

School of Electrical Engineering and Computer Science
Washington State University
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RESEARCH SUMMARY

My general research interests are in Artificial Intelligence (AI) and Machine Learning (ML), with a main focus on developing robust, safe, and trustworthy Machine Learning algorithms for addressing critical real-world challenges within safety-sensitive domains. My current work focuses on developing efficient algorithms and theoretical frameworks to enhance the reliability and safety of deep learning algorithms. My research is specifically concentrated on:

- Adapting Uncertainty Quantification methods, like Conformal Prediction, to facilitate effective and secure human-ML collaboration within healthcare applications.
- Trustworthy Out-of-Distribution (OOD) Detection for ensuring the reliability of ML models when applied to real-world tasks beyond their original training scope.

EDUCATION

Ph.D., Computer Science <i>Washington State University</i> Advisor: Prof. Jana Doppa	2022 – Present <i>Pullman, WA, USA</i>
BS., Statistics (First Class Honors) <i>University of Nigeria</i> Thesis title: <i>Sensitivity of Randomization test and F-test in Some Experimental Designs</i> Class rank: <i>Best Graduating Student</i>	2014 – 2018 <i>Nsukka, Nigeria</i>

PROFESSIONAL APPOINTMENTS

Research Assistant <i>EECS Department – Washington State University</i>	Aug 2022 – Present <i>Pullman, WA, USA</i>
Teaching Assistant <i>EECS Department – Washington State University</i> CptS 223: Advanced Data Structures C/C++ (Fall-2022) CptS 315: Introduction to Data Mining (Spring-2023) CptS 223: Advanced Data Structures C/C++ (Fall-2023) CptS 315: Introduction to Data Mining (Spring-2024)	Aug 2022 – Present <i>Pullman, WA, USA</i>
Teaching Assistant <i>Statistics Department – Kano State Polytechnic</i>	2019 – 2020 <i>Kano, Nigeria</i>

AWARDS AND HONORS

EECS Outstanding Graduate Student Teaching Assistant Award	2024
EducationUSA Opportunity Fund Program Scholar <i>USA Embassy, Abuja, Nigeria</i>	2022
Best Graduating Student <i>Statistics Department – University of Nigeria</i>	2018
Best in Nigerian Statistical Association competition for undergraduates <i>Representative of the University of Nigeria.</i>	2018
Gold medalist in Nigerian Statistical Association competition <i>Representative of the University of Nigeria.</i>	2018

PUBLICATIONS

PAPERS UNDER REVIEW AND PREPRINTS

1. [AAAI'25] **Ugwu, C. E.**, Yan Yan, Diane Cook, Janardhan Rao Doppa (2024). *Adaptive Prediction Region for Multi-target Regression*.
2. [DATE'25], Pratyush Dhingra, **Ugwu, C. E.**, Jana Doppa and Partha Pratim Pande (2024). *ERGo: Energy-Efficient Hybrid GNN Training on Heterogeneous Processing-In-Memory Architecture*
3. **Ugwu, C. E.**, Yan Yan, Diane Cook, Janardhan Rao Doppa (2024). *Importance-Weighted Calibrated Region Prediction of Multi-target Cognitive Health Measures from Smartwatch Sensor Data*.

JOURNAL PAPERS

1. Oladugba, A. V., **Ugwu, C. E.**, & Onwuamaeze, U. C. (2023). Sensitivity and robustness of randomization test and F-test in some experimental designs. *Quality and Reliability Engineering International*, 39(7), 2967-2974.

CONFERENCE PAPERS

1. Oladugba, A. V., **Ugwu, C. E.**, & Onwuamaeze, U. C. (2018). A Comparison of randomization test and F-test in some experimental designs. *Nigerian Statistical Association 42nd Annual National Statistical Association conference, 2018*.