

GOKSU AVDAN, PhD

Tenure-Track Assistant Professor

Department of Engineering Technology and Applied Computing

Missouri Western State University

CONTACT

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Ph.D. 2020 – 2024	Engineering Science (Specialized in Industrial and Quality Engineering) Southern Illinois University, Carbondale, IL (SIUC)
M.S. 2017 – 2019	Industrial Engineering Southern Illinois University, Edwardsville, IL (SIUE)
B.S. 2012 – 2017	Industrial Engineering (Dual Diploma Program) Southern Illinois University, Edwardsville, IL Istanbul Technical University, Istanbul, Turkey (ITU)
Minor 2012 – 2017	Mathematical Studies Southern Illinois University, Edwardsville, IL

EXPERIENCE

Academic

Assistant Professor Tenure-Track 2024 – Present	Department of Engineering Technology and Applied Computing Missouri Western State University, St. Joseph, MO
Instructor 2021 – 2024	Department of Industrial Engineering Southern Illinois University, Edwardsville, IL
Research Assistant 2020 – 2020 2017 – 2019	Department of Industrial Engineering Department of Electrical and Computer Engineering Southern Illinois University, Edwardsville, IL
Teaching Assistant 2017 – 2019	Department of Industrial Engineering Southern Illinois University, Edwardsville, IL
Lab Manager 2019 – 2019	Department of Industrial Engineering Southern Illinois University, Edwardsville, IL

Non-Academic

- | | |
|---|---|
| Business Analyst
9/2019 – 12/2019 | YouParcel, Inc., Saddle Brook, NJ |
| Engineering (Internship)
5/2018 – 8/2018 | Ormat Technologies, Inc., Reno, NV |
| Manuf. Eng. (Internship)
6/2015 – 7/2015 | Celik Halat ve Tel Sanayi A.S., Kocaeli, Turkey |

PUBLICATIONS (*Corresponding Author) Citations: 107, H-Index: 7**Journal Papers**

1. **Avdan G**, Onal S., Lu C. IMU-Trans: imputing missing motion capture data with unsupervised transformers. *Neural Computing and Applications*, 2025. 37: 5699-5717.
2. Roy D, **Avdan G***, Cho S. Evaluating Worker Performance and Ergonomic Risks Using EMG and Kinematics: A MIMO Approach. *JARIE*, 2025.
3. **Avdan G**, Chen CB, Onal S. An alternative EMG normalization method: Heterogeneous recurrence quantification analysis of maximum voluntary isometric contraction movements. *Biomedical Signal Processing and Control*, 2024. 93, 106219.
4. Roy D, Cho S, **Avdan G**. Data Envelopment Analysis (DEA) for Improving Ergonomics and Workplace Performance. *Journal of Applied Research on Industrial Engineering (JARIE)*, 2024. 11 (1): 24-36.
5. **Avdan G**, Onal S, Smith BK. Normalization of EMG signals: Optimal MVC positions for the lower limb muscle groups in healthy subjects. *Journal of Medical and Biological Engineering*, 2023. 43(2): 195-202.
6. **Avdan G**, Onal S, Rekabdar B. Regression transfer learning for the prediction of three-dimensional ground reaction forces and joint moments during gait. *International Journal of Biomedical Engineering and Technology*, 2023. 42(4): 317-338.
7. Gunasekera J, **Avdan G**, Lee HF, Kweon S, Klingensmith JD. Investigating the effects of external pressure on coronary arteries with plaques and its role in coronary artery disease. *Journal of Medical Engineering & Technology*, 2022. 46 (7): 624-632.
8. **Avdan G***, Yoon D. Esports as Culture and Leisure: Associations with PERMA-G and Social Connection Among College Students. *Journal of Electronic Gaming and Esports (Under Review)*.
9. **Avdan G***. Peer Learning for Applied Engineering Technology Education. *Journal of Applied Learning in Higher Education (Major Revision)*.

10. **Avdan G***, Catron Z, Holtz M, Kraft J. Effects of passive neck exoskeleton on muscle activity, perceived fatigue, and neck pain during simulated manufacturing tasks. (*Working Paper*)
11. **Avdan G***. Student-Directed Peer Collaboration in Undergraduate Engineering Technology Programs. (*Working Paper*)

Conference Proceedings

1. **Avdan G***. Ergonomics Sensing in Industry 5.0 Human-Robot Collaboration: Current Trends and Future Directions. 11th North American Industrial Engineering and Operations Management (IEOM), 2026 (June 8-11), Milwaukee, WI (**4th Place in Human Factors, Ergonomics and Health Systems**).
2. **Avdan G***. FANUC Robotics Labs for Industry 5.0 Manufacturing: A Flipped Learning Approach in Computer Integrated Manufacturing (CIM) Course. 11th North American IEOM, 2026 (June 8-11), Milwaukee, WI.
3. Richardson H, Conkling J, **Avdan G***. AOKI DM45/47 Units: Design and Validation of a Foldable Access Ladder for Operator Access. *The National Conference on Undergraduate Research (NCUR)*, 2026. *Accepted (Student decided not to attend because of schedule conflict)*.
4. Sweiger KS, **Avdan G***. Bio-Based Neck Orthosis Design: Structural Comparison of Circular, Elliptical, and Honeycomb Patterns Using Finite Element Analysis. *IEEE 8th International Conference on Electrical, Electronics, and System Engineering*, 2025.
5. **Avdan G**, Onal S. Lean Thinking in Healthcare 5.0 Technologies: An Exploratory Review. 9th North American IEOM, 2024 (June 4-6), Washington, DC.
6. **Avdan G**, Onal S. Resilient Healthcare 5.0: Advancing Human-Centric and Sustainable Practices with Wearable Devices. *IISE Annual Conference and Expo*, 2024.
7. **Avdan G**, Chen CB, Onal S. Investigation of an alternative EMG normalization technique: Recurrence quantification analysis of maximum voluntary contractions. *Institute of Industrial and Systems Engineering (IISE) Annual Conference and Expo*, 2023 (May 20-23), New Orleans, LA.
8. Roy D, Cho S, **Avdan G**. Ergonomic risk and performance assessment using data envelopment analysis (DEA). *IISE Annual Conference and Expo*, 2023 (May 20-23), New Orleans, LA.
9. **Avdan G**, Onal S, Smith BK. Maximum voluntary contraction (MVC) techniques to normalize lower limb muscle groups in young healthy subjects. *IISE Annual Conference and Expo*, 2022 (May 21-24), Seattle, WA.

Abstracts & Posters & Presentations

1. **Avdan G***. Ergonomics Sensing in Industry 5.0 Human-Robot Collaboration: Current Trends and Future Directions. 11th North American Industrial Engineering and Operations Management (IEOM), 2026 (June 8-11), Milwaukee, WI.

2. **Avdan G***. FANUC Robotics Labs for Industry 5.0 Manufacturing: A Flipped Learning Approach in Computer Integrated Manufacturing (CIM) Course. 11th North American IEOM, 2026 (June 8-11), Milwaukee, WI.
3. Byers S, **Avdan G***. Quality 4.0 Quality Management in a Modern Manufacturing Setting. *Multidisciplinary Research Day at Missouri Western State University, Spring 2026*.
4. Stickler J, **Avdan G***. Human-Centric AI Framework for Quality Management with Oversight and Explainability. *Multidisciplinary Research Day at Missouri Western State University, Spring 2026*.
5. Sweiger KS, **Avdan G***. Bio-Based Neck Orthosis Design: Structural Comparison of Circular, Elliptical, and Honeycomb Patterns Using Finite Element Analysis. *IEEE 8th International Conference on Electrical, Electronics, and System Engineering, 2025*.
6. Richardson H, Conkling J, **Avdan G***. Ergonomic Design and Validation of a Foldable Ladder for AOKI DM45/47 Operator Access. *Multidisciplinary Research Day at Missouri Western State University, Fall 2025*.
7. Catron Z, Holtz M, Kraft J, **Avdan G***. Effects of a Passive Neck Exoskeleton on NASA TLX, Perceived Fatigue, and Neck Pain During Milling and Lathe Operations. *Multidisciplinary Research Day at Missouri Western State University, Fall 2025*.
8. **Avdan G***, Onal S. Lean Thinking in Healthcare 5.0 Technologies: An Exploratory Review. 9th North American IEOM Conference, 2024 (June 4-6), Washington, DC.
9. **Avdan G***, Onal S. Resilient Healthcare 5.0: Advancing Human-Centric and Sustainable Practices with Wearable Devices. *IISE Annual Conference and Expo, 2024*.
10. **Avdan G**, Onal S, Lu C. An Unsupervised Transformers Approach for Predicting Missing Markers in Human Motion Capture Systems. *IEEE International Conference on Biomedical and Health Informatics, 2023 (Oct 15-18), Pittsburgh, PA*.
11. **Avdan G**, Chen CB, Onal S. Investigation of an alternative EMG normalization technique: Recurrence quantification analysis of maximum voluntary contractions. *IISE Annual Conference and Expo, 2023 (May 20-23), New Orleans, LA*.
12. Roy D, Cho S, **Avdan G**. Ergonomic risk and performance assessment using data envelopment analysis (DEA). *IISE Annual Conference and Expo, 2023 (May 20-23), New Orleans, LA*.
13. **Avdan G**, Onal S, Smith BK. Maximum voluntary contraction (MVC) techniques to normalize lower limb muscle groups in young healthy subjects. *IISE Annual Conference and Expo, 2022 (May 21-24), Seattle, WA*.
14. **Avdan G**, Lee HF, Klingensmith JD, Celik S, Alluri V, Maddali N. Stress analyses of 3D coronary plaque models based on intravascular ultrasound images. *Biomedical Engineering Society (BMES), 2018 (Oct 17-20), Atlanta, GA*.

TEACHING EXPERIENCE

Lead Instructor

- o **IE-370: Manufacturing Processes**
 - o Fall 2022 (4.93/5.00)
 - o Fall 2023 (4.75/5.00)
- o **IE-451: Methods Design & Work Measurements**
 - o Spring 2022 (4.21/5.00)
 - o Spring 2023 (4.87/5.00)
 - o Spring 2024 (NA/5.00)
- o **IE-488: Lean Production Systems**
 - o Spring 2021 (4.40/5.00) *Hybrid*
 - o Spring 2022 (4.24/5.00)
- o **EGT-220: Engineering Materials**
 - o Fall 2024 (4.60/5.00)
 - o Fall 2025 (4.80/5.00)
- o **EGT-400: Dynamics**
 - o Fall 2024 (NA/5.00) *Online*
 - o Fall 2025 (5.00/5.00) *Online*
- o **EGT-440: Thermodynamics**
 - o Spring 2026 (Pending, available May 14, 2026) *Online*
- o **MET-232: Computer-Integrated Manufacturing**
 - o Fall 2024 (4.60/5.00)
 - o Fall 2025 (4.80/5.00)
- o **MET-242: CNC Machining Processes**
 - o Fall 2024 (4.70/5.00)
 - o Fall 2025 (4.90/5.00)
- o **MET-132: Manufacturing Methods**
 - o Spring 2025 (5.00/5.00)
 - o Spring 2026 (Pending, available May 14, 2026)
- o **EGT-350: Engineering Documentation**
 - o Spring 2025 (4.00/5.00) *Online*
 - o Spring 2026 (Pending, available May 14, 2026) *Online*
- o **MET-372: Programmable Logic Controllers**
 - o Spring 2025 (4.10/5.00)
 - o Spring 2026 (Pending, available May 14, 2026)
- o **EGT-450: Independent Research/Project**
 - o Spring 2025 (5.00/5.00)
 - o Summer 2025 (NA/5.00)
 - o Spring 2026 (Pending, available May 14, 2026)
- o **EGT-490: Engineering Technology Internship**
 - o Spring 2025 (NA/5.00)
 - o Summer 2025 (NA/5.00)
 - o Spring 2026 (Pending, available May 14, 2026)
 - o Summer 2026 (Ongoing)

- **CET-351:** Construction Estimating I
 - Spring 2026 (Pending, available May 14, 2026) *Online*
- Teaching Assistant**
- **IE-345:** Engineering Economic Analysis (Fall 2020)
- **IE-430:** Managing Engineering and Technology (Summer 2021, Summer 2022)
- **IE-431:** Project Analysis & Control (Summer 2021, Summer 2022)
- **IE-476:** Plantwide Process Control (Fall 2020, Fall 2021)
- **IE-483:** Production Planning & Control (Fall 2017, Summer 2022)
- **IE-490:** Integrated Engineering Design (Spring 2021)

PROFESSIONAL ACTIVITIES

Research Grants & Travel Awards

- 2025** National Science Foundation Engineering Research Initiation (NSF ERI: Real-Time Multimodal Ergonomic Risk Prediction and Robotic Adaptation for Safety-Aware Human-Robot Collaboration, PI: Dr. Goksu Avdan). *Declined (2 Good, 1 Fair) \$199,329*
- 2025** MWSU Summer Fellowship – Faculty Research Grant Program (PI: Dr. Goksu Avdan), Amount: \$7,500
- 2024** SIUE Research Equipment and Tools Funding Program (Co-authored, PI: Dr. Sinan Onal), Amount: \$22,100
- 2023** IEEE BHI'23 NSF Student Travel Award, Amount: \$250
- 2023** SIUE Travel/Presentation Funding (IISE Annual Conference and Expo), Amount: \$1,276.44
- 2022** SIUE Travel/Presentation Funding (IISE Annual Conference and Expo), Amount: \$1,335.39
- 2021** Research Grants for Research Doctoral Students, SIUE, Amount: \$1,000
- 2018** Research Grants for Graduate Students, SIUE, Amount: \$500
- 2018** SIUE Travel/Presentation Funding (BMES), Amount: \$750

Reviewed for

- npj Digital Medicine, *Nature* (IF: 15.1)
- Artificial Intelligence Review, *Springer* (IF: 13.9)
- IEEE Transactions on Consumer Electronics (IF: 10.9)
- Journal of NeuroEngineering and Rehabilitation, *BMC* (IF: 5.2)
- Biomedical Signal Processing and Control, *Elsevier* (IF: 4.9)
- IEEE Sensors Journal (IF: 4.5)
- Neural Computing and Applications, *Springer* (IF: 4.5)

- o Scientific Reports, *Nature* (IF: 3.8)
- o Heliyon, *Elsevier* (IF: 3.4)
- o Soft Computing, *Springer* (IF: 3.1)
- o BioMedical Engineering OnLine, *Springer Nature* (IF: 2.9)
- o BMC Sports Science, Medicine and Rehabilitation, *Springer Nature* (IF: 2.8)
- o Journal of Electromyography and Kinesiology, *Elsevier* (IF: 2.3)
- o Signal, Image and Video Processing, *Springer* (IF:2.1)
- o The International Journal of Health Planning and Management, *Wiley* (IF: 1.9)
- o IISE Annual Conference and Expo, 2023
- o Healthcare Systems Process Improvement Conference, 2024
- o 9th North American Industrial Engineering and Operations Management (IEOM) Conference, 2024
- o 11th North American Industrial Engineering and Operations Management (IEOM) Conference, 2026

Other Meriting Academic Missions

- 2026-28** Center for Teaching and Learning (CTL) Advisory Board Member, Missouri Western State University
- 2027-28** ABET Accreditation Lead, Manufacturing Engineering Technology Program, Missouri Western State University, planned 2027–2028 review cycle
- 2026-29** Undergraduate Curriculum Committee (UGCC) Committee Member, Missouri Western State University *Term begins July 2026*
- 2025** ABET Program Contact, Construction Engineering Technology Program, Missouri Western State University, 2025–2026 review cycle
- 2024-27** General Studies Committee Member, Missouri Western State University
- 2023** Session Chair of Human Factors in Human Performance Track 1 in IISE Annual Conference and Expo
- 2023** Session Chair of Work and Organization Safety in IISE Annual Conference and Expo
- 2022** Session Chair of Physical Ergonomics I in IISE Annual Conference and Expo

Honors, Awards and Certifications

- 2026** Alpha Chi Compass Award for Most Influential Professor, Alpha Chi Honor Society, Missouri Western State University
- 2025** FANUC Setup, Programming & Machining (Course ID: TRCNC40-301)
- 2022** Outstanding Teaching Assistant at Doctoral Level, Graduate School, SIUE

2016-17 Dean's List, SIUE (Two Times)

2016 Honor Student, Istanbul Technical University

Memberships

- o Institute of Industrial and Systems Engineers (IISE)
- o Institute of Electrical and Electronics Engineers (IEEE)
- o American Society for Quality (ASQ)