

James Weatherhead

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Education

UTMB John Sealy School of Medicine, MD/PhD/MPH

Expected MD Graduation: 2029

Galveston, Texas

Doctoral Advisor: Peter McCaffrey, MD, MS, FCAP (Chief AI Officer, UTMB)

PhD Candidate. On track to defend dissertation by December 2026; returning to MS3 clinical rotations thereafter.

- USMLE Step 1 (Passed)
- PhD Qualifying Examination (Passed)
- Advanced to PhD Candidacy (Application Approved)

St. Mary's University

Graduated: 2021

San Antonio, Texas

Bachelor of Science in Biology, Minor in Chemistry

- NCAA Tennis Student-Athlete

Doctoral Research

Dissertation focus: Privacy-preserving deployment of large language models in clinical workflows.

Healthcare AI systems can operate under HIPAA Business Associate Agreements (BAAs), but most external tools, including web search and current-literature retrieval, are not BAA-covered. This creates a practical boundary condition: any query containing protected health information (PHI) must be reliably de-identified before it leaves a secure environment. Insufficient de-identification forces a tradeoff between PHI exposure risk and restricted external-tool access, a primary driver of unsanctioned "shadow AI" usage in healthcare. My dissertation evaluates and improves this boundary through three contributions:

- ASQ-PHI: an adversarial synthetic-data benchmark for clinical PHI de-identification, evaluating rule-based, cloud-based, vector-based, and on-device (Ollama) approaches (peer-reviewed; AMIA 2026 Amplify poster)
- K-anonymity decay analysis quantifying identifiability erosion across multi-turn clinical LLM conversations (peer-reviewed)
- Local PHI Scrubber: a Chrome extension performing on-device, human-in-the-loop PHI redaction using small language models (3-4B parameters), enabling zero data transmission while preserving access to external tools (AMIA 2026 Amplify oral presentation, Session CI25)

Research & Clinical Experience

UTMB / Microsoft AI Hackathon Participant

September 2025 to Present

Medical Imaging Cohort Creation with Natural Language

- Selected to participate in a collaboration between UTMB and Microsoft Research
- Contributed to development of NLP-based cohort discovery platform addressing a critical bottleneck: traditional imaging cohort creation requires weeks of cross-departmental coordination between PACS administrators, data warehouse teams, and radiologists
- Participated in implementation of semantic search architecture utilizing medical image embeddings and radiology report indexing on Azure infrastructure
- Collaborated with Microsoft engineers on multimodal data integration pipeline combining DICOM metadata, HL7 clinical data, and unstructured imaging reports

Research Assistant to Peter McCaffrey, MD, MS, FCAP (Chief AI Officer, UTMB)

June 2024 to Present

UTMB John Sealy School of Medicine, Galveston, TX

- Co-developed AutoTox, an AI-powered toxicology interpretation system deployed in UTMB clinical pathology workflow (featured in Retool case study, September 2024; see Selected Press)
- Develop HIPAA-compliant semantic search and AI agent infrastructure for clinical content discovery in governed environments
- First author on two peer-reviewed publications in 2026 (PHI de-identification benchmarking; multi-turn clinical LLM privacy) and co-author on a third (LLM evaluation on neurology board-style questions); see Publications

AI Researcher, Thrive AI Health (OpenAI Startup Fund-backed)

July 2025 to October 2025

San Francisco, CA

- Built biological age prediction models from wearable sensor and biomarker data
- Designed AI agents with LangGraph to analyze health data from wearables and recommend personalized interventions
- Integrated wearable data from Junction (health data aggregation platform) into AI analysis pipelines
- Deployed Python code to iOS and Android app stores
- Debugged AI agent interactions using LangSmith tracing tools

Research Assistant to Stephen Molldrem, PhD

October 2022 to January 2024

UTMB John Sealy School of Medicine, Galveston, TX

- Analyzed effectiveness of Community Health Integrated Response Portal (CHIRP) digital health platform
- Integrated vaccination rates, community partner data, and CDC Social Vulnerability Index (SVI) metrics
- Presented findings at National Student Research Forum 2023 and IPEP Symposium 2023

Research Assistant to Amina El Ayadi, PhD

October 2022 to January 2024

UTMB John Sealy School of Medicine, Galveston, TX

- Investigated lipid biomarkers in neuroinflammation using murine burn injury models
- Conducted systematic literature reviews and statistical analyses using R and SPSS

Research Assistant to Terry Shackleford, PhD

August 2019 to April 2022

St. Mary's University, San Antonio, TX

- Conducted laboratory testing of anti-cancer drugs on pediatric sarcoma cell lines
- Analyzed drug effectiveness using dose-response curves and IC50 calculations

Research Internship

June to August 2019

ELM Lab, UT Dell Medical School, Austin, TX

- Conducted meta-analysis of memory enhancement in treatment-resistant epilepsy patients with deep brain stimulation (DBS)
- Authored case report on DBS outcomes in patient with comorbid OCD and autism spectrum disorder
- Presented findings at Student Summer Research Symposium, St. Mary's University

Publications

1. **Weatherhead J**, Hasan A, Weatherhead J, Golovko G, Grant B, Garcia JD, Certuche HS, Powell RP, Abril JM, McCaffrey P. K-anonymity decay in multi-turn clinical large language model conversations. *Frontiers in Digital Health*. 2026;8:1832168. doi: [10.3389/fdgth.2026.1832168](https://doi.org/10.3389/fdgth.2026.1832168)
2. **Weatherhead J**, Golovko G, McCaffrey P. ASQ-PHI: An adversarial synthetic data benchmark for clinical de-identification and search utility. *Data in Brief*. 2026;65:112586. Published 2026 Feb 11. doi: [10.1016/j.dib.2026.112586](https://doi.org/10.1016/j.dib.2026.112586)
3. Almomani M, Valaparla V, **Weatherhead J**, Fang X, Dabi A, Li C-Y, McCaffrey P, Hier D, Rodríguez-Fernández JM. Evaluation of multiple generative large language models on neurology board-style questions. *Frontiers in Digital Health*. 2026;7:1737882. doi: [10.3389/fdgth.2025.1737882](https://doi.org/10.3389/fdgth.2025.1737882)

Presentations and Invited Talks

2026 AMIA Amplify Conference, Grand Hyatt Denver, CO

May 19, 2026

Oral Presentation: "Local PHI Scrubber: A Chrome Extension for On-Device PHI Redaction in Clinical LLM Workflows."

Session CI25: Guardrails, Governance, and Getting It Right (Amplify 25x5 Track), Mt. Sopris B.

Poster Presentation: "ASQ-PHI: An Adversarial Synthetic Benchmark for Clinical PHI De-Identification." Poster Session 1, Amplify Health Equity Track, Aspen Ballroom. Sponsored by University of Colorado Anschutz Center for Health AI.

Digital Pathology Association Conference

October 2025

Presentation: "Beyond Digital Pathology: Leveraging AI to Improve Cancer Detection and LLMs to Personalize Care."

Retool Summit (Industry Talk)

2024

Talk: "How UTMB Improved Diagnostic Testing for Thousands of Patients Using AI."

Perplexity AI HQ, San Francisco (Invited Talk)

2024

Talk: Presented HIPAA-compliant semantic search technology for clinical content discovery.

2026 AI in Health Conference (AIHC), Rice University Ken Kennedy Institute, Houston, TX September 15-17, 2026

Poster Presentation: "Agentic AI-Assisted Real-World Evidence Analysis Identifies EBV-Specific Neurovascular Risk after Corticosteroid Exposure in Older Adults." Authors: Golovko G, Cwiklik E, Watson R, **Weatherhead J**, Naydanova E, Botnar K, Woolsey C, Khanipov K.

Honors and Awards

Winner, Google DeepMind Gemini 3 Pro Vibe Coding Hackathon (Kaggle)

March 2026

Selected as one of 50 winners from 4,096 global submissions; affiliation: The University of Texas Medical Branch

- Built "VibeRad", a next-generation DICOM viewer in which AI agents educate, explain, and guide students and trainees through medical images (built with Gemini 3 Pro in Google AI Studio)
- Cited by UTMB President and CEO Jochen Reiser, MD, PhD in his June 2026 public communication on UTMB's system-wide enterprise AI initiative, naming the win as part of UTMB's "compounding portfolio of innovation"

Selected Press and Media

UTMB News: "UTMB AI Innovators Win International Hackathon with Radiology Viewer and Teaching Tool" June 26, 2026

UTMB News. utmb.edu/news/article/utmb-news/2026/06/26/utmb-ai-innovators-win-international-hackathon-with-radiology-viewer-and-teaching-tool

- Official UTMB News feature on the Google DeepMind Gemini 3 Kaggle hackathon win, profiling VibeRad and the UTMB AI innovators team

Microsoft Healthcare and Life Sciences Blog: "Using Natural Language to Build Healthcare Imaging Cohorts for Research"

December 2025

Microsoft Tech Community. techcommunity.microsoft.com/blog/HealthcareAndLifeSciencesBlog/using-natural-language-to-build-healthcare-imaging-cohorts-for-research/4472603

- Named in acknowledgements as contributor on Microsoft HLS Frontiers AI publication describing the UTMB / Microsoft Research collaboration on natural-language medical imaging cohort discovery
- Authored by Manoj Kumar (Director, HLS Data and AI, Microsoft), Alberto Santamaria-Pang (Principal Applied Data Scientist, HLS Frontiers AI; Adjunct Faculty, Johns Hopkins Medicine), and Jared Erwin (Senior Software Engineer, HLS Nursing AI and Data Platform)

Retool Case Study: "How the University of Texas Medical Branch Improved Diagnostic Testing for Thousands of Patients Using AI"

September 2024

Retool Engineering Blog. retool.com/blog/how-utmb-improved-diagnostics-ai

- Co-credited as lead engineer (with Gladson John, under Dr. Peter McCaffrey) on AutoTox, an AI-powered toxicology interpretation system deployed at UTMB

- Reduced toxicology sign-out time by 66% (15 minutes to 5 minutes); increased pathology review throughput tenfold (50 to 500 cases per week); HIPAA-compliant Azure backend
- Live demo and discussion: youtube.com/watch?v=Di7O9hJg1aM

Teaching

Guest Lecturer, NTD 6088: Independent Study on AI Agent Systems for Biomedical Research
Spring 2026

UTMB Graduate School of Biomedical Sciences

- Delivered guest lecture "Agentic Coding with Claude Code" on agentic coding workflows and tooling patterns using the Claude Code CLI
- Seven attendees, primarily technical programmers and one PhD researcher

Leadership and Service

Co-President and Co-Founder
August 2022 to Dec 2024

AI in Medicine Student Organization, UTMB

- Lead bi-weekly meetings on cutting-edge AI developments in healthcare
- Organize coding camps for K-12 students on AI integration
- Deliver educational presentations on AI advancements to UTMB community

Medical Student Leadership Roles

TMA Delegate and Co-Chair, Texas Medical Association Leadership Committee
Jan 2023 to Dec 2024

Committee Member, AMA Committee on Health Information Technology
Jan 2023 to Dec 2024

Student Ambassador, UTMB School of Medicine
Nov 2022 to Dec 2024

Clinical Volunteering

St. Vincent's Hope Clinic Intern
Aug 2022 to Present

Luke Society Clinic Volunteer
Nov 2022 to Present

Street Medicine Student Organization
Aug 2022 to Present

SIGHT Community Garden Volunteer
Dec 2022 to Aug 2024

Community Outreach

Co-President and Co-Founder, STEM Outreach RSO, St. Mary's University
2019 to 2021

COVID-19 Community Outreach, San Antonio Food Bank
2020 to 2021

Professional Memberships and Competitions

OpenAI Forum, Member
June 2026 to Present

- Member of the OpenAI Forum, OpenAI's curated community advancing public discourse on safe AI development among researchers, developers, and stakeholders

Kaggle, Competitions Participant
June 2024 to Present

Active in international AI/ML competitions including:

- NVIDIA Nemotron Model Reasoning Challenge: LoRA fine-tuning of Nemotron-3-Nano-30B (rank ≤ 32 adapter); lightweight fine-tuning via Hugging Face, Unsloth, and TRL; prompting strategies, synthetic data generation, and reinforcement learning for reasoning
- Google DeepMind Vibe Code with Gemini 3 Pro hackathon: multimodal AI application development (Winner; see Honors and Awards)

- OpenAI AI Agent Security Multi-Step Tool Attacks: LLM agent red-teaming, adversarial prompt injection, and agentic security evaluation

Clinical Shadowing

Robert Michler, MD, Chair of Surgery, Montefiore Medical Center, NYC Summer 2017
Observed coronary artery bypass graft surgeries and vein graft assessments

Katherine B. Vadasdi, MD, Orthopedic Surgeon, Greenwich, CT Summer 2017
Observed orthopedic procedures including arthroscopy, ACL reconstruction, and tendon repairs

Skills, Certifications, and Training

Programming and AI/ML

- Languages: Python, SQL, R
- AI Tools: LangGraph, LangChain, LangSmith, multi-agent orchestration, LLM API integration, vector databases, embedding models, on-device LLMs (Ollama)
- Experience: 4+ years applied AI and natural language processing; 3+ years with PubMed NCBI APIs

Certifications and Training

- **Foundation: Monitoring Production Agents**, LangChain Academy. Issued April 2026. Production agent monitoring with LangSmith: cost tracking, product analytics with trace insights, latency and error monitoring, user sentiment, A/B testing, security monitoring, and alerts.
- **Ambient Agents with LangGraph**, LangChain Academy. Issued February 2026. Built an ambient email agent from scratch with LangGraph; covered LangGraph fundamentals, agent design, agent evaluations with LangSmith, human-in-the-loop, memory, and deployment.
- **Deep Research with LangGraph**, LangChain Academy. Issued February 2026. Built a multi-agent deep research system with LangGraph; covered scoping, research agents, research agents with Model Context Protocol (MCP), research supervisors, and full multi-agent orchestration; evaluated performance with LangSmith.
- **Deep Agents**, LangChain Academy. Issued February 2026. Implemented a Deep Agent for complex, long-running tasks; covered agent creation, todo lists for task planning, file systems for persistent knowledge, and subagents for delegating work.
- **Foundation: Introduction to Agent Observability and Evaluations**, LangChain Academy. Issued January 2026. Agent tracing, evaluation, prompt engineering, human feedback, and production observability with LangSmith.
- **Quickstart: LangGraph Essentials, Python**, LangChain Academy. Issued January 2026. LangGraph essentials including nodes, edges, conditional edges, memory, and human-in-the-loop interrupts; built a complete email workflow application in Python.
- **Foundation: Introduction to LangChain, Python**, LangChain Academy. Issued December 2025. Built AI agents in Python with LangChain covering foundational models, tools, short-term memory, multimodal messages, MCP, context and state, multi-agent systems, human-in-the-loop, and dynamic agents.
- **Emerald Cloud Lab, Level 1 Certification**. Issued November 2024. Robotic laboratory automation platform.