

# OLAWALE SALAUDEEN

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## EDUCATION

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**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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### Workshop Papers

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*

### Abstracts

1. 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)*

## 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** May 2022 - Present  
*Student Researcher - Cambridge, MA*

**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*

## SERVICE

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### Reviewing

International Conference on Machine Learning (ICML) 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

## HONORS AND AWARDS

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NSF Miniature Brain Machinery Research Trainee 2021  
*University of Illinois at Urbana-Champaign*

GEM Associate Fellow 2021  
*University of Illinois at Urbana-Champaign*

Beckman Institute Graduate Fellow 2020  
*University of Illinois at Urbana-Champaign*

Sloan Scholar 2019  
*Alfred P. Sloan Foundation's Minority Ph.D. (MPHD) Program*

Masters Fellowship Program (declined) 2019  
*Sandia National Laboratories*

Mechanical Engineering Advisory Council Scholarship 2018  
*Texas A&M University*

Foundation Excellence Award 2017  
*Texas A&M University*

Pi Tau Sigma, Sigma Delta 2016  
*National Mechanical Engineering Honors Society*

Craig and Galen Brown Honors College of Engineering 2015  
*Texas A&M University*

Regents Scholar Program 2015  
*Texas A&M University*