OLAWALE SALAUDEEN

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EDUCATION

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

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

PUBLICATIONS

6. *Target Conditioned Representation Independence (TCRI); From Domain-Invariant to Domain-General Representations*
Olawale Salaudeen, Oluwasanmi Koyejo.
In Review.

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.
In Review.

4. *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)

3. *Adapting to Shifts in Latent Confounders using Observed Concepts and Proxies*
Matt J. Kusner, Ibrahim Alabdulmohsin, Stephen Pfohl, **Olawale Salaudeen**, Arthur Gretton, Sanmi Koyejo, Jessica Schrouff, Alexander D'Amour.
International Conference on Machine Learning, 2022. Workshop on Principles of Distribution Shift (PODS)

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

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
- 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

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

HONORS AND AWARDS

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

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) – *Top 10% reviewer award*	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