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## Education

- Ph.D. in Mathematics, Howard University, 2017
- Bachelor's Degree in Mathematics, University of the District of Columbia (UDC), 2007

# Highlights

- Developed, implemented and taught introduction to data science course.
- Developed mathematics major with a concentration in data science.
- Faculty member of the Virtual Applied Data Science Training Institute (VADSTI).
- Microsoft Visiting Data Science Professor Program (Summer 2021)
- Co-Creator of Howard University's Coursera course: Linear Algebra for Data Science Using Python
- Team member of Howard University, University Of Delaware &NSA's Social Network Research Program (2020 2021)
- Grant: 3U54MD007597-33S2 (PI: Kwagyan, John) 9/15/21 01/30/24 Enhancing Data Science Capability and Application at Howard University, NIH/NIMHD Administrative supplement to the parent grant, Howard University Research Centers for Minority Health and Health Disparities (PI, Parent grant: Southerland, William) with a goal to enhance capacity building in data science by offering training to students, faculty, and researchers at Howard University. Role: co-investigator. Award Amount: \$386, 250.00
- GRT000313 National Research Experience for Undergraduates Program (NREUP). Award Amount: \$28,999.00

# Employment

#### Howard University, Washington, DC

- Master instructor, Department of Mathematics (Fall, 2023 to present)
- Lecturer, Department of Mathematics (Fall, 2017-Spring, 2023)
- Chair of the graduate students' seminar (2015)

## **Research Interests**

Differential Privacy, applications of ordinary differential equations to model infectious diseases, and applications of Optimal Controls theory to vector-borne diseases.

# Publications

- Moussa Doumbia and Abdul-Aziz Yakubu, "Malaria Incidence and Anopheles Mosquito Density In Irrigated and Non-Irrigated Villages Of Niono In Mali" Vol. 22, no. Discrete and Continuous Dynamical Systems - Series B (DCDS-B) (January 2017).
- 2. Differential Privacy in Machine Learning: An Overview and Limitations (in Progress)
- 3. Asymptomatic Malaria Infections in Pregnant Women of Ngbo in Ohaukwu local Government Area of Ebonyi State of Nigeria (in progress)

# **Students Projects**

- Statistical Significance and Predictive Modeling: An Advanced EDA and Machine Learning Approach to COVID-19 Data Analysis, (Summer, 2023)
- Covid-19 Prediction using SEIRAF Model (Summer 2023)

## Awards and Achievements

- Outstanding Faculty of the mathematics department (2021 2022).
- Best Oral Presenter award, Research Day at Howard University (April 2013).
- Outstanding Poster Presenter award, South Africa US Conference in Mathematical Methods in Systems Biology and Population Dynamics, Cape Town (January 2012).
- Visiting Scholar, Mathematical Biosciences Institute, Ohio State University (January 2011 August 2011)
- Edward A. Bouchet Fellowship Howard University (2008-2013).

# Invited Talks

- Joint Mathematics Meetings: "Asymptomatic Malaria Infections in Pregnant Women of Ngbo in Ohaukwu local Government Area of Ebonyi State of Nigeria." Baltimore Convention Center (2019).
- AMS Special Session "Malaria Incidence and Anopheles Mosquito Density in Irrigated and Adjacent Non-Irrigated Villages of Niono in Mali." Georgetown University (2015)

# **Conference Activity**

- Panels Organized: NSF-CBMS Regional Conference Mathematical Biology: Modeling and Analysis at Howard University (May 2018).
- Discussant: CCICADA: The 2017 Annual Meeting of the Command, Control Interoperability Center for Advanced Data Analysis Howard University (2017).

## Presentations

- Workshop on Precision Medicine "Asymptomatic Malaria Infections in Pregnant Women of Ngbo in Ebonyi State of Nigeria." Howard University (April 2016).
- SACNAS National Conference. The Diversity in STEM Conference "Malaria Incidence and Anopheles Mosquito Density in Irrigated and Adjacent Non-Irrigated Villages of Niono in Mali." Gaylord National Resort and Convention Center (October 2015).
- MPE 2013+ Workshop on Management of Natural Resources, "Malaria Incidence and Anopheles Mosquito Density in Irrigated and Adjacent Non-Irrigated Villages of Niono in Mali". Howard University (June 2015).

## Workshops Attended

- Workshop on Using Data to Drive Reform Through Prosecutorial Performance, Atlanta University Consortium, Atlanta (June 2022).
- Modeling of Mathematical Modeling of Neuropathies and Neuropsychiatric Illnesses Howard University (April 2017).
- Frontiers in Mathematical Oncology: Young Investigator's Conference, University Of Maryland, College Park (April 2017).
- KI-Net Conference: Groups and interactions in data, networks, and biology Jointly sponsored by the Ki-Net and the Center for Nonlinear Analysis, Carnegie Mellon University, (May 2015).
- Workshop on Modeling Infectious Diseases, Howard University (December 2016).
- Workshop on Precision Medicine, Howard University (April 2016).
- Workshop on the Treatment of Cancer Howard University (December 2015).

#### **Teaching Experience**

- Intro to Data Science, Applied Calculus, College Algebra I and Pre-calculus (Fall 2023)
- Intro to Data Science, Applied Calculus, College Algebra I&II (Spring 2023),
- Intro to Data Science, Applied calculus, College Algebra I&II Pre-calculus II (Fall 2022)
- Introduction to Linear Algebra, Introduction to Data Science, Applied Calculus, College Algebra I&II (Fall 2022);
- Probability and Statistics, Calculus III (Summer 2022);
- Introduction to Data Science, Applied Calculus, College Algebra I and College Algebra II (Spring 2022)
- Introduction To Data Science (Fall 2021); Seminar Comp Data Sci II (Spring 2021); Applied Calculus(Spring 2021);
- Topic in Applied Mathematics (Fall 2020); Applied Calculus (Fall 2020); College Algebra I (Fall 2020);
- Seminar Comp Data Sci II (Spring 2021); Applied Calculus (Spring 2021);
- Topic in Applied Mathematics (Fall 2020); Applied Calculus (Fall 2020); College Algebra I (Fall2020);
- Calculus I STEM (Summer 2020); Pre-calculus (Summer 2020);
- Pre-Calculus (Spring 2019); College Algebra I (Spring 2019); Pre-Calculus (Spring 2019);
- Applied Calculus (Fall 2018); College; Pre-Calculus (Fall 2018); College Algebra I (Fall 2018);
- Calculus III (Summer 2018); College Algebra II (Summer 2018);
- Pre-Calculus (Spring 2018); College Algebra I (Spring 2018); College Algebra II (Spring 2018);
- Probability & Statistics (Fall 2017); Applied Calculus (Fall 2017); College Algebra I (Fall 2017);
- Calculus III (Summer 2017); College Algebra I (Summer 2017); College Algebra II (Summer 2017)