

**Dr. Ronald Keng'ara
Tombe, Ph.D.
Curriculum Vitae (CV)**

Email: ronalddtombe@kisiiversity.ac.ke
Skills: Lecturing, Research and Leadership
Research Interests: Machine Learning, Artificial Intelligence and Its Applications, ICT4D, Enterprise Architectures.
<https://orcid.org/0000-0002-0765-2947>
DoB:

1. Education

- a) **Ph.D. Computer Science (Full-Time) (2018-2021):** *University of KwaZulu-Natal, South Africa*
- b) **MSc. Software Engineering (2011- 2015):** *Jomo Kenyatta University of Agriculture & Technology, Kenya*
- c) **BSc. Information and Technology (2nd Upper-Class honours)-2009)**
Jomo Kenyatta University of Agriculture & Technology, Kenya
- d) **Kenya Certificate of Secondary Education (KCSE), 2001-2004,**
Nyansiongo Boys High School, Kenya.
- e) **Kenya Certificate of Primary Education (KCPE), 2000**
Itumbe Primary School, Kenya.

2. Awards

- a) Won a grant worth **USD 28 000** from the Carnegie Corporation of New York through the Future Africa of the University of Pretoria, where I'm a Research Fellow
- b) Tuition-paid Scholarship for PhD studies by the University of KwaZulu-Natal, South Africa.

3. Work experience:

- a) **Research Fellow 2022- 2024: - Future Africa, at the University of Pretoria:** <https://www.futureafrica.science/ronald>
Project Title Inclusive Agricultural Transformation: Innovations and Scaling of Digital Systems for Enhancing Productivity, Knowledge Preservation and Incomes of Indigenous Communities.
- b) **Program Coordinator 2021-to-current: Africa Institute of Indigenous Knowledge Systems, Kisii University chapter.** <https://aiiks.org/>
 - i) Coordinating the institute activities within Kisii University
 - ii) Initiating research projects that are collaborative in nature
 - iii) Writing Grant proposals and managing the research project(s)
 - iv) Representing Kisii University in all the executive management meetings of the AIIKS consortium partners.
 - v) Writing and providing reports to the stakeholders periodically as required
- c) **Lecturer and Researcher: Kisii University, Since 2013-to-current.**
<https://kisiiversity.ac.ke/>

- i) **Teaching:** This involves preparing course materials, designing curriculum, and selecting appropriate teaching methodologies to convey subject matter effectively.
 - ii) **Assessment and Evaluation:** Setting exams, grading assignments, providing feedback, and assessing students' progress throughout the course.
 - iii) **Mentorship and Guidance:** Providing academic guidance, career advice, and student support, including supervising students' research projects and dissertations.
 - iv) **Research and Scholarship:** Engaged in scholarly activities, including conducting research, publishing papers in academic journals, and presenting at conferences. *Active research involvement, including writing grant-winning proposals and conducting research.*
 - v) **Curriculum Development:** Developing and updating course curricula to reflect advancements in my field to meet the evolving needs of students and industry demands.
 - vi) **Classroom Management:** Creating a conducive and respectful learning environment is essential.
 - vii) **Counselling and Support:** Provide emotional and academic support to students, offering guidance during challenging times and referring them to appropriate support services when needed.
 - viii) **Maintaining Academic Standards:** Upholding academic integrity and ensuring students adhere to academic standards and discourage academic misconduct.
- d) **Professional Development:** Engaging in professional development activities, including
- ❖ **Reviewer for Journals (Since 2020)**
<https://www.webofscience.com/wos/author/rid/ABH-5235-2020>
 - IEEE Transactions on Geoscience and Remote Sensing (3)
 - IEEE Geoscience and Remote Sensing Letters (3)
 - Canadian Journal of Remote Sensing (2)
 - MDPI- Remote Sensing (8)
 - MDPI Sustainability Journals (1)
 - ❖ **Member, Indaba Deep Learning Since 2020**
 - Presents and facilitates during workshop/conference sessions
 - ❖ **Research Fellow** at Future Africa, University of Pretoria
 - Conducts transdisciplinary research on ICT4D in digitalization of the Agricultural value chain. Also attends several training seminars
- e) **Institutional Service:** contribute to the university's administration and participate in research committees and academic boards.
- ❖ *Chairperson of a University Committee:* Africa Institute of Indigenous Knowledge Systems (AIKS)
 - ❖ *Member of various research committees,* which are constituted periodically
 - ❖ *Examination Officer,* Computer Science Department 2014-2018: Kisii University

❖ *Projects Coordinator*, Computing Sciences Department 2014 Aug-2015Dec)

f) **Community Engagement:**

❖ *Chairperson of the finance committee and Board of Management member* at Itumbe Secondary School (2015-2017) and 2021-current

4. Other Services

a) **Vice-President**, International Students Association (ISA), University of KwaZulu-Natal, South Africa, 2019-2020.

<https://ndabaonline.ukzn.ac.za/UkzndabaStory/Vol9-Issue50-aes-grad/ISA%20Vice-President%20Awarded%20PhD/>

5. Publications in Journals and Conference Proceedings

a) Published articles in Journals

i. Tombe, R. and Smuts, H., 2023. Agricultural Social Networks: An Agricultural Value Chain-Based Digitalization Framework for an Inclusive Digital Economy. *Applied Sciences*, 13(11), p.6382. <https://doi.org/10.3390/app13116382>

ii. Tombe R. and S. Viriri, (2020) "Adaptive Deep Co-occurrence Feature Learning based on Classifier-Fusion for Remote Sensing Scene Classification," in IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing. <https://doi.org/10.1109/JSTARS.2020.3044264>

iii. Ronald Tombe \& Serestina Viriri (2020) Effective Processing of Convolutional Neural Networks for Computer Vision: A Tutorial and Survey, IETE Technical Review. <https://doi.org/10.1080/02564602.2020.1823252>

iv. Tombe, R. and Viriri, S., 2023. Remote Sensing Image Scene Classification: Advances and Open Challenges. *Geomatics*, 3(1), pp.137-155. <https://doi.org/10.3390/geomatics3010007>

v. Tombe, R.K.A., 2015. *A Method for Software Maintenance Risk Assessment at Architecture Level Design* (master's dissertation). <http://hdl.handle.net/123456789/1679>

b) Published papers in Conference Proceedings

i. Tombe, R. and Smuts, H., 2023. Society 5.0-Inspired Digitalization Framework for Resilient and Sustainable Agriculture. *EPiC Series in Computing*, 93, pp.216-227. <https://doi.org/10.29007/x5q>

ii. TOMBE, R., 2020, May. Computer Vision for Smart Farming and Sustainable Agriculture. In *2020 IST-Africa Conference (IST-Africa)* (pp. 1-8). IEEE.

iii. Tombe R., Viriri S. (2021) Towards Exploiting Convolutional Features for Remote Sensing Images Scene Classification. In: Hong TP., Wojtkiewicz K., Chawuthai R., Sitek P. (eds) *Recent Challenges in Intelligent Information and Database Systems. ACIIDS 2021. Communications in Computer and Information Science*, vol 1371. Springer, Singapore. https://doi.org/10.1007/978-981-16-1685-3_22

- iv. Tombe R., Viriri S. (2019) Fusion of LBP and Hu-Moments with Fisher Vectors in Remote Sensing Imagery. In: Nguyen N., Chbeir R., Exposito E., Aniorté P., Trawiński B. (eds) Computational Collective Intelligence. ICCCI 2019. Lecture Notes in Computer Science, vol 11683. Springer, Cham. https://doi.org/10.1007/978-3-030-28377-3_33
- v. Tombe, R. and Viriri, S., 2019, March. Local Descriptors Parameter characterization with Fisher vectors for remote sensing images. In 2019 Conference on Information Communications Technology and Society (ICTAS) (pp. 1-5). IEEE.
- vi. Tombe, R. and Viriri, S., 2021. Remote Sensing Scene Classification Based on Effective Feature Learning by Deep Residual Networks. In *Machine Learning for Networking: Third International Conference, MLN 2020, Paris, France, November 24–26, 2020, Revised Selected Papers 3* (pp. 320-336). Springer International Publishing.
- vii. Tombe R., Viriri S., Dombau J.V.F. (2020) Scene Classification of Remote Sensing Images Based on ConvNet Features and Multi-grained Forest. In: Bebis G. et al. (eds) Advances in Visual Computing. ISVC 2020. Lecture Notes in Computer Science, vol 12509. Springer, Cham. https://doi.org/10.1007/978-3-030-64556-4_57

6. REFEREES

1. Dr. Ben Maake,
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2. Prof. Hassan Kaya
Director, DST, Center of Excellence in Indigenous Knowledge Systems,
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3. Dr Evans Okemwa,
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