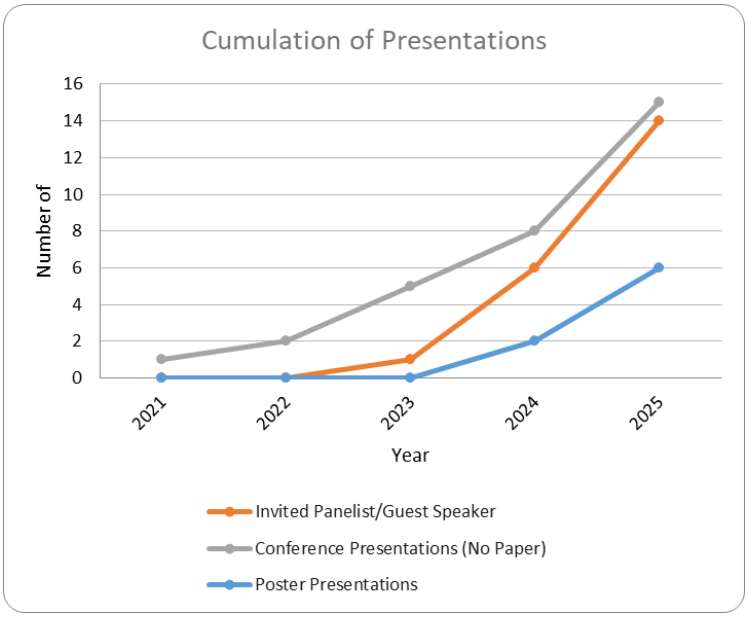
### Conference — 20 Presented

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 — 15 Presented

*UAH Research Horizons, Research or Creative Experience for Undergraduates (RCEU), Von Braun Space Exploration Symposium, UAH Graduate Poster Session, UAH Engineering Week, AI4SE SERC Workshop*

### Invited Presentations — 16 Presented




**Conference Presentations (no paper): 20**

*Note: Supervised students underlined*

20. Womack, L., **Wooley, A**. (2026). Digital Twin Analytical Framework AI: Turning Digital Twin Intent into a Traceable Roadmap. *The Reliability, Availability, and Maintainability (RAM) XVIII Training Summit.* Huntsville, AL, September 2026
19. Leder, S., **Wooley, A**. (2026). Digital Twins for AI/ML Training and Testing in Reliability-Critical Systems. *The Reliability, Availability, and Maintainability (RAM) XVIII Training Summit.* Huntsville, AL, September 2026
18. Womack, L. **Wooley, A**., Ledford, A., Bitencourt, J. (2026). DTAF: A Path Toward an Integrated Approach for Digital Twin Adoption. 54th SME North American Manufacturing Research Conference (NAMRC 54 2026). State College, PA. June 14-18, 2026.
17. Womack, L., Thomas, K., **Wooley, A.** Ledford, A., Bitencourt, J. (2026). Operationalizing a Digital Twin Analytical Framework. *MBSE Symposium*. Huntsville, AL, June 8-10, 2026.
16. Womack, L., **Wooley, A.** Ledford, A., Bitencourt, J. (2026). A path towards an integrated analytical framework for Digital Twins. *Institute of Industrial and Systems Engineering (IISE) Annual Conference*. Arlington, TX, May 16-19, 2026.
15. Thomas, K., Tran, C., Womack, L., Wisehart, H., Andrews, E., **Wooley, A.,** Ledford, A., Bitencourt, J. (2026). Strategic roadmap for DT adoption: Digital Twin Analytical Framework (DTAF). *3D CIC (Collaboration and Interoperability Congress).* Golden, CO, March 2-4, 2026.
14. 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.
13. 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.
12. 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.
11. 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.
10. 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.

9. 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.
8. **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.
7. **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.
6. **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.
5. **Wooley, A.** (2023). Simulation and Digital Twin: Bridging the Gap. *INFORMS Annual Meeting*, Phoenix, AZ, October 15–18, 2023.
4. **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.
3. **Wooley, A.** (2023). When Is a Simulation a Digital Twin? A Systematic Literature Review. *Auburn Research Showcase*, Huntsville, AL, March 23, 2023.
2. **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.
1. **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: 15**

*Note: Supervised students underlined*

15. **Wooley, A**. Leder, S. (2026). Digital Twins for AI/ML Training and Testing: A systematic Review. *AI4SE & SE4AI Research and Application Workshop 2026.* Washington, DC. September 22-23, 2026
14. Keplinger, J., SureshKumar, M., Kannan, H., Thomas, D., **Wooley, A.** (2026). Toward a Formal Theory of Information Propagation in Digital Twins. *MBSE Symposium*. Huntsville, AL, June 8-10, 2026.
13. Leder, S., **Wooley, A.** (2026). Guiding Industry 4.0 Technology Selection for Digital Transformation. *UAH Graduate Poster Session.* Huntsville, AL, March 24th, 2026.
12. Womack, L., **Wooley, A.** (2026). DTAF AI Agent: Operationalizing a Digital Twin Analytical Framework. *UAH Graduate Poster Session.* Huntsville, AL, March 24th, 2026.
11. Andrews, E., Thomas, K., Tran, C., Womack, L., Wisehart, H., Ledford, A., **Wooley, A.,** Bitencourt, J., Schall, M., Miller, S. (2026). Digital Twin Analytical Framework (DTAF). *Defense Industrial Base Digital Engineering Summit.* Auburn, AL, March 2-4, 2026.
10. Rodgers, S., **Wooley, A**. (2026). Digital Manufacturing: Integrating Load Cell Sensors into a Manual Assembly Line. *UAH Research Horizons*, Huntsville, AL, March 3, 2026.
9. Wisehart, H. **Wooley, A.** (2026). Digital Twin Analytical Framework. *UAH Research Horizons*, Huntsville, AL, March 3, 2026.
8. Keagle, M., **Wooley, A.** (2026). Exploring how AI Testing and Training can benefit from the use of Digital Twins. *UAH Research Horizons*, Huntsville, AL, March 3, 2026.
7. Wisehart, H. **Wooley, A.** (2026). Digital Twin Analytical Framework. *UAH Engineering Week*, Huntsville, AL, February 24, 2026.
6. Womack, L., **Wooley, A.** (2025). DTAF: Digital Twin Analytical Framework. V*on Braun Space Exploration Symposium*, Huntsville, AL, October 27–28, 2025.
5. 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
4. 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.

3. 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.
2. Campo, K., Kacerek, E., **Wooley, A.** (2024). Weaving the Future: A Systematic Literature Review of Digital Thread Creation in Aerospace Systems. V*on Braun Space Exploration Symposium.* Huntsville, AL, October 28-30, 2024.
1. Dimson, G. **Wooley, A**. (2024). Comprehensive understanding of Digital Twins: A meta-analysis of systematic literature reviews. V*on Braun Space Exploration Symposium.* Huntsville, AL, October 28-30, 2024.

**Invited Presentations: 15**

*(Panelist and Guest speaker)*

15. **Wooley, A**. (2026). Invited speaker, ISE 761 Class. Lecture on research methods and PhD process. *University of Alabama in Huntsville*, Huntsville, AL, January 27, 2026.
14. **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.
13. **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.
12. **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.
11. **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.
10. **Wooley, A**. (2025). Invited panelist, Faculty Panel Discussion during New Faculty Orientation. *University of Alabama in Huntsville*, Huntsville, AL, August 18, 2025.
9. **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.
8. **Wooley, A.** (2025). Invited speaker, Digital Twin Research Seminar. *California Polytechnic State University,* San Luis Obispo, March 10, 2025.
7. **Wooley, A.** (2025). Invited speaker, Computer Science Department Seminar at UAH. *University of Alabama in Huntsville*, February 17, 2025.
6. **Wooley, A.** (2024). Invited panelist, Women in Engineering Panel. *SRE Huntsville Chapter RAM XVI Training Summit*, Huntsville, AL, November 6, 2024.
5. **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.
4. **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.
3. **Wooley, A.** (2024). Invited speaker, Webinar: When Is Simulation a Digital Twin? *Auburn University*, July 23, 2024.
2. **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.
1. **Wooley,** A. McLarney, E., Hutchinson, V., Keesing, R., Wilbur, L., (2023). Invited panelist, Digital Transformation Toolbox: Panel Talk. V*on Braun Space Exploration Symposium*, Huntsville, AL, October 25–27, 2023.

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## RESEARCH AREAS

- Digital Twin
- Digital Engineering

- Digital Manufacturing
- Continuous Improvement Methodologies and Implementation
- Simulation

# STUDENT MENTORSHIP

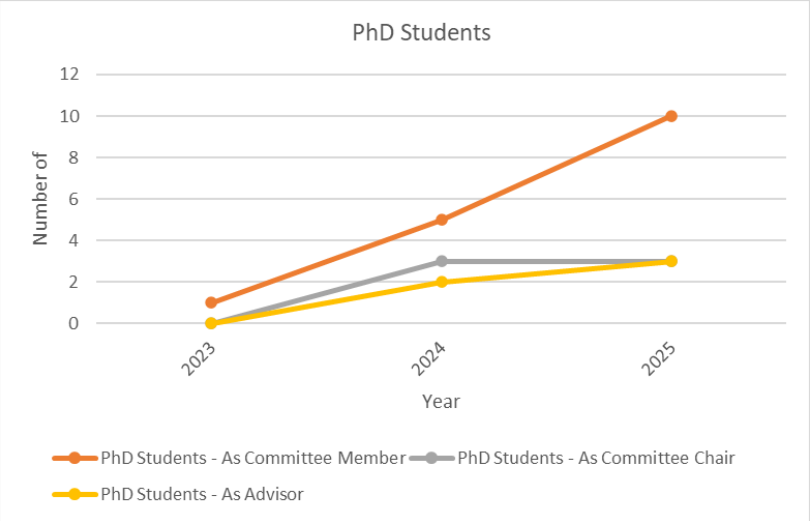
## PhD Students

### PhD Actively researching

4 PhD Students – As Primary Advisor
10 PhD Students – As Committee Member
2 PhD Students – As Committee Chair

### PhD Graduated

3 PhD Student – As Committee Member
1 PhD Student – As committee Chair




**PhD Students as Primary Advisor – Actively Researching: 4**

4. Ali Albrahim---------- Summer 2026 – Present
   Topic: Integrating Model-Based Systems Engineering and Digital Twin Technologies: A Lifecycle Framework for Validation, Integration Maturity, Proof-of-Method Implementation
   *Engineering Management Program*
   Expected Graduation: Spring 2028
   Job Position: Part time student
   Funding: Self-funded
3. Landon Womack---------- Fall 2025 – Present
   Topic: Digital Twin Analytical Framework
   *Engineering Management Program*
   Expected Graduation: Spring 2028
   Job Position: Full Time UAH Graduate Research Assistant
   Funding: MxD
2. Sheri Leder---------- Fall 2024 – Present
   Topic: Systematic Approach to Digital Transformation
   *Engineering Management Program*
   Expected Graduation Spring 2027
   Job Position: Full Time UAH Graduate Research Assistant
   Funding: Startup, LWI
1. Jake Keplinger---------- Spring 2024 – Present
   Topic: Systems Thinking approach to Digital Twins
   *Systems Engineering Program*
   Expected Graduation: Spring 2028
   Job Position: NASA
   Funding: Company Funded

**PhD Student as Committee Member– Actively Researching: 10**

10. Eman Abdou---------- Fall 2026 – Expected Fall 2028
    *Civil and Environmental Engineering – Primary Advisor Dr. Al-Hamdan*
9. Myles Scarano---------- Summer 2026 – Expected Fall 2028
    *Engineering Management Program – Primary Advisor PJ Benfield*
8. Monica Sartain---------- Spring 2026 – Expected Fall 2028
    *Engineering Management Program – Primary Advisor Nicholas Loyd*
7. Khalid Sharfi---------- Fall 2025 – Expected Fall 2026
    *Civil and Environmental Engineering – Primary Advisor Mike Anderson*
6. Veronica Schrimsher---------- Fall 2025 – Expected Fall 2027
    *Engineering Management Program – Primary Advisor Hue Pham*
5. Mohammed Taufeed---------- Spring 2025 – Expected Fall 2026
    *Engineering Management Program – Primary Advisor Nicholas Loyd*
4. Vishwa Kumar---------- Spring 2025 – Expected Fall 2026
    *Engineering Management Program – Primary Advisor Nicholas Loyd*
3. Justin Brown---------- Fall 2024 – Expected Fall 2026
    *Engineering Management Program – Primary Advisor Nicholas Loyd*
2. Jason Parcus---------- Fall 2024 – Expected Fall 2026
    *Engineering Management Program – Primary Advisor Nicholas Loyd*
1. Peter Oyewale---------- Fall 2024 – Expected Fall 2027
    *Engineering Management Program – Primary Advisor Nicholas Loyd*

**PhD Student as Committee Chair– Actively Researching: 2**

2. Veronica Schrimsher---------- Summer 2024 – Expected Fall 2027
    *Engineering Management Program – Primary Advisor Hue Pham*
1. Maurice Hudson---------- Fall 2024 – Expected Fall 2028
    *Engineering Management Program – Primary Advisor Hue Pham*

**PhD Student as Committee Member– Graduated: 3**

3. Michael Santelangelo---------- Fall 2024 – Spring 2026
    Topic: Mechanisms of Interface Formation in Bi-Metallic Components Fabricated Used Additive Manufacturing Processes
    *Mechanical and Aerospace Engineering – Primary Advisor Judith Schneider*
2. Gelayon Nazarmohammad---------- Fall 2025 – Spring 2026
    Topic: Mobility and Safety Impacts of Ending Mass Telework: Evidence from the Federal Return-to-Office mandate in Huntsville, Alabama
    *Civil and Environmental Engineering – Primary Advisor Mike Anderson*
1. Casey Eaton---------- Fall 2023 – Summer 2024
    Topic: Selection and Impact of Technical Measures in Large-Scale Complex Engineered Systems Design
    *Systems Engineering Program – Primary Advisor Bryan Mesmer*

**PhD Student as Committee Chair Only– Graduated: 1**

1. Anyama Tettey---------- Summer 2024 – Spring 2026
    Topic: A Hierarchical, Data-Driven Analytical Paradigm for Strategic Planning, Operational Decision-Making, and Resilience Enhancement in United States Electric Power Systems under Extreme Demand Conditions
    *Industrial and Systems Engineering Program – Primary Advisor Hue Pham*

## Undergraduate Students

### Undergraduate Research as Primary Advisor – Actively Researching: 2

2. Gabriella Kupski, *Industrial and Systems Engineering*---------- Fall 2026 – Present
   Startup (Digital X Lab)
1. Sarah Rodgers, *Industrial and Systems Engineering*---------- Summer 2025 – Present
   RCEU, Startup (Digital X Lab)

### Undergraduate Research Assistant as Primary Advisor – Research Completed: 21

21. Hannah Wiseman, *Industrial and Systems Engineering*---------- Fall 2025 – Summer 2026
    MxD
20. Molly Keagle, *Industrial and Systems Engineering*---------- Fall 2025 – Spring 2027
    LWI
19. Ethan Denoncourt, *Industrial and Systems Engineering*---------- Spring 2026 – Spring 2026
    Startup (Digital X Lab)
18. Elizabeth Kacerek, *Industrial and Systems Engineering*---------- Fall 2024 – Spring 2025
    New Faculty Research Award UAH
17. Landon Womack---------- Fall 2024 – Spring 2025
    Startup (Digital X Lab)
16. Colin Holt, *Industrial and Systems Engineering*---------- Fall 2024 – Spring 2025
    Startup (Digital X Lab)
15. Lauryn Worthington, *Industrial and Systems Engineering*---------- Fall 2024 – Spring 2025
    Startup (Digital X Lab)
14. Taylor Painter, *Industrial and Systems Engineering*---------- Fall 2024 – Spring 2025
    Startup (Digital X Lab)
13. Matthew Allmon, *Mechanical and Aerospace Engineering*---------- Fall 2024 – Spring 2025
    Startup (Digital X Lab)
12. Jackson O'Connor, *Information Systems*---------- Fall 2024 – Spring 2025
    Startup (Digital X Lab)
11. Kylon Cryer, *Industrial and Systems Engineering*---------- Fall 2024 – Fall 2024
    Startup (Digital X Lab)
10. Maia Toro, *Industrial and Systems Engineering*---------- Fall 2024 – Fall 2024
    Startup (Digital X Lab)
9. Rayden Gray, *Industrial and Systems Engineering*---------- Fall 2024 – Fall 2024
   Startup (Digital X Lab)
8. Rebecca Phillips, *Industrial and Systems Engineering* ---------- Fall 2024 – Fall 2024
   Startup (Digital X Lab)
7. Eliza Wilson, *Industrial and Systems Engineering*---------- Fall 2024 – Fall 2024
   Startup (Digital X Lab)
6. Astin Starr, *Industrial and Systems Engineering*---------- Fall 2024 – Fall 2024
   Startup (Digital X Lab)
5. Paul Johns, *Electrical and Computer Engineering*---------- Fall 2024 – Fall 2024
   Startup (Digital X Lab)
4. Ikechukwu Sunny-Odio, *Mechanical and Aerospace Engineering*---------- Fall 2024 – Fall 2024
   Startup (Digital X Lab)
3. Catherine Baggett, *Industrial and Systems Engineering*---------- Fall 2024 – Fall 2024
   Startup (Digital X Lab)
2. Garrett Dimson, *Industrial and Systems Engineering*---------- Fall 2023 – Spring 2025
   Startup (Digital X Lab)

1. Tyler Thomas, *Industrial and Systems Engineering*---------- Fall 2023 – Fall 2024
   UAH COE Undergraduate Research Program

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# SERVICE

## UAH University Service

### Search Committees: 4

| | |
|---|---|
| ISEEM Industrial Engineering Assistant Professor: Committee Member | Fall 2025 – Spring 2026 |
| 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 |
| ABET Representative: Representative | Fall 2025 – Current |
| Undergraduate Committee Member: Representative | Fall 2024 – Current |

### ISEEM Department Events:

| | |
|---|---|
| Guest Judge: ISE 327 (Project Management) project presentations | Spring 2026 |
| Guest Judge: ISE 428 (Senior Design) project presentations | Spring 2026 |
| Guest Judge: EM 747 (Strategic Engineering Management) project presentation | Spring 2026 |

### 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

| | |
|---|---|
| 2026 Engineering Honors Convocation: Invited Guest | March 2026 |
| 2026 UAH Graduate Poster Session: Volunteer | March 2026 |
| 2026 SACSCOC On-Site Committee Faculty Luncheon: Volunteer | March 2026 |
| 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 |

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|---|---|
| 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 |

**Professional Service**

**Journal Reviewer and Guest Editor: 5**

- Simulation Modelling Practice and Theory Journal (Spring 2026 – Present)
- INCOSE Systems Journal (January 2026 – Present)
- 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/Program Committee: 6**

- Session Chair – Institute of Industrial and Systems Engineering (IISE) Annual Conference, Arlington, TX, May 2026. My PhD student Landon Womack served as a chair.
- Program Committee – Simulation in Digital Twins track, Winter Simulation Conference (WSC), Glasgow (UK), December 6-9, 2026.
- Session Chair – Digital Twin Session at NAMRC 54, Greenville, South Carolina, June 2025
- Session Chair – Institute of Industrial and Systems Engineering (IISE) Annual Conference, Atlanta, GA, May 2025
- 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**

- WSC 2026 (Winter Simulation Conference)
- 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)

## PROFESSIONAL SOCIETIES

6. **Engineering Society of Systems Scholars (ESSyS)**---------- Fall 2026 - Current
   Regular Member

5. **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

**SME Huntsville Professional Chapter Leadership:**

- Treasurer: Spring 2025 - Current

4. **Institute of Industrial and Systems Engineering (IISE)----------** Spring 2024 – Current

Regular Member

2027 IISE Conference Track Chair, Manufacturing and Design division

**Reviewer:**

- 2024 Institute of Industrial and Systems Engineers (IISE) Conference.
- 2023 Institute of Industrial and Systems Engineers (IISE) Conference.

**Conference Session Chair:**

- 2026 IISE, Arlington, TX
- 2025 IISE, Atlanta, GA
- 2024 IISE, Montreal, Canada

**Student Group Advisor:**

- Student Chapter at UAH, Spring 24- Current

3. **Society of Women Engineers (SWE)----------** Fall 2023 – Fall 2024

Regular Member

**Student Group Advisor:**

- Student Chapter at UAH, Spring 24- Current
- The student chapter received the Society of Women Engineers FY26 Mission Recognition. Mission recognitions are for SWE Groups that embody SWE core values and demonstrate continuous improvement and growth as they work to achieve the Society's strategic goals.

**Conference Attendance:**

- 2024 SWE, Chicago, IL.

2. **American Astronautical Society----------** Fall 2023 – Fall 2024

Regular Member

1. **INFORMS Society----------** Fall 2023 – Fall 2024

Regular Member

## MEDIA FEATURE

### Media Feature: 6

*(Website, Newspaper, Magazine Articles)*

6. Interim presentation for MxD Project 24-01-07 Digital Twin Toolbox for Mass Adoption led by The University of Alabama in Huntsville (UAH), Auburn University, The Innovation Machine and MxD. This presentation showcased the application of the Digital Twin Analytical Framework (DTAF) through the implementation of an operational Digital/Physical Twin of a CNC Machining Work Cell on MxD's Factory Floor. May 28, 2026.
5. "UAH, UA receive NSF planning grant for SMART center to help manufacturers incorporate advanced tech". October 6, 2025.
4. "Women Advancing Manufacturing: The importance of role models, mentors and ceiling smashers". January 10, 2025.

3. "Meet the Professor | Dr. Ana Wooley - ISEEM | E-week 2024". UAH. February 23, 2024.
2. "Recent graduates passing on ISE knowledge to students". Auburn University. November 8, 2023.
1. "Five new faculty members join UAH College of Engineering". UAH. August 2, 2023.

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# AWARDS AND SCHOLARSHIP

### Ana Wooley Awards

5. Alabama Defense Advanced Manufacturing Community Grant of $3,000 to perform research in manufacturing
   Auburn University Spring 2023
4. IISE Annual Conference Doctoral Colloquium
   Institute of Industrial and Systems Engineers Summer 2023
3. Winter Simulation Conference (WSC) diversity award and cash prize given by INFORMS
   WSC Fall 2021
2. Honda Fellowship of $15,000 for 3 consecutive years
   Honda and Auburn University Fall 2021
1. 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

7. 3rd Place 2026 Graduate Student Presentation: **Landon Womack**
   Womack, L., **Wooley, A**. (2026). Digital Twin Analytical Framework AI: Turning Digital Twin Intent into a Traceable Roadmap. *The Reliability, Availability, and Maintainability (RAM) XVIII Training Summit.* Huntsville, AL, September 2026
   Society of Reliability Engineers Fall 2026 $500
6. 1st Place 2026 Graduate Student Presentation: **Sheri Leder**
   Leder, S., **Wooley, A**. (2026). Digital Twins for AI/ML Training and Testing in Reliability-Critical Systems. *The Reliability, Availability, and Maintainability (RAM) XVIII Training Summit.* Huntsville, AL, September 2026
   Society of Reliability Engineers Fall 2026 $1100
5. Mary Makima and Lester M. Ross, Senior, Scholarship in Engineering: **Landon Womack**
   College of Engineering at UAH Fall 2026 and Spring 2027 $5000
4. 2nd Place 2025 UAH Poster Session – RCEU Program: **Sarah Rodgers**
   UAH - RCEU Fall 2025
3. 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
2. 2nd 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
1. National Defense Industrial Association Missile Defense Working Group - 2025 Fellow: **Charles Maranich**
   NDIA Spring 2025 $5,000

# PROFESSIONAL DEVELOPMENT

**Professional Development: 2**

2. UAH 2025 Hanover Grant Academy. Individualized proposal support and training provided by Hanover Grant Academy — Spring 2025 - Spring 2026
1. Mentorship Program from INFORMS — Fall 2023 - 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
- 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
  - New Faculty Colloquium (NFC) at Institute of Industrial and Systems Engineers (IISE) Conference. Arlington, TX. — Summer 2026
  - 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

**Conference and Symposium Attendance: 31**

A31. AI4SE & SE4AI Workshop, Washington, DC — Fall 2026
A30. INCOSE US Government Summit, Washington, DC. — Fall 2026
A29. NAMRC54 Manufacturing Conference, State College, PA. — Summer 2026
A28. MBSE Symposium. Huntsville, AL — Summer 2026
A27. Institute of Industrial and Systems Engineering (IISE) Annual Conference. Arlington, TX, May 16-19, 2026. — Summer 2026
A26. Conference on Systems Engineering Research (CSER). Arlington, VA — Spring 2026
A25. NSF SMART Center Planning Meeting. Tuscaloosa, AL — Spring 2026
A24. Defense Industrial Base Digital Engineering Summit. Auburn, AL — Spring 2026
A23. The Reliability, Availability, and Maintainability (RAM) Symposium. Huntsville, AL — Fall 2025
A22. Von Braun Symposium. Huntsville, AL. — Fall 2025
A21. Southern Automotive Conference, Huntsville, AL. — Fall 2025
A20. NAMRC53 Manufacturing Conference, Greenville, SC. — Summer 2025
A19. NDIA-TVC Digital Engineering and MBSE Symposium, Huntsville, AL — Summer 2025
A18. IISE Annual Meeting Conference 2025. Atlanta. GA. — Summer 2025
A17. NDIA-TVC Digital Engineering and MBSE Symposium, Huntsville, AL — Summer 2025
A16. 2025 Space and Missile Defense Symposium, Huntsville, AL. — Summer 2025
A15. U.S. Space & Rocket Center AI Symposium, Huntsville, AL — Spring 2025

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| A14. Auburn Engineering Research Symposium, Huntsville, AL. | Spring 2025 |
| A13. Aerospace Materials & Manufacturing Digital Summit, SAE International. Virtual. | Spring 2025 |
| A12. The Reliability, Availability, and Maintainability (RAM) Symposium. Huntsville, AL | Fall 2024 |
| A11. ASEM Conference 2024. Virginia, VA. | Fall 2024 |
| A10. Von Braun Symposium. Huntsville, AL. | Fall 2024 |
| A9. 2024 Society of Women in Engineering Conference | Fall 2024 |
| A8. IISE Annual Meeting Conference 2024. Montreal, Canada. | Summer 2024 |
| A7. NDIA-TVC Digital Engineering and MBSE Symposium, Huntsville, AL | Summer 2024 |
| A6. AI and Cybersecurity Safeguarding Tomorrow: Ensuring Security Across Software and Hardware. Hosted by Sonatype and Carahsoft. Huntsville, AL. | Summer 2024 |
| A5. UAH Executive Summit: The Future of Work in the Digital Era, Huntsville, AL. | Summer 2024 |
| A4. IEMS Conference 2024. Virtual. | Spring 2024 |
| A3. Making The Connection: VR and AR in Alabama. Huntsville, AL. | Fall 2023 |
| A2. Von Braun Symposium. Huntsville, AL. | Fall 2023 |
| A1. INFORMS 2023, Phoenix AR. | Fall 2023 |