Graham West, Ph.D.

Assistant Professor of Computer Science and Data Science
Director, Laboratory of Applied Interdisciplinary AI Research
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About Me

I am an Assistant Professor at Meharry Medical College and Director of the Laboratory of Applied Interdisciplinary AI Research. My research develops reliable AI/ML methods for handwritten text recognition, cultural heritage digitization, and uncertainty quantification. I collaborate with international partners in Europe and regional U.S. institutions. I teach core data science and math/stats courses and mentor graduate student researchers. I have also served on numerous academic committees shaping curriculum, cyberinfrastructure, accreditation, and PhD policy.

Interests

Research

- Digital humanities
- Handwritten text recognition
- Human-in-the-loop systems
- Uncertainty quantification

Teaching

- Applied mathematics/statistics
- Applied AI/ML
- Student research mentorship
- Curriculum design

Academic Positions

2024–Present	*Assistant Professor*	Meharry Medical College
2023–2024	*Lecturer*	Middle Tennessee State University
2023	*Adjunct Instructor*	Trevecca Nazarene University
2022–2023	*Adjunct Instructor*	Middle Tennessee State University
2022	*Adjunct Instructor*	Cumberland University
2015–2021	*Graduate Teaching Assistant*	Middle Tennessee State University
2014–2015	*Tutor*	Trevecca Nazarene University

Education

2015–2021	*Ph.D. in Computational and Data Science*	Middle Tennessee State University
2015–2017	*M.S. in Mathematics*	Middle Tennessee State University
2011–2015	*B.S. in Mathematics/Physics*	Trevecca Nazarene University

Research

Journal Articles

2024

G. West, M. I. Swindall, B. Keener, T. Player, A. C. Williams, J. H. Brusuelas, and J. F. Wallin. "An Approach for Noisy, Crowdsourced Datasets Utilizing Ensemble Modeling, Normalized Distributions of Annotations, and Entropic Measures of Uncertainty," *Journal of Data Mining and Digital Humanities, Special Issue: Historical Documents and Automatic Text Recognition*. https://arxiv.org/abs/2210.16380.

2023

G. West, M. Ogden, and J. Wallin. "A robust fitness function and genetic algorithm to morphologically constrain the dynamics of interacting galaxies," *Astronomy and Computing*, 42. https://doi.org/10.1016/j.ascom.2023.1006.

2022

G. West, Z. Sinkala, and J. Wallin. "A kernel mixing strategy for use in stochastic optimization and adaptive Markov chain Monte Carlo contexts," *Frontiers in Applied Mathematics and Statistics*, 8. https://doi.org/10.3389/fams.2022.9.

Conference Proceedings

2024

G. West, M. I. Swindall, J. H. Brusuelas, and J. F. Wallin. "A deep learning pipeline for the palaeographical dating of ancient Greek papyrus fragments." *ACL 2024 ML4AL Workshop*.

M. I. Swindall, K. Upadhyay, J. H. Brusuelas, G. West, J. F. Wallin "Smart Digital Edition Management: A Blockchain Framework for Papyrology." *Association of Computing Machines SIGMIS Computers and People Research Conference.*

M. I. Swindall, G. West, J. H. Brusuelas, A. C. Williams, and J. F. Wallin. "Towards a Platform for AI-Assisted Papyrology." *29th Annual Association of Computing Machines Conference on Intelligent User Interfaces.*

2023

M. I. Swindall, G. West, J. H. Brusuelas, and J. F. Wallin. "A.I.-Assisted Papyrology: Integrating Deep Learning into the Scholarly Workflow." *Alpha, Aleph, and AI: Languages of the Ancient Mediterranean and Near East, Bristol, United Kingdom*

M. B. Ogden, J. F. Wallin, G. West, and A. Holincheck. "Exploring dynamical parameters of interacting galaxies using deep learning and optimization." *The 13th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Wilmington, NC, USA.*

2022

J. F. Wallin, M. I. Swindall, G. West, and J. H. Brusuelas. "Crowd-sourced datasets and Deep Learning," *American Mathematical Society, Special Session on Methods and Applications in Data Science*, University of Texas at El Paso, El Paso, TX. (1179-68-15190).

G. West, M. Ogden, and J. Wallin. "Data-driven fitness functions for optimizing simulations of interacting galaxies," *Astronomical Society of the Pacific Conference Series*, 532. Virtual conference held November 9-12, 2020. https://ui.adsabs.harvard.edu/abs/2022ASPC..532..299W

2020

G. West, M. Ogden, J. Wallin, Z. Sinkala, and W. Smith. "Optimizing Numerical Simulations of Colliding Galaxies I: Fitness Functions and Optimization Algorithms," *Research Notices of the American Astronomical Society*, 4, 136. doi.org/10.3847/2515-5172/abad9b.

M. Ogden, G. West, J. Wallin, Z. Sinkala, and W. Smith. "Optimizing Numerical Simulations of Colliding Galaxies II: Comparing Simulations to Astronomical Observations," *Research Notices of the American Astronomical Society*, 4, 136. doi.org/10.3847/2515-5172/abad9c.

2013

G. West and A. Fowler. "Improving Radio Astronomy Using High Altitude Balloons as Calibration Sources," *2013 Academic High Altitude Balloon Conference*. doi.org/10.31274/ahac.5604.

Presentations and Seminars

2025

G. West. "Echoes of Athens: Bringing Advances in AI/ML to Ancient Greek Papyrology," *SACS MMC Ethical and Responsible AI in Medical Systems Seminar Series*.

2024

G. West, M. I. Swindall, J. H. Brusuelas, and J. F. Wallin. "Echoes of Athens: Bringing Advances in AI/ML to Ancient Greek Papyrology," *Oak Ridge National Laboratory, AI Seminar Series*.

2023

M. I. Swindall, G. West, J. H. Brusuelas, and J. F. Wallin. "A.I.-Assisted Papyrology: Integrating Deep Learning into the Scholarly Workflow," *MTSU Computational Science Seminar*.

M. I. Swindall, G. West, J. H. Brusuelas, and J. F. Wallin. "Understanding Ancient Manuscripts Using Crowd-sourcing and Data Science," *AWS Human-in-the-Loop Science Summer Seminar Series*.

2020

G. West, M. Ogden, J. Wallin, Z. Sinkala, and W. Smith. "Using two-factor similarity scoring functions to quantify and optimize the morphological similarity of models of interacting galaxies," *MTSU College of Basic and Applied Science's Scholar's Week*.

2019

M. Ogden, G. West, and J. Wallin. "Towards a semi-automated computing pipeline for the fitting of simulations of interacting galaxies to observational data," *MTSU Computational Science Seminar*.

2018

G. West, Z. Sinkala, and J. Wallin. "RSAP: An adaptive Metropolis algorithm with rejection-based Gaussian proposal-scaling for fast convergence in multimodal parameter spaces," *MTSU Computational Science Seminar*.

2015

G. West. "Genetic Algorithms: A Biology-Inspired Approach to the Longest Path Problem," *TNU Undergraduate Research Symposium*.

2013

G. West. "Improving Radio Astronomy Using High Altitude Balloons as Calibration Sources," *TNU Undergraduate Research Symposium*.

Dissertation

2021

G. West. "On fitting the morphology of simulations of interacting galaxies to synthetic data," Defended November 9, 2021.

Collaborating Institutions

- **Middle Tennessee State University (MTSU)** – Longstanding collaborator on astrophysics and digital humanities projects.
- **University of Kentucky (UK)** – Regional partner on digital humanities projects.
- **Ägyptisches Museum und Papyrussammlung (Berlin, Germany)** – Collaborations on ancient manuscripts and paleography.
- **Università degli Studi di Firenze (Florence, Italy)** – Collaborations on ancient manuscripts and paleography.
- **Università degli Studi di Napoli Federico II (Naples, Italy)** – Collaborations on ancient manuscripts and paleography.

- **Country Music Hall of Fame and Museum (Nashville, TN)** – Partner on digitization and harmonization of historical document transcriptions.
- **Meharry School of Global Health (SOGH)** – Joint development of AI literacy initiatives through the institutional QEP.

Grant Proposals

- **2025 – "2026 Sloan Research Fellowship"**
  The Alfred P. Sloan Foundation
  Submitted; pending
- **2025 – "Expanding HPC Resources at Meharry Medical College: A Multi-H200 GPU Catalyst" (PI)**
  MS-CC, Research Catalyst Program
  Submitted; not selected for funding
- **2025 – "Resolving Heterogeneity in AI-generated Transcriptions of Handwritten Documents" (Co-PI)**
  Schmidt Sciences, Humanities and AI Virtual Institute
  Submitted; not selected for funding

Teaching Experience

Meharry Medical College (2024–Present)

- MSDS 520: Mathematical & Statistical Foundations for Data Science
- MSDS 565: Predictive Modeling and Analytics
- Math/Stats Bootcamp for Incoming Students

Middle Tennessee State University (2015–2024)

- ASTR 1030: Intro to Astronomy (assistant)
- MATH 1710: College Algebra
- DATA 1500: Introduction to Data Science
- DATA 3500: Data Cleansing and Feature Engineering
- DATA 3550: Applied Predictive Modeling
- CSCI 4900: Special Topics in Computer Science
- DATA 6300: Data Understanding
- DATA 6310: Data Exploration
- DATA 6320: Predictive Modeling
- COMS 6500: Fundamentals of Scientific Computing (assistant)

Cumberland University (2022)

- MATH 098: Basic Algebra
- MATH 100: Algebra Workshop

Trevecca Nazarene University (2014–2015; 2023)

- INT 0960: Intermediate Algebra
- MATH 1510: Calculus I (tutor)
- SCI 2150: Intro to Computer Technology for the Sciences (tutor)
- EEC 3150: Engineering Programming II

Service

Meharry Medical College (2024–Present)

- **Director, Laboratory of Applied Interdisciplinary AI Research**

  - Established LAIR with NSF RISE startup funding to support interdisciplinary AI research
  - Provided student support for digital humanities AI projects
- **Chair, Course Evaluation Committee**
  - Led the design and deployment of a new course evaluation survey
- **Founder, Cyberinfrastructure Committee**
  - Organized a team to explore establishing self-administered cyberinfrastructure in line with OIT policies and oversight
- **Member, QEP Topic Selection Committee for SACSCOC Reaffirmation**
  - Represented SACS on college-wide committee for QEP topic selection
  - Negotiated with Reaffirm leadership for a collaborative proposal b/t SACS andd SGH
  - Led the writing of two QEP proposals from multiple MMC schools (SACS, SACS/SGH)
  - Expedited topic sorting and selection using LLM tools
- **Member, ABET Assessment Committee**
  - Helped develop and map learning outcomes and KPIs to core SACS courses
  - Collected and documented course materials for ABET assessment
- **Member, Research Infrastructure and Library Resources Committee**
  - Connected MMC with Cambridge Computer vendor
  - Developed technical specifications for an 8x L40S GPU server to support SACS research
- **Member, Curriculum Committee**
  - Developed course schedules for new and updated degree programs
  - Advocated for an AI/ML course audit to identify content gaps and overlaps
- **Examiner, Candidacy Exam Committee**
  - Served as primary examiner for MSDS 565
  - Led three study sessions with students, ensuring full student success (all passed)
- **Member, Student Evaluation, Promotion, and Advancement Committee (SEPAC)**
  - Monitored at-risk students
  - Streamlined academic processes, including redesign of the change-of-major form
- Additional Service
  - Delivered presentation on efficient committee sizes and policies
  - Presented grant proposals and white papers at faculty development meetings

Advising & Mentorship

Academic Advisees (MMC)

- Xianye Xiao
- Zimazile Khumalo
- Robert Agee
- Hannah Boykin
- Jessica Owens
- Antonio Brown
- Ellen Gentile
- Jaylin Dyson
- La Chiara Ladrum
- Jonathan Obele

Graduate Student Research (MMC, MTSU, UK)

- Matthew Swindall (MTSU) — advised project “Advancing Digital Papyrology: Machine Learning and Blockchain Tools for Modernizing the Study of Ancient Greek Manuscripts”
- Richard Hoehn (MTSU) — advised in laying groundwork for transformer-based ancient Greek autocorrect model
- Riley Sheridan (UK) — advised packaging of ancient Greek HTR and paleography pipelines
- Hritik Dalvi (UK) — advised literature review and coding on LLM uncertainty quantification for HTR
- Jaylin Dyson (MMC) — advised development of transformer-based ancient Greek autocorrect model; “Bridging Past and Present: Modernizing Du Bois’ Visualizations for Contemporary Data Science Education”
- Hannah Boykin (MMC) — “Bridging Past and Present: Modernizing Du Bois’ Visualizations for Contemporary Data Science Education”

Undergraduate Student Research (MTSU, 2017–2020)

- 2020: Ethan Lawing — "Regression analysis of human-scored galaxy models using WNDCHRM image features"
- 2019: William Smith — "Estimating tidal distortion of interacting galaxies with the impulse approximation"
- 2017: Matthew Ogden — "Creation of realistic galaxy images from simulations"

Awards

2021	*Magna Cum Laude*	Middle Tennessee State University (Ph.D.)
2017	*Magna Cum Laude*	Middle Tennessee State University (M.S.)
2015	*Summa Cum Laude*	Trevecca Nazarene University (B.S.)
2015	*Excellence in Mathematics*	Trevecca Nazarene University — Awarded to the top student in their final year of a bachelor's degree
2011–2015	*Dean's List*	Trevecca Nazarene University — Awarded each semester with a GPA of 3.5 or higher

Software Skills

Python Packages

- numpy/scipy
- pandas
- matplotlib/seaborn
- opencv/skimage
- keras/tensorflow
- sklearn
- openai
- BeautifulSoup
- networkx
- streamlit
- yfinance
- nltk/spacy

Other Languages/Tools

- LaTeX
- Linux
- GitHub
- Fortran
- Mathematica
- Maple
- Matlab
- C/C++ w/ MPI
- Java

Memberships

- Association of Computational Linguistics (ACL)
- American Astronomical Society (AAS)
- Phi Delta Lambda Honors Society
- Sigma Zeta National Science and Mathematics Honors Society