

Curriculum Vitae

PERSONAL INFORMATION

Rendani Mbuva FASSA, CERA, MSc

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Sex Male | Date of birth 23/10/1990 | Nationality South African

WORK EXPERIENCE

1 Jul 2017 - Present

Lecturer and Machine Learning Researcher (Africa Google PhD fellow)

University of Witwatersrand, Johannesburg (South Africa)

Lecturing in the School of Actuarial Science and Statistics with on-going research in machine learning. Major research interests include Bayesian Neural Networks, renewable energy modelling and interpretable machine learning.

1 Jan 2018 - Present

Independent Actuary and Consultant

Johannesburg (South Africa)

Machine Learning advisor to a data science team at a JSE listed Insurance company. Independent actuarial and machine learning consulting to various entities private equity firms, legal firms etc.

1 Jan 2017 – 15 Jun 2017

Machine Learning Researcher

Expekra AB, Stockholm (Sweden)

Worked on an industry master thesis project titled "Bayesian Neural Networks for short term wind power forecasting".

1 Jul 2016–12 Aug 2016

Actuary/ Data Scientist

Milliman Africa, Johannesburg (South Africa)

Worked on bespoke Predictive Models for understanding lapse/Churn experience variations for a major South African Life Insurer. Model used included Random Forests, Conditional Reference Trees and Generalised Linear Models.

1 Sep 2014–27 Jul 2015

Assistant Vice President : Product Development Actuary

Barclays Africa Group, Johannesburg (South Africa)

Product Management role for Life Insurance Products reporting to the Product Development Executive. The Product portfolio I managed had a total Lifetime Value (LTV) of circa USD 38 Million, a book size of about 500 000 policies/subscribers and new business of circa 12 000 a month sold through online, telephone and branch channels.

9 Jan 2012–31 Aug 2014

Actuarial Analyst

Discovery Health, Johannesburg (South Africa)

A Health Insurance pricing, reserving and analytics role. This involved using machine learning and statistical tools for pricing, risk management and operations improvement.

EDUCATION

15 Feb 2018 - Present

PhD in Electrical & Electronic Engineering

University of Johannesburg, Johannesburg (South Africa)

- Doctoral Thesis on Bayesian Methods for Neural Networks (Ongoing)

31 Aug 2015–15 Jun 2017

MSc in Computer Science and Engineering

KTH Royal Institute of Technology, Stockholm (Sweden)

- Relevant Courses: Inter alia – Advanced Machine Learning, Artificial Intelligence, Image Based Recognition with Deep Learning, Natural Language Processing, Parallel Computing, Artificial Neural Networks and other learning Systems, Computer Intensive Methods in Statistics, Speaker and Speech Recognition
- Master thesis project : Bayesian Neural Networks for Short Term Wind Power Forecasting

1 Feb 2008–17 Dec 2011

BSc Actuarial Science and Statistics and BSc Honours in Actuarial Science

University of Cape Town, Cape Town (South Africa)

- Relevant Courses: Actuarial Science, Mathematical Statistics, Computer Science, Economics, Accounting, Actuarial Science, Operations Research, Multivariate Statistics, Geospatial Statistics, Professional Communication, Research Project

1 Jan 2012–12 Dec 2014

Fellow of the Actuarial Society of South Africa (FASSA)

Actuarial Society of South Africa, (South Africa)

Completed professional exams for qualification as an Actuary (Fellow Member Status)

- Relevant Courses: Health and Care Fellowship, Statistics, Business Awareness, Mathematical Modelling, Communications

1 Aug 2013–31 Dec 2014

Chartered Enterprise Risk Actuary (CERA)

CERA Global Association

Publications

- Mbuva, R., Jonsson, M., Ehn, N. and Herman, P., 2017, November. Bayesian neural networks for one-hour ahead wind power forecasting. In *Renewable Energy Research and Applications (ICRERA), 2017 IEEE 6th International Conference on* (pp. 591-596). [Link](#)
- Ericson, L. and Mbuva, R., 2017. On the performance of network parallel training in artificial neural networks. arXiv preprint arXiv:1701.05130. [Link](#)
- Mbuva, R., 2017. Bayesian Neural Networks for Short Term Wind Power Forecasting. Masters Thesis KTH Royal Institute of Technology. [Link](#)
- Mbuva, R., Boulkaibet, I., Marwala, T. and de Lima Neto, F.B., 2018, June. A Hybrid GA-PSO Adaptive Neuro-Fuzzy Inference System for Short-Term Wind Power Prediction. In *International Conference on Swarm Intelligence* (pp. 498-506). Springer, Cham. [Link](#)
- Mbuva, Rendani, Illyes Boulkaibet, and Tshilidzi Marwala. "Automatic Relevance Determination Bayesian Neural Networks for Credit Card Default Modelling." arXiv preprint. [Link](#) arXiv:1906.06382 (2019).

Patents

- Tshilidzi Marwala, Rendani Mbuva. (**South African Provisional Patent 2018/06344**)
A system and method for imputing missing data in a dataset, a method and system for determining a health condition of a person, and a method and system of calculating an insurance premium.

Honours And Awards

- Africa Google PhD Fellowship (2019)
- Mail & Guardian 200 Young South Africans (2019)
- Awarded Most Promising Innovation for Township Economy: Innovation Hub GATE Competition (2017)
- Awarded Swedish Institute Study Scholarship for Masters Studies (2015-2017)
- Awarded Discovery Health University Bursary (2008 - 2011)
- Deans Merit List University of Cape Town Faculty of Science (2008-2009)
- Science Faculty Scholarship (2008-2009)
- Limpopo Province Education Member of Executive Council award for obtaining a 100% in Mathematics, Physical Science and Biology in the 2007 final matriculation exams
- Top learner from a previously disadvantaged school: National Science Olympiad -Ranked 9th Nationally (2007)
- Selected to represent South Africa at the International Summer School for Young Physicists in Waterloo, Ontario Canada (2006)
- National Finalist: South African Youth Water Prize (2006) for developing the theoretical underpinnings and prototype version of a water purification software.