Kwabena Afriyie, OWUSU

Modeling and analysis of complex systems with applications on sustainability and climate change.

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Born on 13 Dec 1988, Ghanaian.

Education

2016 - 2020	UNIVERSITY CHEIKH ANTA DIOP, SENEGAL	*PhD Mathematics*

Thesis - Human-Resource Interactions : An Experimental Economics and Dynamic Modelling Perspective.

Supervisors
Prof. Agostino Merico, Jacobs University, Germany.
Prof. Mouhamed M. Fall, African Inst. for Mathematical Science, Senegal.
Prof. Papa Ngom, Cheikh Anta Diop University, Senegal.

Reporters
Prof. Alessandro Tavoni, University of Bologna, Italy.
Prof. Ilona Otto, Potsdam Inst. for Climate Impact Research, Germany.

Funding - German Academic Exchange Service, DAAD. (For more information about my PhD, see Project HARVEST)

2013- 2014	UNIVERSITY OF CAPE-COAST, GHANA	*MSc Mathematical Science*

Thesis - Conway's Game of Life and its Variations.

Supervisor
Prof. Sergey Kitaev, University of Strathclyde, United Kingdom.

Funding - African Institute for Mathematical Sciences, Ghana.

2008- 2012	UNIVERSITY OF MINES AND TECHNOLOGY, GHANA	*BSc Mathematics (distinction)*

Thesis - Comparison of Ordinary Regression and Errors-in-Variables Regression with Applications to Real Life Data.

Supervisor
Dr. Martin Koduah, University of Mines and Technology, Ghana.

2005- 2007	GHANA SECONDARY TECHNICAL SCHOOL , GHANA	*WASSCE*

General Science option : Physics, Biology, Chemistry, and Mathematics.

Experience

2020-2022	AFRICAN INSTITUTE FOR MATHEMATICAL SCIENCES, SENEGAL	*Postdoctoral*

Scientific and networking coordinator for the project INDUCE to produce sound scientific knowledge for the conservation of fish functional diversity from socially inclusive and environmentally-sustainable economic growth perspectives in Senegal. (For more information about the project, see Project INDUCE).

2018 - 2019	AFRICAN INSTITUTE FOR MATHEMATICAL SCIENCES, SENEGAL	*Ass. Lecturer*

Organizing, preparing and providing lectures (at AIMS-Senegal). I also supervised research essays including resolving problems with programming, and comprehension.

2016- 2018	LEIBNIZ CENTRE FOR TROPICAL MARINE RESEARCH, GERMANY	*Guest Scientist*
	CHAIR IN MATHEMATICS AND ITS APPLICATIONS, SENEGAL	*PhD Fellow*

I spent the first half of each year with the systems ecology group of ZMT, Germany, and the second half of the year with the Humboldt research chair of AIMS, Senegal. During my stays, I served as a teaching assistant to my respective supervisor's students.

2012- 2013   University of Mines and Technology, Ghana   *Teaching Assistant*

Reviewing lecture materials with students and marking assignment.

Scientific contributions

Published   **Owusu, K.A.**, Acevedo-Trejos, E., Fall, M. M., Merico, A., Effects of cooperation and different characteristics of marine protected areas on a simulated artisanal fishery, *Ecological Complexity*. 44 (2020): 100876. https://doi.org/10.1016/j.ecocom.2020.100876

Owusu, K.A., Kulesz, M.M., Merico, A., Communication among harvesters leads to sustainable fishing behaviour in a continuous time common pool resource experiment , *Frontiers in Marine Science, Ocean Solutions*. 2021. https://doi: 10.3389/fmars.2021.644056

Owusu, K.A., Kulesz, M.M., Merico, A., Extraction behaviour and income inequalities resulting from a common pool resource exploitation, *Sustainability*. 2019; 11(2):536. https://doi.org/10.3390/su11020536

Under review   **Owusu, K.A.**, Fall, M. M., An agent-based model to assess the impact of non-pharmaceutical interventions on the spread of COVID-19 for Dakar region, Senegal, *Spatial and Spatio-temporal Epidemiology*. (see here for details)

In preparation   **Owusu, K.A.**, Fall, M. M., Merico, A., Bioenergy crops versus food crops: An Agent-Based Modelling study of land-use conflict in Ghana.

With this study, we investigate the competing interests between bioenergy companies and farmers and the factors that may drive Ghanaian farmer's decision to cultivate Jatropha and the implications for food security in the country.

Awards

2021   Research Stays for University Academics and Scientists Scholarship,   DAAD.
A research grant to visit ZMT, Germany on 1st October - 31st December, 2021.

2016 - 2018   German Academic Exchange (DAAD) Doctoral Scholarship,   AIMS - Senegal.

2016 - 2017   Canadian International Dev. Research Centre Grant ,   IDRC.
A small research grant awarded to AIMS Alumni (AASRG).

2013 - 2014   African Inst. for Mathematical Sciences Masters Scholarship,   AIMS - Ghana.

Projects

2020 - 2022   INDUCE : Defining socially-inclusive strategies for conserving fish functional diversity and promoting sustainable blue economy,   BMZ & GIZ, Germany.

African German Partners for Ocean Knowledge initiative of the German Federal Ministry for Economic Cooperation and Development (BMZ) aimed at providing policy-makers with the scientific information for profound decisions for the effective management and conservation of Africa's ocean and coasts.

2015 - 2016   HARVEST : Harvest behaviour in common pool resource systems: data analysis and modelling of dynamic decision making,   DAAD, AIMS & ZMT.

Master students mentoring

Meseyeki Saiguran, *Evaluation of Markov Chains to Describe Movements on Tiling*, African Institute for Mathematical Sciences, Senegal, with Prof. Arne Ring, University of the Free State, South Africa, 2018.

Racheal Afua Arkorful, *Symbolic Data Analysis*, African Institute for Mathematical Sciences, Senegal, with Prof. Niang Ndeye, National Conservatory of Arts and Crafts (CNAM), France, 2018.

Professional affiliations

International Association for the Study of the Commons (IASC).

Global Land Programme (GLP).

Selected recent conferences and workshops

Participant　Meerwissen African German Partners for Ocean Knowledge initiative Co-Design Workshop, 3 - 5 December 2019, Hamburg, Germany.

Agent-Based Modeling of Social-Ecological Systems, Arizona State University, January 7-11, 2019, Tempe, Arizona, USA.

Teaching Individual / Agent-Based Modeling, Humboldt State University, July 30 - Aug 3, 2018, Arcata, California, USA.

Instructor　Winter School on "Mathematical Modelling of Ecological and Socioeconomic Systems", African Institute for Mathematical Sciences, January 27-31, 2020, Mbour, Senegal.

Winter School on "Non-linear Dynamics and Scientific Writing", African Institute for Mathematical Sciences, February 4-8 2019, Mbour, Senegal.

Others

Computing Skills　I have good command over Python, R, and LaTeX.

Media coverage　Fish App - Young African Mathematicians Help Senegal's Fishermen
A film about my doctoral project by Tomorrow Today Science Magazine aired on Deutsche Welle (DW) television on Sept 20, 2015 at 21:30-22:00 UTC.

Language　English - Excellent fluency ; French - Basic knowledge ; Akan - Native language.

References

Prof. Agostino Merico
Leibniz Center for Tropical Marine Research
Bremen / Germany
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agostino.merico@leibniz-zmt.de

Prof. Mouhamed Moustapha Fall
President - African Institute for Mathematical Sciences
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