

RICHARD KODZO
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Associate Professor

Department of Statistics and Actuarial Science
Kwame Nkrumah University of Science and Technology (KNUST)
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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**, University of Kaiserslautern, Germany
October 2001–November 2003 **MSc Financial Mathematics**, 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.

AREAS OF SPECIALIZATION

Mathematical Statistics
Financial Mathematics
Actuarial Science

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).

POSITIONS AT KNUST

November 1, 2022-Date	Unity Hall of Residence, KNUST. , Kumasi, Ghana Hall Master
September 1, 2020-	Unity Hall of Residence, KNUST. , Kumasi, Ghana Senior Tutor
October 30, 2022	
January 1, 2020-	Council of Convocation, KNUST. , Kumasi, Ghana 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
 2015.

SCHOLARSHIP

PhD German Academic Exchange Service, DAAD
 Candidacy

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
 2016–July Senior Lecturer
 2025

August **Kwame Nkrumah University of Science and Technology**, Kumasi, Ghana
 2006–July Lecturer
 2016

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

September **Blessed Training Centre**, London, UK
 2004–July Mathematics Teacher
 2006

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

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

COMPUTER SKILLS

Maths/Stats Packages MATLAB, R, Python, SPSS
Others \LaTeX , Microsoft Office Suite

SELECTED INTERNATIONAL CONFERENCES ATTENDED

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

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

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

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

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

PROFESSIONAL ASSOCIATIONS

Member American Statistical Association, USA
Member Royal Statistical Society, United Kingdom
Member International Biometric Society
Member Ghana Statistical Association

LANGUAGES

GHANAIAN LANGUAGES

Ewe, Twi, Ga
Fluent

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 and Technical University of Kaiserslautern*

INTERESTS

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

REFERENCES

Professor Isaac K. Dontwi

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