# Joshua W. Anderson

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## Summary

PhD Student in Intelligent Systems with a strong foundation in data science, specializing in bias, interpretability, and causal methods to develop fair, transparent, and effective models for real-world challenges in healthcare and international development. Current research focuses on bias mitigation in clinical decision-making. Passionate about leveraging AI to improve quality of life through robust, transparent, and practical implementations.

## Education

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| **PhD** | University of Pittsburgh, Intelligent Systems | Expected: Oct. 2026 |
| **MS** | Chapman University, Computational and Data Sciences | May 2022 |
| **BS** | Chapman University, Computer Science | May 2020 |

## Work Experience

**NIH T15 Research Fellow** Jan. 2023 to Present
**University of Pittsburgh**, Pittsburgh, PA

- Evaluate the impact and clinical relevance of fairness metrics in decision support models
- Present findings to interdisciplinary audiences, bridging technical and clinical perspectives
- Publish peer-reviewed research on algorithmic bias & fairness for biomedical informatics

**Contract Data Scientist & Graduate Research Assistant** Aug. 2020 to Aug. 2022
**World Bank & Chapman University**, Orange, CA

- Developed a multi-source data pipeline using AWS S3 buckets
- Utilized open-source GIS data to measure vulnerability in sub-Saharan Africa
- Managed two undergraduate research assistants

**Graduate Teaching Assistant, Data Structures & Algorithms** Aug. 2021 to May 2022
**Chapman University**, Orange, CA

- Assist in grading assignments throughout the semester
- Hold TA sessions to review course content and help with questions about lectures
- Be available to students as a resource for study

**Graduate Teaching Assistant, Statistical Models for Business** Aug. 2020 to Dec. 2020
**Chapman University**, Orange, CA

- Graded problem sets and provided quality feedback to students
- Attended classes to help students get the most out of Zoom lectures
- Held office hours to provide homework help and reinforce concepts from lecture

**Applications Development & Vulnerability Analyst Intern** Mar. 2019 to Aug. 2019
**CISOSHARE**, San Juan Capistrano, CA

- Built and debugged web application modules using React.js
- Interfaced with NoSQL databases for a web application using RethinkDB
- Applied cybersecurity concepts, such as security architecture to application development

**Data Analytics Intern** Jun. 2018 to Aug. 2018
**Ingram Micro**, Irvine, CA

- Created SQL and other queries to acquire data accurately and efficiently
- Output insights describing exceptions or significant anomalies from queries
- Fully automated analytics project by configuring a server-based application

**Computer Science & Mathematics Tutor** Feb. 2017 to Jul. 2017
**Oxford Tutoring**, Irvine, CA

- Tutored AP Computer Science students to prepare them for coursework and the AP exam
- Taught mathematics to grade school students to assist them in accelerating their education
- Debugged and walked through student projects to help them learn to Java

## Teaching Experience

Talks / Guest Lectures:

- [Fall 2025] Machine Learning for Managers @ Chapman University
  - Topics in Machine Learning: Algorithmic Fairness
- [Fall 2025] High Performance Computing @ Chapman University
  - Topics in Artificial Intelligence: Mechanistic Interpretability
- [Spring 2025] Machine Learning for Managers @ Chapman University
  - Topics in Machine Learning: Algorithmic Fairness
- [Spring 2022] Intro to Data Science @ Chapman University
  - Topics in Data Science: Causal Inference

Teaching Assistant:

- [Fall 2021, Spring 2022] Data Structures and Algorithms @ Chapman University
- [Fall 2020] Machine Learning for Managers @ Chapman University
- [Fall 2020] Statistical Models for Business @ Chapman University

## Academic Service

Student Mentoring:

- Mentor and Lecturer, UPMC Hillman Cancer Center Academy
  - Mentored a high school student in computational research; designed and delivered instructional sessions to the cohort
- Research Mentor, HershLab
  - Supervised 3 undergraduate students; guided on coursework, research tasks, and skill development

Peer Reviewer:

- ACM Transactions on Intelligent Systems and Technology
- NeurIPS Reliable ML Workshop
- International Conference on Information Systems
- Journal of American Medical Informatics Association
- Journal of Biomedical Informatics

## Publications

Papers:

- Anderson, J. W., & Visweswaran, S. (2025). Algorithmic individual fairness and healthcare: a scoping review. *JAMIA Open*, *8*(1), ooae149.
- Anderson, J. W., Shaikh, N., & Visweswaran, S. (2024). Measuring and reducing racial bias in a pediatric urinary tract infection model. *AMIA Summits on Translational Science Proceedings*, *2024*, 488.
- Anderson, J. W., & Rakovsk, C. (2023). An R package for parametric estimation of causal effects. *arXiv Preprint arXiv:2307.08686*.

- Anderson, J. W. (2022). CausalModels: An R Library for Estimating Causal Effects. *Chapman University*.
- Anderson, J. W., Encina, L. I. A., Karippacheril, T. G., Hersh, J., & Stringer, C. (2022). A Topic Modeling Approach to Classifying Open Street Map Health Clinics and Schools in Sub-Saharan Africa. *arXiv Preprint arXiv:2212.12084*.

Awards:

- AMIA Informatics Summit 2024, *Student Paper Award nomination*: "Measuring and Reducing Racial Bias in a Pediatric Urinary Tract Infection Model"
- AMIA Annual Symposium 2023, *Distinguished Poster Award nomination*: "Assessing Racial Bias in Clinical Prediction for Urinary Tract Infections"