Princewill Okoroafor

Email: pco9@cornell.edu   **Website**: pokoroafor.github.io

Research interests	Theoretical Computer Science, Learning Theory, Algorithmic Game Theory

Education

Cornell University   Ithaca, NY
PhD in Computer Science   August 2020 – Present
Advisor: Robert Kleinberg.

Harvey Mudd College   Claremont, CA
BS in Computer Science and Mathematics   August 2016 – May 2020
Mentors: Ran Libeskind (CS), Mohamed Omar (Math)

Honors and scholarships

Computer Science Department Honors (Harvey Mudd)	2020
ACM ICPC Southern California Regional (5th Place)	2019
Shamit Grover '05 and Kara McManus Scholarship (Harvey Mudd)	2016
Pan-African Science Olympiad (Gold Medal)	2015
International Math Olympiad (Honorable Mention)	2012

Publications

Non-stochastic CDF Estimation Using Threshold Queries
Prncewill Okoroafor, Vaishnavi Gupta, Robert Kleinberg, Eleanor Goh.
SODA, 2023.

Faster Recalibration of an Online Predictor via Approachability
Princewill Okoroafor, Wen Sun, Robert Kleinberg.
pre-print, 2022.

Research experience

Fair ERM in the Malicious Adversary Model
Mentors: Avrim Blum (TTIC)   Summer 2022
We study the impact of adversarial data corruptions on the accuracy of fair learning algorithms and propose robustness modifications.

Online CDF Estimation
Mentors: Robert Kleinberg (Cornell)   2021 – Present
Designed sample-efficient algorithms for estimating the empirical distribution of a sequence of non-stochastic samples using threshold queries.

Calibrated Forecasting in Online Learning
Mentors: Robert Kleinberg (Cornell), Wen Sun (Cornell)   Sep 2020 – Present
Worked on improving worst-case guarantees on the calibration error in online prediction. Proposed technique based on Blackwell's Approachability Theorem for achieving calibration and no-regret simultaneously.

Teaching experience	**Teaching assistant, Cornell University**	2021 - 2022

CS 6789: Foundations of Reinforcement Learning
CS 4820: Introduction to Analysis of Algorithms

Teaching assistant, Harvey Mudd College   Fall 2017 - Spring 2020

MATH 055: Discrete Mathematics
MATH 171: Abstract Algebra
MATH 172: Abstract Algebra II: Representation Theory
CS 81: Computability and Logic
CS 140: Algorithms
CS 181D: Complexity Theory
PHYS 24: Mechanics and Wave Motion

Industry experience	**Microsoft Research,** MSR NYC	Virtual

Research Intern - advised by Akshay Krishnamurthy   Summer 2020

Developed a codebase for implementing new reinforcement learning algorithms with support for benchmarking and testing multiple RL algorithms in different environments.

Microsoft, Microsoft Teams   Bellevue, WA

Software Engineer Intern   Summer 2018, Summer 2019

Successfully implemented the user interface and business logic for read receipts feature in one-on-one chats on Microsoft Teams. Implemented the business logic for group chats in addition as a stretch goal.

Successfully implemented the raise hand feature for calls and meetings on the new version of Microsoft Teams based on ReactJS. Later implemented this feature on AngularJS for backward compatibility.

Jobs in Nigeria,   Lagos, Nigeria

Software Developer Intern   Summer 2014

Implemented a web crawler that parses data (specifically job listings) from a webpage into a database using Scrapy, a Python web crawling framework.

Talks and tutorials	**Non-Stochastic CDF Estimation Using Threshold Queries**	Nov 2022

Cornell Fall 2022 Theory Seminar

Skills	**Programming**	

Proficient in: Python, Javascript, C++, HTML/CSS, Git
Familiar with: Racket, React, AngularJS, NodeJS

Languages

English (fluent), Igbo (fluent), French (conversational)

Service and outreach	**Young Data Scientists League**	Jan 2018 – present

Content Developer. The Young Data Scientists League (YDSL) is a non-profit community of students, educators, data scientists, and academic researchers in data science. Our mission is to provide every student with the pathways and motivation to use data to shape our world in diverse, creative, and ethical ways. More at https://www.youngdatascientists.org

Special Maths Academy Nigeria   Jan 2020 – present

Helped develop a summer camp designed for secondary school students who are passionate about building their mathematical foundation to be able to successfully participate in the Nigerian mathematics Olympiad. Our mission at SMAL is to build a sustainable ecosystem for the young talented Nigerian mathematicians; to mentor and nurture them from an early stage.

Gear Up - Renton, WA   Aug 2019

Curated content for and taught at STEM summer school for middle school students in Renton as a volunteer for the Washington Student Math Association. Gear Up is a national program focused on increasing the college and career readiness of low-income students.

MISE CS Research Camp - Accra, Ghana   Summer 2017

Worked with *Amy Zhang*, Facebook AI Research Engineer to prepare and present lectures on Computational Thinking using Python to equip students with tools needed to build machine learning models using Python libraries. MISE is a summer camp that offers excellent high school students opportunities to work on research projects led by graduate and post-doctoral mentors.

Gifted Math Camp - Abuja, Nigeria   Summer 2015, Summer 2017

Taught and mentored at high school math camp for exceptional students from across Nigeria.

Other interests	soccer, chess.