Tyler Ward

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Research Interests

Artificial Intelligence, Biomedical Informatics, Computer Vision, Medical Imaging

Education

University of Kentucky — **Lexington, KY, USA**
Ph.D. in Computer Science — In progress

Morehead State University — **Morehead, KY, USA**
M.S. in Engineering & Technology Management — May 2023

B.S. in Computer Science — May 2021
Minors: Computer Information Systems and Film Studies

Positions

Primary:

University of Kentucky — **Lexington, KY, USA**

Department of Computer Science
Student Teaching Assistant — Aug 2025 - present

Computational Health, Imaging, and Learning Laboratory
Graduate Student Researcher — Aug 2025 - present
Graduate Research Assistant — Aug 2024 - Aug 2025

Morehead State University — **Morehead, KY, USA**

Department of Engineering Sciences
Adjunct Lecturer, Computer Science — Jan 2026 - present

Virtual and Augmentated Reality Laboratory
Part-time Research Assistant — Jul 2024 - Aug 2024
Research Associate — Jul 2023 - Jun 2024

Department of Engineering & Technology Management
Graduate Assistant — Aug 2021 - May 2023

Secondary:

TRIO, Upward Bound Program — **Morehead, KY, USA**
Instructor — Summer 2022, 2024

KY Tech in a Box — **Louisa, KY, USA**
Information Technology Specialist — May 2019 - Aug 2024 (seasonal)

Journal Articles

Ward, T., Owen, M.K., Coleman, O., Noehren, B., Imran, A.-A.-Z., "Autoadaptive medical Segment Anything Model," *Scientific Reports* [Accepted].

Ward, T., Moseley, A., Imran, A.-A.-Z., "Domain and task-focused example selection for data-efficient contrastive medical image segmentation," *Machine Learning for Biomedical Imaging* [Accepted].

Ward, T., Jenab, K., Ortega-Moody, J., Barari, G., Molina Acosta, L.D.C., "Virtual classrooms, real impact: A framework for introducing virtual reality to K–12 STEM learning based on best practices," *Applied Sciences*, **15**:21, 11356, 2025.

Ward, T., Ortega-Moody, J., Khoury, S., Wheatley, M., Jenab, K., "Virtual reality platforms for K-12 STEM education," *Management Science Letters*, 2024.

Ward, T., Khoury, S., Staub, S., Jenab, K., "A machine learning framework for exploring the relationship between supply chain management best practices and agility, risk management, and performance," *Management Science Letters*, 2024.

Ward, T., Jenab, K., Ortega-Moody, J., "Adaptive imputation of irregular truncated signals with machine learning," *Applied Sciences*, **14**:15, 6828, 2024.

Jenab, K., **Ward, T.**, Isaza, C., Ortega-Moody, J., Anaya, K., "Ensemble machine learning for intelligent condition monitoring," *International Journal of System Assurance Engineering and Management*, 2024.

McKnight, T., **Ward, T.**, Jenab, K., "Data-driven quality improvement for sustainability in automotive packaging," *Applied Sciences*, **14**:13, 5723, 2024.

Ward, T., Jenab, K., Ortega-Moody, J., Staub, S., "A comprehensive review of machine learning techniques for condition-based maintenance," *International Journal of Prognostics and Health Management*, **15**:2, 2024.

Ward, T., Jenab, K., Ortega-Moody, J., "Machine learning models for condition-based maintenance with regular truncated signals," *Decision Science Letters*, **13**:1, 197-210, 2024.

Conference Proceedings

Ward, T., Imran, A., "A probabilistic Segment Anything Model for ambiguity-aware medical image segmentation," *SPIE Medical Imaging 2026: Imaging Informatics* [Accepted].

Ward, T., Imran, A.-A.-Z., "Improving brain disorder diagnosis with advanced brain function representation and Kolmogorov-Arnold Networks," *Medical Imaging with Deep Learning (MIDL)*, Salt Lake City, UT, USA, 2025.

Jenab, K., **Ward, T.**, Ortega-Moody, J.A., Moslehpour, S., Molina Acosta, L.D.C., Garcia, J., Garcia, E.J.M., Marin, J.N.T., "Design and prognosis of CanSat manuever systems using machine learning," *8th International Congress and Workshop on Industrial AI and eMaintenance 2025 (IAI2025)*, Luleå, Sweden, 2025.

Jenab, K., Ortega-Moody, J.A., Muldoon, W., **Ward, T.B.**, Isaza, C., Molina Acosta, L.D.C., "Deep reinforcement learning for maintenance planning in Weibull distributed fleet system," *8th International Congress and Workshop on Industrial AI and eMaintenance 2025 (IAI2025)*, Luleå, Sweden, 2025.

Ward, T., Imran, A.A.Z., "Annotation-efficient task guidance for medical Segment Anything," *2025 IEEE International Symposium on Biomedical Imaging (ISBI)*, Houston, TX, USA, 2025.

Ward, T., Vanderpool, I., Jenab, K., Ortega-Moody, J., "Optimizing grasp quality of a robotic hand using machine learning," *2024 ATMAE Annual Conference*, Las Vegas, NV, USA, pp. 49-60, 2024.

Ward, T., "Gender-based detection and tracking of child pedestrians using machine learning," *2024 International Conference on Electrical, Computer and Energy Technologies (ICECET)*, Sydney, Australia, pp. 1-6, 2024.

Ward, T., "Areas of improvement for autonomous vehicles: A machine learning analysis of disengagement reports," *2024 4th Interdisciplinary Conference on Electrics and Computer (INTCEC)*, Chicago, IL, USA, pp. 1-6, 2024.

Jenab, K., **Ward, T.**, Isaza, C., Ortega-Moody, J., Anaya, K., "Intelligence based condition monitoring model," *7th International Congress and Workshop on Industrial AI and eMaintenance 2023 (IAI2023)*, Luleå, Sweden, 2023.

Ward, T., Rashad, S., Elgazzar, H., "Machine learning based detection and tracking for autonomous vehicles," *2023 IEEE 13th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, USA, pp. 1294-129, 2023.

Presentations

Ward, T., McFarland, B., Nozad, S., Arshad, T., Nebbache, H., Chen, J., Wang, X., Imran, A., "Automated intraoperative lumpectomy margin detection using SAM-incorporated Forward-Forward Contrastive Learning," *Radiology Noon Conference*, Albert B. Chandler Hospital, Lexington, KY, USA, 2025.

Ward, T., Imran, A., "A probabilistic Segment Anything Model for ambiguity-aware medical image segmentation," *MIDL Young Researcher Showcase*, 2025 [Featured Presentation].

Taylor, A., **Ward, T.**, Jenab, K., Ortega-Moody, J., "Spare parts analysis from scrambled data using machine learning," *2024 ATMAE Annual Conference*, Las Vegas, NV, USA, 2024.

Ward, T., Rashad, S., Elgazzar, "Machine learning based detection and tracking systems for autonomous vehicles," *17th Annual Celebration of Student Scholarship*, Morehead State University, Morehead, KY, USA, 2023. [Received an

Exceptional Merit Award for Oral Presentation].

Ward, T., Jenab, K., "Virtual reality STEM and workforce training platforms," *2nd Annual Elmer Smith College of Business and Technology Research Seminar*, Morehead State University, Morehead, KY, USA, 2023. [Received a Certificate of Achievement].

Posters

Ward, T., McFarland, B., Nozad, S., Arshad, T., Nebbache, H., Chen, J., Wang, X., Imran, A., "Automated intraoperative lumpectomy margin detection using SAM-incorporated Forward-Forward Contrastive Learning," *Medical Imaging with Deep Learning (MIDL) Short Papers*, Salt Lake City, UT, USA, 2025.

Ward, T., Imran, A.-A.-Z., "Annotation-efficient task guidance for medical Segment Anything," *20th Annual Center for Clinical and Translational Science (CCTS) Spring Conference*, University of Kentucky, Lexington, KY, USA, 2025.

Vanderpool, I., Gross, G., Uusikartano, O., **Ward, T.**, Jenab, K., Ortega-Moody, J., "Detecting the level of scrap metal discard from CNC machines using capacitive sensors," *19th Annual Celebration of Student Scholarship*, Morehead State University, Morehead, KY, 2024.

Gross, G., Uusikartano, O., Vanderpool, I., **Ward, T.**, Ortega-Moody, J., Jenab, K., "Development of remote monitoring software for CNC machines," *19th Annual Celebration of Student Scholarship*, Morehead State University, Morehead, KY, 2024.

Uusikartano, O., **Ward, T.**, Ortega-Moody, J., Jenab, K., "Implementation of a flexible simulated manufacturing system," *19th Annual Celebration of Student Scholarship*, Morehead State University, Morehead, KY, 2024.

Fitch, L., **Ward, T.**, Jenab, K., Ortega-Moody, J., "Enabling smart agriculture with computer vision," *19th Annual Celebration of Student Scholarship*, Morehead State University, Morehead, KY, 2024.

Fitch, L., **Ward, T.**, Jenab, K., Ortega-Moody, J., "Enabling smart agriculture with computer vision," *Posters-at-the-Capitol*, Frankfort, KY, 2024 [Selected for Lightning Talk Presentation].

Ward, T., Jenab, K., Ortega-Moody, J., "Machine learning models for condition-based maintenance with regular truncated signals," *NSF SuperCollider 2024*, Lexington, KY, 2024 [Received a Mark of Distinction].

Ward, T., Jenab, K., Ortega-Moody, J., "Intelligence-based condition monitoring model," *NSF SuperCollider 2024*, Lexington, KY, 2024.

Preprints / In preparation

Ward, T., Imran, A., "ABFR-KAN: Kolmogorov-Arnold Networks for functional brain analysis," *arXiv preprint arXiv: 2601.00416*, 2026 [Under review at *Machine Learning for Biomedical Imaging*].

Ward, T., Imran, A., "Robustness of medical imaging models with physics-based image quality degradations" [Under review at *Medical Imaging with Deep Learning (MIDL) 2026*].

Munia, N., **Ward, T.**, Rifa, K.R., Massey, M.A., Imran, A., "Self-supervised learning: Pretrain-finetuning or joint training?" [Under review at the *2026 Conference on Computer Vision and Pattern Recognition (CVPR)*]

Ward, T., McFarland, B., Nozad, S., Arshad, T., Nebbache, H., Chen, J., Wang, X., Imran, A., "Detection of breast cancer lumpectomy margin with SAM-incorporated Forward-Forward Contrastive Learning," *arXiv preprint arXiv: 2506.21006*, 2025 [Under review at *ACM Transactions on Computing for Healthcare*].

Workshops/Demos

Artificial intelligence for medical diagnosis
Demo at Engineer's Day (E-DAY) 2025, Stanley and Karen Pigman College of Engineering, University of Kentucky

Virtual reality STEM education and workforce training platforms
Demo at Morehead State University

Machine learning in maintenance
Three day workshop at the Polytechnic University of Querétaro

Research Funding

- *Individualized Mixed Reality Environments to Aid Autistic Child Development*
  PI: K. Jenab
  Co-PI/Co-I(s): J. Ortega-Moody, **T. Ward**
  Sponsor: Kentucky Commercialization Ventures (KCV)
  Total award: $5,000
  Duration: 2024-2025

Awards & Honors

Verizon Communications Graduate Fellowship	2024
ATMAE Service Award	2023
Dr. Clois E. Kicklighter Student Scholarship Award	2022
KCV GOAL Funding	2022

Reviewing

AI and Ethics
Archives of Computational Methods in Engineering
Artificial Intelligence Review
ATMAE Annual Conference
Connection Science
Discover Applied Sciences
Discover Sustainability
IEEE International Symposium on Biomedical Imaging (ISBI)
IEEE International Symposium on Computer-Based Medical Systems (CBMS)
IEEE Transactions on Circuits and Systems for Video Technology
IEEE Transactions on Pattern Analysis and Machine Intelligence
International Conference on Computer Vision (ICCV)
International Journal of Vehicle Information and Communication Systems
Neural Information Processing Systems (NeurIPS)
Scientific Reports

Teaching

Department of Engineering Sciences, Morehead State University

CS 310: Algorithms and Advanced Data Structures	Spring 2026

Department of Computer Science, University of Kentucky

CS 215: Introduction to Program Design, Abstraction, and Problem Solving	Spring 2026
CS 218: Advanced Programming and Operating System Interfaces	Fall 2025

Department of Engineering & Technology Management, Morehead State University

EEC 141L: Network Fundamentals Lab	Spring 2022
EEC 480L: Digital Communications & Networking Lab	Fall 2021

Research Mentoring

Past Students (Morehead State University)

- Jeffrey Young (Undergraduate)
- Mary Belle Youngs (Graduate)
- Ashleigh Taylor (Undergraduate)
- Robert Isaac Vanderpool (K-12)
- Gunnar Gross (Graduate)
- Brian Landon Fitch (Undergraduate)
- Olli Uusikartano (Undergraduate)
- Andrew Smith (Undergraduate)

- Zachary Williamson (Undergraduate)
- Mykelti Wheatley (Undergraduate)

Activity

Society Memberships:

- Association of Technology, Management, and Applied Engineering (ATMAE)
- Kentucky Academy of Science (KAS)
- Institute of Electrical and and Electronics Engineers (IEEE)
- IEEE Engineering in Medicine and Biology Society (EMBS)
- SPIE, the international society for optics and photonics

Professional Development:

- 2025 CIFAR Deep Learning + Reinforcement Learning (DLRL) Summer School

Member, Nominations Committee, ATMAE 2024-2025
Student Representative on the Board of Directors, ATMAE 2022-2023