

# OLAWALE SALAUDEEN

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## EDUCATION

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### Stanford University

*September 2022 - Present*

Visiting Ph.D. Student Researcher  
Department of Computer Science  
Advisor: Sanmi Koyejo

### University of Illinois at Urbana-Champaign

*August 2019 - Present*

Ph.D. Candidate  
Department of Computer Science  
Advisor: Sanmi Koyejo

### Texas A&M University

*August 2015 - May 2019*

Bachelor of Science with Honors, Mechanical Engineering  
Minors in Computer Science and Mathematics

## RESEARCH INTERESTS

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Deep Learning, Transfer Learning (Domain Adaptation/Generalization), Causal Inference/Discovery, Causality-Inspired Machine Learning, Probabilistic Graphical Models

## PUBLICATIONS

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5. *Adapting to Latent Subgroup Shifts via Concepts and Proxies*  
Ibrahim Alabdulmohsin, Nicole Chiou, Alexander D'Amour, Arthur Gretton, Sanmi Koyejo, Matt J. Kusner, Stephen R. Pfohl, **Olawale Salaudeen**, Jessica Schrouff, Katherine Tsai.  
Authors listed in alphabetical order.  
The International Conference on Artificial Intelligence and Statistics (AISTATS), 2023.
4. *Target Conditioned Representation Independence (TCRI); From Domain-Invariant to Domain-General Representations*  
**Olawale Salaudeen**, Oluwasanmi Koyejo.  
arXiv, 2022
3. *Addressing Observational Biases in Algorithmic Fairness Assessments*  
Chirag Nagpal, **Olawale Salaudeen**, Sanmi Koyejo, Stephen Pfohl.  
Conference on Neural Information Processing Systems (NeurIPS), 2022. Workshop on Algorithmic Fairness through the Lens of Causality and Privacy (AFCP) (extended abstract)
2. *Ultra-fast 3D fMRI to explore cardiac-induced fluctuations in BOLD-based functional imaging*  
Brad Sutton, Aaron Anderson, Benjamin Zimmerman, Paul Camacho, Riwei Jin, Charles Marchini, **Olawale Salaudeen**, Natalie Ramsy, Davide Boido, Serge Charpak, Andrew Webb, Luisa Ciobanu.  
International Society for Magnetic Resonance in Medicine (ISMRM), 2022. (abstract)
1. *Exploiting Causal Chains for Domain Generalization*  
**Olawale Salaudeen**, Sanmi Koyejo.  
Conference on Neural Information Processing Systems (NeurIPS), 2021. Workshop on Distribution Shifts – Connecting Methods and Applications (DistShift)

## PROFESSIONAL EXPERIENCE

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### Google Research

*May 2022 - Present*

*Student Researcher - Cambridge, MA*

- Worked on a team to develop a domain adaptation algorithm under latent confounder distribution shift; developed semi-synthetic data for evaluation and implemented state-of-the-art domain adaptation algorithms

## Sandia National Laboratories

May 2017 - April 2022

*Year-Round R&D Intern - Albuquerque, NM*

- 2021.** Developed a deep set predictor with configurable mean and pairwise errors (Type I/II) for multiclass prediction in the context of contraband detection in images
- 2020.** Worked on a team to develop models to classify organic materials in X-ray images
- 2020.** Designed and executed experiments to investigate the effectiveness of Reinforcement Learning in sequence to sequence generation – Deep Q Network in the context of automated code generation
- 2019.** Implemented a rationale generating Recurrent Convolutional Neural Network model for triage classification of triggered network security alerts
- 2019.** Prototyped a Convolutional Neural Network framework for semantic segmentation of X-Ray images of Improvised Explosive Devices and generation of a graphical model of designs of the devices
- 2018.** Developed and implemented a multi-modal deep Recurrent Neural Network framework for classifying safety rules for maintenance tasks from mixed numerical and textual tasks descriptions
- 2018.** Extended a 2D Simultaneous Localization and Mapping (SLAM) algorithm for ground systems to 3D for air systems equipped with 3D-LIDAR, IMU/GPS
- 2017.** Designed and prototyped an intrusion detection and localization system using fiber-optic disturbances
- 2017.** Researched and presented applications of big data analysis to learn physical properties of a configuration space based on electromagnetic disturbances in transmitted wireless signals

## HONORS AND AWARDS

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| • NSF Miniature Brain Machinery Research Trainee<br><i>University of Illinois at Urbana-Champaign</i> | 2021 |
| • GEM Associate Fellow<br><i>University of Illinois at Urbana-Champaign</i>                           | 2021 |
| • Beckman Institute Graduate Fellow<br><i>University of Illinois at Urbana-Champaign</i>              | 2020 |
| • Sloan Scholar<br><i>Alfred P. Sloan Foundation's Minority Ph.D. (MPHD) Program</i>                  | 2019 |
| • Masters Fellowship Program (declined)<br><i>Sandia National Laboratories</i>                        | 2019 |
| • Mechanical Engineering Advisory Council Scholarship<br><i>Texas A&amp;M University</i>              | 2018 |
| • Foundation Excellence Award<br><i>Texas A&amp;M University</i>                                      | 2017 |
| • Pi Tau Sigma, Sigma Delta<br><i>National Mechanical Engineering Honors Society</i>                  | 2016 |
| • Craig and Galen Brown Honors College of Engineering<br><i>Texas A&amp;M University</i>              | 2015 |
| • Regents Scholar Program<br><i>Texas A&amp;M University</i>  | 2015 |

## RESEARCH EXPERIENCE

**University of Illinois at Urbana-Champaign**

September 2021 - Present

*Miniature Brain Machinery NSF Trainee with Prof. Sanmi Koyejo and Prof. Brad Sutton – Champaign, Illinois*

- An NSF-funded research traineeship that combines cognitive and behavior studies with brain cell and tissue biology
- Developing machine learning algorithms to detect and remove nuisance artifacts, such as the effects of breathing, from fMRI scans

**University of Illinois at Urbana-Champaign**

August 2020 - July 2021

*Beckman Institute Graduate Research Fellow with Prof. Sanmi Koyejo, Prof. Brad Sutton, and Prof. Aron Barbey – Champaign, Illinois*

- Developed a causal structure learning framework to isolate and remove motion artifacts in functional Magnetic Resonance Images (fMRI)

**University of Illinois at Urbana-Champaign**

August 2019 - July 2020

*Graduate Research Assistant with Prof. Sanmi Koyejo and Prof. Aron Barbey – Champaign, Illinois*

- Developed a learning framework for estimating multi-modal individual treatment effects, correlated changes, and counterfactuals in the context of human performance optimization

**Texas A&M University Multi-Robot Laboratory**

October 2018 - May 2019

*Undergraduate Researcher with Prof. Dylan Shell – College Station, TX*

- Created and analyzed a novel geometry-based motion planning algorithm for tethered robots

**Texas A&M University Energy Systems Laboratory**

August 2016 - October 2018

*Undergraduate Researcher with Prof. Charles Culp – College Station, TX*

- Developed probabilistic algorithms for fault detection and diagnosis in industrial Heating Ventilation and Air Condition systems

**TALKS AND PRESENTATIONS**

3. Denoising via probabilistic graphical model augmentation of ICA-AROMA  
*University of Illinois at Urbana-Champaign Beckman Institute Graduate Student Seminar*
2. Automated Incorporation of Machine Learning (AIM)  
*Sandia National Laboratories MARTIANS End of Summer Symposia, 2020*
1. Interpretable Recurrent Convolutional Neural Networks for Cyber Alert Triaging  
*Sandia National Laboratories MARTIANS End of Summer Symposia, 2019*

**SERVICE****Reviewing**

Neural Information Processing Systems (NeurIPS)	2022
NeurIPS Algorithmic Fairness through the Lens of Causality and Privacy (AFCP) Workshop	2022
International Conference on Machine Learning (ICML) – <i>Top 10% reviewer award</i>	2022
NeurIPS Black In AI (BAI) Workshop	2021

**University of Illinois at Urbana-Champaign**

Directed Reading Program, Mentor	2022-Present
Graduate Study Committee, 1 of 2 Graduate Student Members	2022
Broadening Participation in Computing, Engagement Subcommittee Member	2021 - 2022
Graduates Engineers Diversifying Illinois, Mentor	2020 - 2022
Institute for Inclusion, Diversity, Equity, and Access (IDEA), Affiliate Member	2020 - Present

## **Mentorship**

Distributed Research Experiences for Undergraduates (DREU)

2021

## **TEACHING**

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- Foundations of Engineering, Peer Teacher – Texas A&M University 2018-2019
- Introduction to Microcontrollers, Co-Instructor – Sandia National Labs HMTech 2018, 2019