

# 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

## PEER-REVIEWED PUBLICATIONS

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3. Matt J. Kusner, Ibrahim Alabdulmohsin, Stephen Pfohl, Olawale Salaudeen, Arthur Gretton, Sanmi Koyejo, Jessica Schrouff, Alexander D’Amour. “*Adapting to Shifts in Latent Confounders using Observed Concepts and Proxies*”. International Conference on Machine Learning, 2022. Workshop on Principles of Distribution Shift (PODS)
2. Brad Sutton, Aaron Anderson, Benjamin Zimmerman, Paul Camacho, Riwei Jin, Charles Marchini, Olawale Salaudeen, Natalie Ramsy, Davide Boido, Serge Charpak, Andrew Webb, Luisa Ciobanu. “*Ultra-fast 3D fMRI to explore cardiac-induced fluctuations in BOLD-based functional imaging*”. International Society for Magnetic Resonance in Medicine (ISMRM), 2022 (abstract)
1. Olawale Salaudeen, Oluwasanmi Koyejo. “*Exploiting Causal Chains for Domain Generalization*” Conference on Neural Information Processing Systems (NeurIPS), 2021. Workshop on Distribution Shifts – Connecting Methods and Applications (DistShift)

## RESEARCH EXPERIENCE

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### 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

## **INTERNSHIPS**

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### **Google Brain**

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
- Developed foundations for generalization bounds under distribution shifts induced by unobserved interventions
- Developed a procedure for empirically estimating domain-to-domain transferability from unlabeled samples under distribution shifts induced by unobserved interventions

### **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.** Working 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

## INVITED TALKS

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1. Denoising via probabilistic graphical model augmentation of ICA-AROMA  
*University of Illinois at Urbana-Champaign Beckman Institute Graduate Student Seminar*

## OTHER TALKS

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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

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### Reviewing

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

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

### Mentorship

Distributed Research Experiences for Undergraduates (DREU)	2021
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## HONORS AND AWARDS

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NSF Miniature Brain Machinery Research Trainee <i>University of Illinois at Urbana-Champaign</i>	2021
GEM Associate Fellow <i>University of Illinois at Urbana-Champaign</i>	2021
Beckman Institute Graduate Fellow <i>University of Illinois at Urbana-Champaign</i>	2020
Sloan Scholar <i>Alfred P. Sloan Foundation's Minority Ph.D. (MPHD) Program</i>	2019
Masters Fellowship Program (declined) <i>Sandia National Laboratories</i>	2019
Mechanical Engineering Advisory Council Scholarship <i>Texas A&amp;M University</i>	2018

Foundation Excellence Award <i>Texas A&amp;M University</i>	2017
Pi Tau Sigma, Sigma Delta <i>National Mechanical Engineering Honors Society</i>	2016
Craig and Galen Brown Honors College of Engineering <i>Texas A&amp;M University</i>	2015
Regents Scholar Program <i>Texas A&amp;M University</i>	2015