



**Zakayo Ndiku MORRIS**  
*Curriculum Vitæ (Jan 25, 2022)*

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## **EDUCATION**

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### **The Hong Kong Polytechnic University**

Ph.D. in Statistical Signal Processing

Coursework GPA of 4.0/4.0

Aug. 2016-Mar.2020

### **The University of Nairobi**

M.Sc. in Mathematical Statistics

GPA of 3.92/4.0

Sep. 2013-Sep. 2015

B.Sc. in Statistics (First-Class Honors)

GPA of 3.89/4.0

Oct. 2009-Aug. 2013

## **PROFESSIONAL EXPERIENCE**

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### **Lecturer**

Department of Mathematics and Statistics, University of Embu, Kenya (*Jan. 2022 -Present*).

### **Part time lecturer**

University of Nairobi, Kenya (*Sept. 2015 - April 2016 and Sept. 2021 – Jan. 2022*)

Machakos University, Kenya (*Sept. 2021 – Jan. 2022*)

The Cooperative University of Kenya, Kenya (*July. 2021 – Jan. 2022*)

Taita Taveta University, Kenya (*Jan 2016 - April 2016*)

### **Statistics Intern**

Kenya National Bureau of Statistics (*July 2012 - Oct 2012*)

### **Reviewer (2016 - present)**

I have served as a reviewer of the following journals:

- The Journal of the Acoustical Society of America.
- IEEE Transactions on Aerospace and Electronic Systems.
- IET Signal Processing.

## PUBLICATIONS

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### Journal Papers

1. K. T. Wong, **Z. N. Morris**, & C. J. Nnonyelu, “Rules-of-thumb to design a uniform spherical array for direction finding – its Cramér-Rao bounds’ nonlinear dependence on the number of sensors,” *The Journal of the Acoustical Society of America*, vol. 145, no. 2, pp. 714-723, February 2019.
2. K. T. Wong, **Z. N. Morris**, D. M. Kitavi, & T. C. Lin, “A uniform circular array of isotropic sensors that stochastically dislocate in three dimensions – the hybrid Cramér-Rao bound of direction-of-arrival estimation,” *The Journal of the Acoustical Society of America*, vol. 146, no. 1, pp. 150-163, July 2019.
3. **Z. N. Morris** & K. T. Wong, “Comparing the “rim” versus the “filled” rectangular array grids-their direction-finding Cramér-Rao bounds,” *IEEE Transactions on Aerospace and Electronic Systems*, vol. 55, no. 4, pp. 1945-1956, August 2019
4. C. J. Nnonyelu & **Z. N. Morris**, “Acoustical direction finding using a Bayesian regularized multilayer perceptron artificial neural networks on a tri-axial velocity sensor”, *International Journal of Mechatronics, Electrical and Computer Technology*, vol. 10, no. 35, pp. 4493-4501, January 2020.
5. **Z. N. Morris**, K. T. Wong, & Y.I. Wu, “3D Dislocations in a uniform linear array’s isotropic sensors - direction finding’s hybrid Cramér-Rao bound”, *The Journal of the Acoustical Society of America*, vol. 147, no. 5, pp. 3209-3220, May 2020.
6. C. J. Nnonyelu, **Z. N. Morris**, & A Madukwe, “On the Performance of L- and V-shaped arrays of cardioid microphones for direction finding”, *IEEE Sensors Journal*, vol. 21, no. 2, pp. 2211-2218, September 2020.
7. L. Yang, K. T. Wong, & **Z. N. Morris**, “A centrosymmetric array comprising a horizontal uniform circular subarray and a vertical uniform linear subarray – its design in reference to its direction-finding Cramer-Rao bound,” *IEEE Transactions on Aerospace and Electronic Systems*, vol. 57, no. 3, pp. 1624-1632, December 2020.
8. H. Yang, K. T. Wong, & **Z. N. Morris**, “Two cardioid sensors of (possibly) different Cardioidicity indices/orders, perpendicularly and directivity collocated -- their Cramér-Rao bound for direction finding,” *IEEE Transactions on Aerospace and Electronic Systems*, (under review)

### Conference Papers

1. **Z. N. Morris**, K. T. Wong, & Y. Han, “Hybrid Cramer-Rao Bound for Near-Field Source Localization Using a Spatially Spread Acoustic Vector Sensor,” *The Journal of the Acoustical Society of America*, vol. 145, p. 1801, May 2019.
2. C. J. Nnonyelu, C. -C. L. Cheung, & **Z. N. Morris**, “Acoustical Direction Finding Using a Bayesian Regularized Multilayer Perceptron Artificial Neural Networks on a Tri-Axial velocity Sensor,” *IEEE International Conference on Mechatronics, Automation and Cyber-Physical Computer Systems*, March 2019.
3. **Z. N. Morris**, K. T. Wong, D. M. Kitavi, & T. C. Lin, “The hybrid Cramér-Rao bound of direction finding by a uniform circular array of isotropic sensors that suffer stochastic dislocations,” *The Journal of the Acoustical Society of America*, vol. 142, no. 4, p. 2554, December 2017.

## Others

1. Ph.D. Thesis: “*Cramér-Rao Lower Bound Rao Lower Bound Estimation of an Incident Signal’s Direction-of-Arrival Upon Rectangular / Circular / Spherical Arrays of Isotropic Sensors*” (2019).
2. M.Sc. Dissertation: “*Laplace Transform in Probability Distributions & Pure Birth Processes*” (2015).
3. Undergraduate Final Year Project: “*A statistical approach to road accidents in Kenya using generalized linear models*” (2013).

## AWARDS

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1. 2016-2019: The Hong Kong PhD Fellowship, *The Research Grants Council, Hong Kong, China.*
2. 2013-2015: Full studentship for master’s degree (via research and coursework), *University of Nairobi, Kenya.*

## LEADERSHIP & SERVICE

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Chairperson

Statistical Students Association of the University of Nairobi

Sep 2011 - Sep 2012

Volunteer part time teacher

Shimba Hills High School, Mombasa, Kenya

May 2010 - Feb 2011

## REFEREES

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Dr. Dominic Makaa KITAVI,  
Chair of Department,  
Department of Mathematics and Statistics,  
University of Embu,  
Embu, Kenya.  
[kitavi.dominic@embuni.ac.ke](mailto:kitavi.dominic@embuni.ac.ke)

Prof. Ivivi Joseph MWANIKI,  
Head of Financial and Actuarial Division,  
Department of Mathematics,  
University of Nairobi,  
Nairobi, Kenya.  
[jimwaniki@uonbi.ac.ke](mailto:jimwaniki@uonbi.ac.ke)

Prof. Kainam Thomas WONG,  
Professor of Engineering,  
School of General Engineering,  
Beijing, China.  
[wong@buaa.edu.cn](mailto:wong@buaa.edu.cn)