Howard Chen

5000 Technology Drive NW
Olin B. King Technology Hall Room N134
Huntsville, AL 35899

Email: howard.chen@uah.edu
Phone: (256) 824-6749

Education

2017	Ph.D.	Industrial Engineering, The University of Iowa
2012	M.S.	Industrial Engineering, The University of Iowa
2010	B.S.	Mechanical Engineering (*with Honors*), The University of Iowa

Professional and Academic Positions

2023–Present	Assistant Professor (Tenure-Track), Industrial & Systems Engineering and Engineering Management Department, College of Engineering, The University of Alabama in Huntsville
2019–2023	Assistant Research Professor, Department of Mechanical Engineering, Samuel Ginn College of Engineering, Auburn University
2017–2019	Postdoctoral Fellow, Department of Mechanical Engineering, Samuel Ginn College of Engineering, Auburn University
2013–2017	Graduate Research Assistant, Department of Occupational and Environmental Health, College of Public Health, University of Iowa
2011	Corporate Intern, Andersen Corporation, Bayport MN
2009–2013	Teaching Assistant, Department of Mechanical and Industrial Engineering, College of Engineering, University of Iowa
2008	Corporate Intern, Caterpillar Inc., Peoria IL
2007–2013	Research Assistant, University of Iowa, Mechanical and Industrial Engineering, College of Engineering, University of Iowa
2007	Engineering Intern, Natural Source Energy Systems Inc., Northbrook, IL

Honors and Awards

2017	Harvard/Liberty Mutual Postdoctoral Fellowship in Occupational Safety and Health
2013–2017	NIOSH Fellow, Heartland Education and Research Center, University of Iowa
2013	Outstanding Graduate Student- Center for Computer-aided Design
2010	Outstanding Teaching Assistant- Univ. Iowa IIE Student Chapter

Teaching Assignments (The University of Alabama in Huntsville)

ISE 391: Probability & Engineering Statistics II (Instructor- Sp25)
-Fundamentals of Data Science

ISE 439: Special Topics: Advanced Manufacturing (Instructor- Sp24)
-Advanced Ergonomics

ISE 390: Probability & Engineering Statistics I (Instructor- Sp24)
-Fundamentals of Probability and Statistics

ISE 324: Work Design (Instructor- F23, Sp24, F24, Sp25, F25)
-Fundamentals of Occupational Ergonomics, Occupational Safety, and Human Factors

ISE 429: System Analysis / Design II (Instructor- Su 23, F24, Sp25)
-Lead project for senior design

ISE 428: System Analysis / Design I (Instructor- Sp 23, Sp 24, F24)
-Lead project for senior design

Teaching Assignments (Auburn University)

MECH 6970: Software for Systems and Sensors (Instructor- Su 22, Su21, S20, S19, Co-instructor Su18)
-Instructed undergraduate and graduate Mechanical Engineering students on the basics of C++ Programming, Software repository, and Robot Operating System (ROS)
-Develop course materials and final project (new course development)

MECH 7970: Software for Biorobotics Systems (Instructor- F21)
-Instructed graduate Mechanical Engineering students on the basics of C++ Programming, Software repository, Mechatronic Systems, and Robot Operating System (ROS)
-Develop course materials and final project (new course development)

Peer-Reviewed Journal Articles

1. Hicks, H. N., **Chen, H.**, & Harper, S. A. (2025). Sensor Fusion for enhancing motion capture: Integrating optical and inertial motion capture systems. *Sensors*, *25*(15), 4680.

2. Tettey, A., Pham, H., **Chen, H.**, Wu, D., & Wooley, A. (2025). A decision support framework for electric demand planning in distribution systems during extreme minimum temperatures. *Energy Reports*, *14*, 1137-1148.

3. Hollinger, D., Pollard, R. S., Schall Jr, M. C., **Chen, H.**, & Zabala, M. (2024). A Hierarchical-Based Learning Approach for Multi-Action Intent Recognition. *Sensors*, *24*(23), 7857.

4. Nail-Ulloa, I., Huangfu, R., Zabala, M., Hani, D. B., Pool, N., **Chen, H.**, ... & Gallagher, S. (2024). Assessing the accuracy of a wireless sensor system for estimating lumbar moments during manual lifting tasks considering the effects of load weight, asymmetry, and height. *International Journal of Industrial Ergonomics*, *103*, 103636.

5. Hollinger, D., Schall Jr, M.C., **Chen, H.**, Zabala, M. (2024). The Effect of Sensor Feature Inputs on Joint Angle Prediction across Simple Movements. Sensors, 24(11), 3657.

6. Nail-Ulloa, I., Zabala, M., Sesek, R., **Chen, H.**, Schall Jr, M. C., & Gallagher, S. (2024). Estimating Compressive and Shear Forces at L5-S1: Exploring the Effects of Load Weight, Asymmetry, and Height Using Optical and Inertial Motion Capture Systems. Sensors, 24(6), 1941.

7. **Chen, H.**, Schall Jr, M. C., Martin, S. M., & Fethke, N. B. (2023). Drift-Free Joint Angle Calculation Using Inertial Measurement Units without Magnetometers: An Exploration of Sensor Fusion Methods for the Elbow and Wrist. Sensors, 23(16), 7053.

8. Hollinger, D., Schall Jr, M.C., **Chen, H.**, Bass, S., & Zabala, M. (2023). The Influence of Gait Phase on Predicting Lower-limb Joint Angles. *IEEE Transactions on Medical Robotics and Bionics*.

9. **Chen, H.**, Schall Jr, M. C., & Fethke, N. B. (2023). Gyroscope vector magnitude: A proposed method for measuring angular velocities. *Applied Ergonomics*, *109*, 103981.

10. Schall Jr, M.C., **Chen, H., &** Cavuoto, L. (2022). Wearable inertial sensors for objective kinematic assessments: a brief overview. *Journal of Occupational and Environmental Hygiene*, DOI: 10.1080/15459624.2022.2100407

11. Zhang, X., Schall Jr, M. C., **Chen, H.**, Gallagher, S., Davis, G. A., & Sesek, R. (2022). Manufacturing worker perceptions of using wearable inertial sensors for multiple work shifts. *Applied Ergonomics*, *98*, 103579.

12. Coker, J., **Chen, H.**, Schall, M. C., Gallagher, S., & Zabala, M. (2021). EMG and Joint Angle-Based Machine Learning to Predict Future Joint Angles at the Knee. *Sensors*, *21*(11), 3622.

13. Schall Jr, M. C., Zhang, X., **Chen, H.**, Gallagher, S., & Fethke, N. B. (2021). Comparing upper arm and trunk kinematics between manufacturing workers performing predominantly cyclic and non-cyclic work tasks. *Applied Ergonomics*, *93*, 103356.

14. **Chen, H.**, Schall Jr, M. C., & Fethke, N. B. (2020). Measuring upper arm elevation using an inertial measurement unit: An exploration of sensor fusion algorithms and gyroscope models. *Applied Ergonomics*, *89*, 103187.

15. Fethke, N. B., Schall Jr, M. C., **Chen, H.**, Branch, C. A., & Merlino, L. A. (2020). Biomechanical factors during common agricultural activities: Results of on-farm exposure assessments using direct measurement methods. *Journal of Occupational and Environmental Hygiene*, *17*(2-3), 85-96.

16. Fethke, N. B., Schall, M. C., Merlino, L. A., **Chen, H.**, Branch, C. A., & Ramaswamy, M. (2018). Whole-Body Vibration and Trunk Posture During Operation of Agricultural Machinery. *Annals of work exposures and health*, *62*(9), 1123-1133.

17. **Chen, H.**, Schall Jr., M.C., & Fethke, N.B. (2018). Accuracy of Angular Displacements and Velocities from Inertial-based Inclinometers. *Applied Ergonomics, 67C,* 151-161.

18. Granzow, R. F., Schall Jr, M. C., Smidt, M. F., **Chen, H.**, Fethke, N. B., & Huangfu, R. (2018). Characterizing exposure to physical risk factors among reforestation hand planters in the Southeastern United States. *Applied Ergonomics*, *66*, 1-8.

19. Schall Jr, M. C., Cullen, L., Pennathur, P., **Chen, H**., Burrell, K., & Matthews, G. (2017). Usability Evaluation and Implementation of a Health Information Technology Dashboard of Evidence-based Quality Indicators. *Cin: Computers, Informatics, Nursing*, *35*(6), 281-288.

20. Schall Jr., M.C., Fethke, N.B., **Chen, H.** (2016). Working Postures and Physical Activity among Registered Nurses. *Applied Ergonomics*. 54, 243-250.

21. Schall Jr., M.C., Fethke, N.B., **Chen, H.** (2016). Evaluation of four sensor locations for physical activity assessment. *Applied Ergonomics*. 53, 103-109.

22. Schall Jr., M.C., Fethke, N.B., **Chen, H.**, Oyama, S., Douphrate, D.I. (2015). Accuracy and repeatability of an inertial measurement unit system for field-based occupational studies. *Ergonomics*. 59(4), 591-602.

23. Schall Jr., M.C., Fethke, N.B., **Chen, H.**, Gerr, F. (2015). A comparison of instrumentation methods to estimate thoracolumbar motion in field-based occupational studies. *Applied Ergonomics*. 48, 224-231.

24. Schall Jr., M.C., Fethke, N.B., **Chen, H.**, Kitzmann, A.S. (2014). A comparison of examination equipment used during common clinical ophthalmologic tasks. *IIE Transactions on Occupational Ergonomics and Human Factors*, 2 (2), 105-117.

25. Ozbolat, I.T., **Chen, H.**, Yu, Y. (2014) Development of 'Multi-arm Bioprinter' for Hybrid Biofabrication of Tissue Engineering Constructs. *Robotics and Computer-integrated Manufacturing*, 30(3), 295-304

26. Zhang, Y., Yu, Y., **Chen, H.**, & Ozbolat, I. T. (2013). Characterization of printable cellular micro-fluidic channels for tissue engineering. *Biofabrication*,*5*(2), 025004.

Peer-Reviewed Conference Proceedings and Published Abstracts

1. Hicks, H.N[*], Harper, S.A., **Chen., H.** (2025 October)., Sensor Fusion for enhancing motion capture: Integrating optical and inertial motion capture systems. *Aspire- the 69th Human Factors and Ergonomics Society Annual Meeting.* Chicago, IL. October 13-17.

2. Gladson, M., Heavlin, H, Rose, C.G., **Chen, H.**, Murrah, W.M., & Neely, K.A. *An exploratory study of emotion and movement in healthy young adults.* North American Society for the Psychology of Sport and Physical Activity (NASPSPA) Annual Meeting. Toronto, Ontario, Canada.

3. Flegel, T., **Chen, H.**, Bevly, D.M. RPV Determination for Heavy Truck Platooning Applications Using IR and RGB Monocular Camera. In *Proceedings of the Ground Vehicle Systems Engineering and Technology Symposium (GVSETS)*, NDIA, Novi, MI, Aug. 16-18, 2022.

4. McWilliams, R., **Chen, H.**, Kamrath, L., & Bevly, D. M. Magnetic Localization Through INS Integration and Improvements in Map Matching. In *Proceedings of the 34th International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2021)* (pp. 2272-2284). 2021, September.

5. Campos-Vega, C. J., Watts, T. M., Martin, S. M., **Chen, H.**, & Bevly D. M. Navigation through the Processing of Android Data with a High-Order Kalman Filter. In *Proceedings of the 34th International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2021)* (pp. 2957-2973).

6. Meyer, S. W., **Chen, H.**, & Bevly, D. M. (2021). Automatic Extrinsic Rotational Calibration of LiDAR Sensors and Vehicle Orientation Estimation. *IFAC-PapersOnLine*, *54*(20), 424-429.

7. Douglass, S. P., Martin, S., Jennings, A., **Chen, H.**, & Bevly, D. M. Deep Learned Multi-Modal Traffic Agent Predictions for Truck Platooning Cut-Ins. In *2020 IEEE/ION Position, Location and Navigation Symposium (PLANS)* (pp. 688-697). 2020, April.

8. Garnett, R. F., Davis, G. A., Sesek, R. F., Gallagher, S., Schall, M. C., & **Chen, H**. Evaluating an Inertial Measurement Unit Based System for After-Reach Speed Measurement in Power Press Applications. *Proceedings of the AHFE 2018 International Conferences on Human Factors and Wearable Technologies, and Human Factors in Game Design and Virtual Environments*. 2018 July 21-25; Orlando, FL.

9. **Chen, H**., Schall Jr., M.C., Fethke, N.B. Effects of Movement Speed and Magnetic Disturbance on the Accuracy of Inertial Measurement Units. *Proceedings of the Human Factors and Ergonomics Society* 61*th Annual Meeting.* 2017 October 9-13; Austin, TX.

10. Granzow, R., Schall Jr., M.C., Smidt, M., **Chen, H.**, Fethke, N.B. Full Shift Physical Activity among Reforestation Hand Planters: A Feasibility Study. *Proceedings of the Human Factors and Ergonomics Society* 60*th Annual Meeting.* 2016 September 19-23; Washington, DC.

11. Schall Jr., M.C., Fethke, N.B., **Chen, H.** Comparing Fatigue, Physical Activity, and Posture among Nurses in Two Staffing Models. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. 2015 October 26-30; Los Angeles, CA. (pp. 1269- 1273).

12. Schall Jr., M.C., **Chen, H.**, Pennathur, P., Cullen, L. Development and Evaluation of a Health Information Technology Dashboard of Quality Indicators. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. 2015 October 26-30; Los Angeles, CA. (pp. 461-465).

13. Schall Jr., M.C., Cullen, L., Pennathur, P., **Chen, H.**, Burrell, K., Matthews, G. Implementing Evidence-based Quality Indicators into a Health Information Technology Dashboard. *4th Annual Improving Primary Care Through Industrial and Systems Engineering (I-PrACTISE) Conference*; 2016 April 24-26; Madison, WI.

14. **Chen, H.**, Ozbolat, I. T. Development of a Multi-Arm Bioprinter for Hybrid Tissue Engineering. *ASME 2013 International Manufacturing Science and Engineering Conference*. 2013 June 10-14; Madison, WI. (pp. V001T01A005-V001T01A005).

15. **Chen, H.**, Ozbolat, I. T. A multi-material bioprinting platform towards stratified articular cartilage tissue fabrication. *Proceedings of the Industrial and Systems Engineering Research Conference*. 2013 May 18-22; San Juan, Puerto Rico. (pp. 2246-2252).

16. Zhang, Y., **Chen, H.**, Ozbolat, I.T. Characterization of Printable Micro-fludic Channels for Organ Printing. *International Mechanical Engineering Congress & Exposition*. 2012 Nov 9-15, Houston, TX. (pp. 553-558).

17. Thomas, G., Polgreen, P., Herman, T., Sharma, D., Johns, B., **Chen, H.**, ... & Decker, T. Improving patient safety with hand hygiene compliance monitoring. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. 2011 Sep 19-23, Las Vegas, NV. (pp. 823-827).

Conference Presentations/Posters and Invited Lectures

1. **Chen, H.,** Charger Robotics and Biomechanics Laboratory Overview & Fundamentals of Inertial Measurement Units. UAH Space Hardware Club Meeting. 2025 November 13th; Huntsville, AL

2. Roberson, J.*, Hicks, H.N., Neese, J., Rostenbach, B., Sharpe, D., Schwalb, J., **Chen H.**, Mesmer, B., Toward Improving UAV Autonomy for Search and Rescue, *RAM XVII Training Summit,* 2025 November 5th and 6th; Huntsville, AL.

3. Panganuti, S.*, **Chen H.**, Harper, S.A., Stair Navigation with Augmented Reality, *RAM XVII Training Summit,* 2025 November 5th t and 6th; Huntsville, AL.

4. Hicks, H.N*, **Chen H.**, Harper, S.A., Improving Reliability of Human Motion Capture Systems Using Sensor Fusion, *RAM XVII Training Summit,* 2025 November 5th t and 6th; Huntsville, AL.

5. Hicks, H.N*, **Chen., H.**, Harper, S.A., (2025 October)., Sensor Fusion for enhancing motion capture: Integrating optical and inertial motion capture systems. *HFE Symposium. Tennessee Valley Human Factors and Ergonomics Society.* October 1. Huntsville, AL.

6. Panuganti, S. *, **Chen, H.**, Low-Cost, Multi-Camera Markerless Motion Capture System Using ZED Framework (2025). *HFE Symposium. Tennessee Valley Human Factors and Ergonomics Society.* October 1. Huntsville, AL.

7. Panuganti, S. *, **Chen, H.**, Low-Cost, Multi-Camera Markerless Motion Capture System Using ZED Framework (2025). The University of Alabama in Huntsville Research and Creative Experiences for Undergraduates Poster Session; September 25th; Huntsville, AL

8. Coker, J., Knight, R., Cochren, M.A., Cook, J., Abele N., Dean C., **Chen, H.**, Harper, S.A., Hicks, H.N.*, Neese, J.*, Barker, B*, Alban, A., Moran M., Challenges and opportunities of joint multimodal patient movement and high volume CASEVAC during large scale combat operations. *Military Health System Research Symposium (MHSRS)*. Kissimmee, FL. August 4-7, 2025.

9. Middle R.J., Roos P.E., Whitley P.E., **Chen H.**, Harper S.A., Hicks H.N*., Pickle N.T., (2025 June)., Comparison of a computational neck model to electromyography during pilot-relevant head motion with head-supported mass. *2025 Aerospace Medical Association & Undersea and Hyperbaric Medical Society Annual Scientific Meeting*, Atlanta, GA.

10. Sharpe D*., **Chen H.**, Duling, C., 3-D SLAM in ROS2 using GLIM, a Tightly-Coupled LiDAR-IMU Algorithm. *UAH Engineering Showcase*, 2025 February 18th, Huntsville, AL.

11. Menon, V., **Chen, H.**, Vangsness, L., Wooley, A., (2025)., Panel for Research Methods of Studying AI and Human Systems. U.S. Space & Rocket Symposium AI Symposium.

12. **Chen H.**, Inertial Motion Capture: Past, Present, and Future (2024). Mechanical Engineering and Industrial & Systems Engineering Joint Graduate Seminar. The University of Iowa, Iowa City, IA. September 5th.

13. **Chen H.**, Charger Robotics and Biomechanics Lab (2024). University of Alabama Systems Drone Day 2024 July 19; Huntsville, AL

14. Nelson, P*., Harper, S.A., **Chen, H.**, Fall Risk on Laboratory Instrumented Stairways (2024). The University of Alabama in Huntsville Research and Creative Experiences for Undergraduates Poster Session; September 19th; Huntsville, AL

15. Roberson, J. *, Harper, S.A., **Chen, H.**, Using Depth Cameras to Measure Foot Clearance on Stairs (2024). The University of Alabama in Huntsville Research and Creative Experiences for Undergraduates Poster Session; September 19th; Huntsville, AL

16. Schwalb J., Roberson J., Neese, J.*, Henneberger, G.*, Rostenbach, B., Voss, M., **Chen, H.**, Mesmer., B., Sapience: Team USA (2024). University of Alabama Systems Drone Day 2024 July 19; Huntsville, AL

17. Wooley, A., Thomas, T., **Chen, H.**, & Loyd, N. (2024, May). Enhancing Industrial & Systems Engineering Education with Smart Factory CPS Integration. In *2024 IISE Annual Conference and Expo*. IISE.

18. **Chen H**, Navigation of sUAS: Challenges and Opportunities (2023). University of Alabama System Drone Day 2023 July 27; Huntsville, AL.

19. Neese J.B., **Chen H.**, A Data Acquisition Solution for Robotics Research Applications. *UAH Research Horizons Poster Session*, 2024 March 5th, Huntsville, AL.

20. Neese J.B., **Chen H.**, A Data Acquisition Solution for Robotics Research Applications. *UAH Engineering Showcase*, 2024 February 20th, Huntsville, AL.

21. Bermudez Y., **Chen H.**, Loyd N., The Use of a Smart Factory Laboratory to Demonstrate Digital Manufacturing Capabilities in Industrial & Systems Engineering Education. Society of Reliability Engineers *RAM XV Training Summit,* 2023 November 1st and 2nd; Huntsville, AL.

22. Mesmer B., Meonon V., Tenhundfeld N., Gholston S., Weger K., Vangsness L., **Chen H.**, Kannan H., Wooley A., "Insights from Multidisciplinary Research on Assessment of AI Systems,", AI4SE & SE4AI Virtual Workshop, Virtual, October 12th, 2023

23. **Chen H**, Navigation of sUAS: Challenges and Opportunities (2023). University of Alabama System Drone Day 2023 July 27; Huntsville, AL.

24. **Chen H**, Schall Jr MC, Fethke NB. Identification of Magnetically-disturbed Data Segments Using Inertial Measurement Units. (2018). *20th Congress International Ergonomics Association*. 2018 August 26-30; Florence, ITA

25. **Chen, H**., Schall Jr., M.C., Fethke, N.B. Effects of Movement Speed and Magnetic Disturbance on the Accuracy of Inertial Measurement Units. *Proceedings of the Human Factors and Ergonomics Society* 61*th Annual Meeting.* 2017 October 9-13; Austin, TX.

26. **Chen, H.**, Schall Jr., M.C., Fethke, N.B. Characterizing Errors of Inertial Measurement Units. *National Occupational Research Agenda (NORA) Symposium*; 2016 May 4, Minneapolis, MN.

27. **Chen, H.**, Schall Jr., M.C., Fethke, N.B. Characterizing Operable Conditions of Inertial Measurement Units: Preliminary Results. *1st Annual Occupational Health and Safety Research Conference*. 2016 April 1; Iowa City, IA.

28. Schall Jr., M.C., Fethke, N.B., Ramaswamy, M., **Chen, H.**, Branch, C., Merlino, L., Watabe, J., Gerr, F. Whole-body vibration among agriculture workers performing common agricultural activities. *International Society for Agricultural Safety and Health*; 2015 June 21-24; Normal, IL.

29. **Chen, H.**, Merlino, L., Branch, C., Schall Jr., M.C., Gerr, F., Fethke, N.B. Seasonal effects of common farm tasks on the experience of low back pain. *International Society for Agricultural Safety and Health*; 2015 June 21-24; Normal, IL.

30. Schall Jr., M.C., **Chen, H.**, Cullen, L., Pennathur, P., Matthews, G., Burrell, K., May, N. Human Factors Considerations for a Health Information Technology Dashboard of Evidence-Based Quality Indicators. *22nd National Evidence-Based Practice Conference: Nursing Workload Balance—Quality Care and Staff Wellness*; 2015 April 23-24; Coralville, IA.

31. **Chen, H.**, Schall Jr., M.C., Fethke, N.B., Oyama, S., Douphrate, D. Inertial Measurement Units for Wrist Posture Measurement: A Pilot Study. *13th Annual National Occupational Research Agenda (NORA) Young/New Investigators Symposium*; 2015 April 16-17; Salt Lake City, UT.

32. Schall Jr., M.C., **Chen, H.**, Merlino, L., Gerr, F., Fethke, N.B. A prospective study of musculoskeletal symptoms among agricultural workers in the Midwest region of the United States. *7th International Symposium: Safety & Health in Agricultural & Rural Populations: Global Perspectives (SHARP)*; 2014 October 19-22; Saskatoon, Saskatchewan.

33. Douphrate, D.I., Fethke, N.B., Hagevoort, R., Nonnennmann, M., Gimeno, D., Marshall, A., Schall Jr., M.C., **Chen, H.**, Mixco, A., Reynolds, S. Task-specific & full-shift sampling of upper extremity muscle activity among US large-herd dairy parlor workers. *7th International Symposium: Safety & Health in Agricultural & Rural Populations: Global Perspectives* (SHARP); 2014 October 19-22; Saskatoon, Saskatchewan.

34. **Chen, H.** "Graduate Research & Continuing Education" Invent Your Future Symposium (Hosted by Alpha Pi Mu IE Honor Society). University of Iowa. 2014 May 1; Iowa City, IA

35. **Chen, H.**, Ozbolat, I. T. Development of a Multi-Arm Bioprinter for Hybrid Tissue Engineering. *ASME 2013 International Manufacturing Science and Engineering Conference*. 2013 June 10-14; Madison, WI. (pp. V001T01A005-V001T01A005).

Patents

1. Ozbolat, I.T., **Chen, H.**, Yin, Y., Zhang, Y., Zavazava, Hong, L., Salaam, A.K., Akkouch, A., Moncal, K.K. (2016). Bioprinter and Methods of using Same, Patent Number: 15034004. Academic, United States of America. (assignee: University of Iowa)

Sponsored Research (The University of Alabama in Huntsville)

Development and integration of novel algorithms for sUAS navigation without GPS — 10/01/2025-9/30/2026, $697,674
Private Industry
Role: Principal Investigator

IUCRC Planning Grant University of Alabama in Huntsville: Center For Smart Manufacturing using AI-based Revolutionary Technologies (SMART) — 03/01/2025-02/28/2026, $20,000
National Science Foundation (NSF)

Role: Co-Principal Investigator (PI: Judy Schneider)

Development and validation of novel navigation algorithms for sUAS 01/01/2025-09/30/2025
Private Industry $146,567
Role: Principal Investigator

Improving Stairway Designs for Individuals with Vision Impairment Seed Grant 11/14/2024-11/13/2025
Human Factors and Ergonomics Society (HFES) $5,000
Role: Co-Principal Investigator (PI: Sara Harper)

Alabama Technology Network Manufacturing Extension Partnership 10/01/2024-9/30/2026
Alabama Technology Network $634,200
Role: Co-Principal Investigator (PI: Nicolas Loyd)

Product Testing and Development for sUAS Applications 09/17/2024-12/06/2024
Private Industry $2,800
Role: Principal Investigator

Minimization of Chronic Neck Pain in Military Aircrew and Vehicle Occupants 02/01/2024-01/02/2025
CFD Research Corporation (SBIR Phase II Sequential, NAVAIR) $59,280
Role: Principal Investigator

GRIPMASTER – Grip Reinforcement Integrated Power with Magnetic Actuation for Seamless Tactical Exoskeletal Response 02/01/2024-09/01/2024
Aptima, Inc (STTR Phase I, Sponsor: DHA) $100,000
Role: Principal Investigator

Sapience: Sense and Avoid – A Cooperative Drone Competition 09/22/2023-05/22/2026
North Atlantic Treaty Organization (Subcontract through City University of London) $67,239.57
Role: Co-Principal Investigator (PI: Bryan Mesmer)

Evaluating Stair Contrast Markings through Augmented Reality 11/28/2023
UAH $5,000
Role: Co-Principal Investigator (PI: Sara Harper)

Development of a low-cost universal data logger 11/08/2023-08/04/2024
College of Engineering Undergraduate Research Program, UAH $3,000
Role: Principal Investigator

Towards Rapid Lab-Based Biomechanical Assessments 10/20/2023-11/22/2025
New Faculty Research Grant, UAH OVPRED $10,000
Role: Principal Investigator

Service

Editorial Board
-International Journal of Industrial Ergonomics

Referee for Peer-Reviewed Journals
-Human Factors and Ergonomics in Manufacturing and Service Industries

-Annals of Work Exposures and Health
-Applied Ergonomics
-International Journal of Industrial Ergonomics
-Journal of Biomechanics
-Journal of NeuroEngineering and Rehabilitation
-Journal of Occupational and Environmental Hygiene
-Sensors
-Scientific Data

Referee for Peer-Reviewed Grant Applications
-National Institute of Occupational Safety and Health (2022)
-Pilot Projects Research Training Program, NIOSH Southwest Center for Occupational and Environmental Health (2018)

College
Institutional Review Board Representative for College of Engineering (2024-Present)
College of Engineering Safety Committee (2024-Present)

Community
Board Member- Tennessee Valley Human Factors & Ergonomics Society Chapter (2023- Present)
Institution Review Board External Member- CFD Research Corporation (2025-Present)

Student Advising

PhD Dissertation (advisor at UAH)
Benjamin Noel, Systems Engineering
Hailey Hicks, Industrial Engineering

MS Thesis (advisor at UAH)
Brett Baird, Engineering Management
Alexander Cook, Industrial Engineering
Alexander Devito, Mechanical Engineering
Gabriel Henneberger, Aerospace Systems Engineering
Jackson Neese, Mechanical Engineering
Jamie Roberson, Computer Science
Christopher Street, Industrial Engineering
Maria Voss, Electrical Engineering

Hailey Hicks, MS in Industrial Engineering, 5/2025
"Sensor Fusion for Enhancing Motion Capture: Integrating Optical and Inertial Motion Capture Systems"
First Position: Remaining at current lab as PhD Student

Joshua Mote, MS in Operations Research, 5/2025
"Aviation Weather Forecasting Utilizing an Artificial Neural Network"
Part-time Graduate Student, Active-Duty United States Air Force

Current Graduate Research Assistants at UAH
Brett Baird, Engineering Management
Hailey Hicks, Industrial Engineering
Jackson Neese, Mechanical Engineering
Jamie Roberson, Computer Science

Past Graduate Research Assistants at UAH
Gabriel Henneberger (Full time at Leidos)
Aubrey Northam (Full time at Performance Drone Works)
Maria Voss (Full time at UAH RSESC)

Current Undergraduate Research Assistants at UAH
Emma Barnes, Kinesiology
Anna Lawler, Industrial & Systems Engineering
Sam Olusegun, Computer Science
David Sharpe, Electrical & Computer Engineering

Past Undergraduate Research Assistants at UAH
Brett Baird (Graduate Student in Engineering Management, UAH, in my lab)
Britney Barker (Full-time at Progressive Health, supporting Mazda Toyota Manufacturing)
Yeraldy Bermudez (Full-time at United Launch Alliance)
Alexander Cook (On-call Research Engineer, UAH)
Wyatt Foutch (Full-time Dassault Falcon Jet)
Hailey Hicks (Graduate Student in Industrial Engineering, UAH, in my lab)
Emily Jolly (Full-time Georgia Tech Research Institute)
Michael Mills
Parker Nelson (Graduate Student in Occupational & Environmental Health, University of Iowa)
Sai Panuganti (Intern at Frontgrade Technologies)
Jamie Roberson (Graduate Student in Computer Science, UAH, in my lab)

PhD Dissertations (as committee member at UAH)
Reginald Holmes, SE, TBD
David Perner, SE, TBD
Christopher White, SE, TBD
Vishwa Kumar, EM, TBD

Nathan Hemming, CS, Menon (Chair) 12/2025 "Declarative Re-Planning: A Trustworthy Deep Reinforcement Learning Method Enabling Zero Shot Learning in Mobile Robot Path Planning"

Joshua Hill, ME, Fahimi (Chair) 12/2024 "Adaptive Discrete Time Sliding Mode Control for N-th Order Flapping Wing Micro Air Vehicles with Unknown Parameters"

Agnes Barnsell, CEE, Anderson (Chair) 12/2024 "A Framework for Identifying Transit Deserts in Rural Areas with Demand-Response Transit Services"

Jacob Elkins, ME, Fahimi (Chair) 08/2024 "Online Learning for Adaptive Control: Stable Learning and Control for Aerospace and Robotics"

MS Thesis (as committee member at UAH)
Jessica Hamer, ME, Fahimi (Chair) 8/2025 "Experimental Evaluation of Recent Theoretical Real-Time Signal Higher-Order Sliding Mode Differentiators on Noisy Sensorss"

Rosemary Cortelli, SE, Mesmer (Chair) 12/2024 "Analyzing Qualitative Data Collection Methods in Systems Engineering"

Josiah Schlabach, ME, Fahimi (Chair) 08/2024 "Adaptive Sliding Mode Control for Plants with Unknown Parameters with Adaptive Boundary Layer Thickness for Chatter Attenuation"

Isaac Barnett, ME, Schneider (Chair) 8/2023 “The Effects of Processing Environment on The Additive Manufacturing of 316L Stainless Steel”

Engineering Undergraduate Research Fellowship at UAH
Jackson Neese. (2023-2024) “Development of a Low-Cost Universal Datalogger”

Research and Creative Experience for Undergraduate Research at UAH
Sai Panuganti. (2025) “Development and validation of a low-cost multi-camera markerless motion capture system”

Jamie Robinson. (2024) “Toward improving stairway safety: Using depth cameras for foot clearance measurement”

Undergraduate Honors Capstone at UAH
Jamie Roberson. (2025) “A Literature Review of Relative Pose Estimation Using Visual Data”

PhD Dissertations (as committee member at Auburn University)
Tyler Flegel, Mech, TBD
Stephanie Meyer, Mech, TBD

Yuting Ma, PhD, Gallagher (Chair) 08/2024 “A Machine Learning Based Approach for Lifting Load Estimation”

Ivan Enrique Nail Ulloa, PhD, Gallagher (Chair) 08/2023 “Back to the Future of Ergonomics: Utilizing Inertial Motion Capture and Fatigue Failure Theory to Develop a Cumulative Damage Assessment Method for Estimating Risk of Low Back Injury in Industrial Settings”

PhD Dissertations (outside reader at Auburn University)
Chang Qing, PhD, Zhou (Chair) 08/2022 “Effects of Geometric Design Features and Traditional Traffic Control Devices on Wrong-Way Driving Incident at Partial Cloverleaf Interchange terminal: A Machine-Learning Approach”

Xuanxuan Zhang, PhD, Schall (Chair) 08/2020 “Adoption of Wearable Technologies among Industrial Workers in the Internet of Things Architecture”

MS Theses (as committee member at Auburn University)
Tyler Flegel, MS, Bevly (Chair) 8/2023 “Relative Position Vector Generation with Computer Vision for Platooning Applications”

Connor Jones, MS, Bevly (Chair) 8/2023 “A Loosely Coupled GNSS/PDR Integration Approach for Pedestrian Navigation”

Ryan McWilliams, MS, Bevly (Chair) 12/2021 “Improving Magnetic Map-Based Navigation using Vehicle Motion Information”

Stephanie Meyer, MS, Bevly (Chair) 08/2021 “Online Rotational Self-Calibration of LiDAR Sensors when Mounted on a Ground Vehicle”

Jordan Coker, MS, Zabala (Chair) 08/2020 “Machine Learning Based Approach Using Electromyography to Predict Joint Angles of the Knee”

Undergraduate Research Fellowship (Auburn University)
Daniel Michael. 08/2021-05/2022 "Using Wearable Sensors to Understand and Predict Occupational Injuries"

Advisee Awards

Graduate Research

1. Hailey Hicks. 2025, William Wessels Most Outstanding Graduate Presentation, 2025, November 5th & 6th, Huntsville AL.
2. Hailey Hicks. UAH 2025 Industrial & Systems Engineering Program Outstanding Graduate Student

Undergraduate Research

1. Jamie Roberson. 1st place Undergraduate Student Competition. Society of Reliability Engineers RAM Training Summit, 2025, November 5th & 6th, Huntsville AL.
2. San Panuganti. 2nd place Undergraduate Student Competition. Society of Reliability Engineers RAM Training Summit, 2025, November 5th & 6th, Huntsville AL.
3. Yeraldy Bermudez. 1st place Undergraduate Student Competition. Society of Reliability Engineers RAM Training Summit, 2023, November 1st & 2nd, Huntsville AL.