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Department of Statistics and Actuarial Science  
Kwame Nkrumah University of Science and Technology (KNUST)  
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Associate Professor

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## PERSONAL INFORMATION

Date of Birth June 5, 1972  
Place of Birth Accra, Ghana  
Nationality Ghanaian  
Marital Status Married

## EDUCATION

October 2007–June 2011 **PhD Applied Mathematical Statistics**, *RPTU Kaiserslautern-Landau (formerly known as University of Kaiserslautern)*, Germany  
October 2001–November 2003 **MSc Financial Mathematics**, *RPTU Kaiserslautern-Landau (formerly known as University of Kaiserslautern)*, Germany  
January 1995–August 1999 **BSc Mathematics**, *University of Cape Coast*, Ghana  
September 1990–June 1992 **G.C.E. A'Level**, *Bishop Herman College*, Kpando, Ghana  
Subjects: Mathematics, Physics, Chemistry, General Paper.  
September 1985–June 1990 **G.C.E./S.C. O'Level**, *Bishop Herman College*, Kpando, Ghana  
Subjects: English Language, Modern Mathematics, Additional Modern Mathematics, Physics, Chemistry, Biology, Economics, Geography.  
September 1979–August 1985 **Common Entrance Examinations**, *Harrow International Preparatory School, Abeka, Accra*, Ghana

## AREAS OF SPECIALIZATION

Mathematical Statistics, Financial Statistics, Financial Mathematics and Actuarial Science

## AREAS OF RESEARCH INTEREST

Statistical Modelling, Financial Modelling, Design and Analysis of Experiments

## SELECTED PUBLICATIONS

Overcoming Technical and Operational Barriers in Low-Voltage Mini-Grids: Two Decades of Research Trends, Progress, and Pathways for Accelerated Rural Electrification (2005–2025), *Energies*, 19(4), 933. Mahu, S.A., Odoi-Yorke, F., Adu-Poku, A., Avuglah, R.K., Frimpong, E.A., Quansah, D.A., Kemausuor, F. (2026).

Predicting Malaria Outbreaks in Children Under Five: Insights from Ghana, *Journal of Health Informatics in Africa*, 12(1). Boateng, M.A, Agyapong, E.K, Treasure, T.K, Avuglah, R.K and Nigre, J.S (2025).

Optimizing Renewable Energy Integration: Advanced Statistical Modelling Techniques for Enhanced Grid Stability and Economic Viability. *Academia Green Energy*, 2(2). Owusu-Ansah, E. D. G. J., Avuglah, R. K., Harris, E., Kyere, A. Y., Amankwaah, B. D. (2025).

Machine Learning Algorithms Analysis of Synthetic Minority Oversampling Technique (SMOTE): Application to Credit Default Prediction. *Ratio Mathematica*, 53. Owusu-Ansah, E. D. G. J., Doamekpor, R., Avuglah, R. K., Adwubi, Y. K. (2024).

Geographically weighted logistic regression model for identifying risk factors for malaria infection among under-5 children in Ghana. *Scientific African*, 26, e02398. Appiah, E. K., Aidoo, E. N., Avuglah, R. K., and Appiah, S. K. (2024).

Quantum Leap and Uptake for Technological Advances in Africa in the Era of the COVID-19 Crisis. *Examining the Rapid Advance of Digital Technology in Africa*, 238-269. Owusu-Ansah, E. D. G. J., Avuglah, R. K., and Kyere, Y. A. (2024).

Simulation Study of Estimators of the Gamma Rate Parameter Using MLE as a Baseline Estimator. *Journal of the Indian Society for Probability and Statistics*, 25(1), 307-325. Frempong, N. K., and Avuglah, R. K. (2024).

Determinants of Length of Stay of Snakebite Victims in a Hospital. *Statistical Modeling Approach. European Journal of Theoretical and Applied Sciences*, 1(5), 1445-1453. Frempong, N. K., Avuglah, R. K., Anane, J. A., and Atambire, J. (2023).

A mixture of Clayton, Gumbel, and Frank copulas: A complete dependence model. *Journal of Probability and Statistics*, 2022(1), 1422394. Boateng, M. A., Omari-Sasu, A. Y., Avuglah, R. K., and Frempong, N. K. (2022).

Improved estimators for the rate parameter of gamma model using asymptotic properties, *Heliyon* 7(5), e0694. Frempong, N.K., Avuglah, R.K, Dontwi, I. K., Bukari, F. K. (2021).

Application of joint generalized linear models in determining physical support factors that influence crop yield in Northern Ghana, *Universal Journal of Agricultural Research*, 8(4), 124-130. Sarpong, S.A., Avuglah, R.K., Nsowah-Nuamah, N. N. N. (2020).

On a hybrid clayton-gumbel and gumbel-frank bivariate copulas with application to stock indices, *Journal of Advances in Mathematics and Computer Science*, 1-13. Boateng, M.A., Omari-Sasu, A.Y., Frempong, N.K., Avuglah, R. K. (2019).

Hybrid Clayton-Frank convolution-based bivariate Archimedean copula, *Journal of Probability and Statistics*, M. A. Boateng, M.A., Omari-Sasu, A. Y., Avuglah, R. K., Frempong, N. K. (2018).

On two random variables and Archimedean copulas, *International Journal of Statistics and Applications*. Boateng, M.A., Omari-Sasu, A.Y., Avuglah, R.K., N. K. Frempong (2017).

Macro and Micro Determinants of Credit Risks and its Effect on Profitability, International Journal of Emerging Technology and Advanced Engineering Vol.7(2): pgs. 103-107., Abanga M.N.A., and Avuglah, R.K.(2017).

Performance Assessment of Penalized Variable Selection Methods Using Crop Yield Data from the Three Northern Regions of Ghana, International Journal of Probability and Statistics 5(1):pgs. 10-17., Sarpong S.A., Nsowah-Nuamah N.N.N., Avuglah R.K., Oh S., Lee Y. (2016).

Impact of trade policies on wood products export in Ghana, American Journal of Mathematics and Statistics Vol.5(5): pgs. 221-229., Acquah, B.S., Avuglah, R.K., and Harris, E. (2015).

Analysis of Crop Yield Physical Support Services Data Using Hierarchical Generalized Linear Models, International Journal of Statistics and Applications Vol.5(5): pgs. 196 - 207., Sarpong, A.S., Oh, S., Avuglah, R.K., Nsowah-Nuamah, N.N.N., Lee, Y. (2015).

Analysing the Major Effects of Exports and Imports on the Balance of Foreign Trade in Ghana, Mathematical Theory and Modelling Vol.4, No.8: pgs. 115-120, Yakubu, D.K., Avuglah, R.K., and Harris, E. (2014).

Application of ARIMA Models to Road Traffic Accident Cases in Ghana, International Journal of Statistics and Application Vol.4, No.5: pgs. 233-239., Avuglah, R.K., Adu-Poku, K.A., and Harris, E. (2014).

Time Series Behaviour of the Volume of Wood Products Export in Ghana, International Journal of Statistics and Probability Vol.3, No.4: pgs. 12-24., Acquah, B.S., Avuglah, R.K., and Harris, E. (2014).

Modelling Road Traffic Fatality Cases in Ghana, Mathematical Theory and Modelling Vol.4, No.13: pgs. 113-120., Adu-Poku, K.A., Avuglah, R.K., and Harris, E. (2014).

Allocation of Assets on The Ghana Stock Exchange, International Journal of Financial Research Vol.4, No.2: pgs. 108-114., Mensah L., Avuglah, R.K., and Dedu, V. (2013).

Modelling Annual Coffee Production in Ghana Using Arima Time Series Model, International Journal of Business and Social Research, Vol.2, No.7: pgs. 175-186., Harris, E., Abudul - Aziz, A.R., and Avuglah, R.K. (2012).

Value-at-Risk based on Asymmetric GARCH-models, R.K. Avuglah, Master Thesis, Technical University of Kaiserslautern, Germany, (2003).

Some methods of solving 2nd order Non-Homogeneous Linear Ordinary Differential Equations, R.K. Avuglah, Undergraduate Dissertation, University of Cape Coast, Ghana, (1999).

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## POSITIONS AT KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY (KNUST), KUMASI

November 1, **Unity Hall of Residence, KNUST.**, Kumasi, Ghana  
2022-Date Hall Master

September 1, **Unity Hall of Residence, KNUST.**, Kumasi, Ghana  
2020- Senior Tutor

October 31,  
2022

January 1, **Council of Convocation, KNUST.**, Kumasi, Ghana  
 2020- Chairman  
 December 31,  
 2021.

January 1, **Council of Convocation, KNUST.**, Kumasi, Ghana  
 2018- Member  
 December 31,  
 2019.

August 1, **Department of Statistics and Actuarial Science, KNUST.**, Kumasi, Ghana  
 2019- Examinations Officer, Distance Learning Programmes  
 December 31,  
 2021.

August 1, **Department of Mathematics, KNUST.**, Kumasi, Ghana  
 2016- July Head  
 31, 2017

July 22, **College of Science, KNUST.**, Kumasi, Ghana  
 2015- July Representative on the Board of the International Programmes Office  
 31,2020.

May 22, **Department of Mathematics, KNUST.**, Kumasi, Ghana  
 2012- Examinations Officer for Postgraduate Programmes  
 December 31  
 2015.

## SCHOLARSHIPS

PhD German Academic Exchange Service, DAAD  
 Candidacy at  
 RPTU  
 Kaiserslautern-  
 Landau,  
 Germany.

Visiting German Academic Exchange Service, DAAD  
 Scholar at  
 RPTU  
 Kaiserslautern-  
 Landau,  
 Germany;  
 09/2023-12/2023

## EMPLOYMENT HISTORY

August **Kwame Nkrumah University of Science and Technology**, Kumasi, Ghana  
 2025–Date Associate Professor

August **Kwame Nkrumah University of Science and Technology**, Kumasi, Ghana  
 2015–July Senior Lecturer  
 2025

August **Kwame Nkrumah University of Science and Technology**, Kumasi, Ghana  
 2006–July Lecturer  
 2015

December **Fraunhofer Institute for Industrial Mathematics**, Kaiserslautern, Germany  
 2007–June Research Assistant  
 2011

September **Blessed Training Centre**, South Wimbledon, London, United Kingdom  
 2004–July Mathematics Teacher  
 2006

September **St. John’s Grammar Senior High School**, Achimota, Accra, Ghana  
 1999–March Mathematics Teacher  
 2001

October **St. Lawrence Preparatory/Junior High School**, North Kaneshie, Accra, Ghana  
 1993– Teacher  
 January 1995

October **National Council on Women and Development (NCWD)**, Ho, Ghana  
 1992–August National Service Person  
 1993

## COMPUTER SKILLS

Mathematical and Statistical Packages  
 MATLAB, R, Python, SPSS

Others  $\LaTeX$ , Microsoft Office Suite

## SELECTED INTERNATIONAL CONFERENCES ATTENDED

30 August – **Designed Experiments: Recent Advances in Methods and Applications (DEMA2011)**, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK  
 2 September 2011

3 December – **Cross-border Workshop for PhD Mathematics Students**, Département de Mathématiques and the Laboratoire de Mathématiques et Applications, Metz, France  
 4 December 2008

12 November – **Flexible Modelling: Smoothing and Robustness (FMSR2008)**, Katholieke Universiteit, Leuven, Belgium  
 – 14 November 2008

11 August– **Designed Experiments: Recent Advances in Methods and Applications (DEMA2008)**, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK  
 15 August 2008

14 January– **International Conference on Design of Industrial Experiments**, University of Antwerp, Belgium  
 15 January 2008

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## PROFESSIONAL ASSOCIATIONS

Member International Biometric Society  
Member Ghana Statistical Association

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## LANGUAGES

### GHANAIAN LANGUAGES

Ewe, Twi, Fluent  
Ga

### FOREIGN LANGUAGES

English Fluent *English is the official Language in Ghana. I studied in English throughout my education*  
German Higher Basic level *Language classes taken at Goethe Institute in Accra, Ghana and RPTU Kaiserslautern-Landau, Germany*

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## HOBBIES

I enjoy traveling, music, politics, athletics, soccer, tennis.

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## REFERENCES

### **Professor Isaac Kwame Dontwi**

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## UPDATED

April 27, 2026