



# RAPHAEL ANGULU (PHD)

PhD Computer Science-Artificial Intelligence (Computer Vision and Machine Learning) (UKZN, SA), Msc. Information Technology (Software Engineering) (MMUST, Kenya), Bsc. Computer Science-First Class Honors (MMUST, Kenya)

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## BACKGROUND INFORMATION

Dr. Angulu Raphael is a dedicated COMPUTER SCIENTIST with strong passion in using computer science and engineering technologies in solving day-to-day life problems. His main objective is to use computer science technologies to improve organizational throughput by making processes efficient and effective. He researches in biometric image and video analysis with a target of improving security, verification and surveillance domains in a quest to make the world a better place to live. He has vast experience in teaching and research at local and international universities. Furthermore, he has vast experience in software design and development with hands-on experience in programming with *Java, C, C++, PHP, Android, Python, HTML, C#* among many other computer languages. Angulu is a member of ACM and IEEE professional bodies and is a reviewer of several international refereed journals.

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## PERSONAL DATA

GENDER: MALE  
STATUS: MARRIED  
DOCUMENTS: ID: 25394673 PASSPORT: A2345636  
PLACE AND DATE OF BIRTH: Kitale, Kenya | 12 April 1987  
ADDRESS: 1924, 30200, Kitale, Kenya  
PHONE: +254 729 260 641  
EMAIL: [anguluraphael@gmail.com](mailto:anguluraphael@gmail.com) | [rangulu@mmust.ac.ke](mailto:rangulu@mmust.ac.ke)

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## NATURAL AND COMPUTER LANGUAGES PROFICIENCY

NATURAL LANGUAGES		COMPUTER LANGUAGES
MOTHER TONGUE:	Fluent	Java, HTML, J2ME, PHP, Java-script, .NET, SQL, C C++, Android, Java Server Faces (JSF), C#, ASP.NET, Python Experience in Database Development and management in MS SQL and MySQL Servers Website and mobile applications Development. Systems and network management
KISWAHILI:	Fluent	
ENGLISH:	Fluent	
ISIZULU	Basic Knowledge	

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## RESEARCH INTERESTS

Computer Vision, Pattern Recognition, Surface Characterization, Machine Learning, Data Mining, Software Engineering, Artificial Intelligence, Deep Learning and Machine Learning Tools optimization. I perform research in video and image processing using C++, Python or Matlab platform with machine learning tools like Convolutional Neural Networks (CNN), Multi-Layer Perceptron (MLP), Support Vector Machines (SVM) and Random Forests. Specific interest include face image analysis, mammogram analysis, fingerprint image analysis, data mining, bio-inspired computing, computational intelligence, surveillance among others.

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## CONFERENCE AND JOURNAL PUBLICATIONS

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Following are some of the most recent publications:-

1. Mary Mwadulo, Stephen Mutua and **Angulu Raphael**. (2020) Breast Cancer Classification Using Local Directional Ternary Patterns, Kenya, *International Journal of Computer Applications*, Vol 176, Issue 38, Pg 14 - 21, July 2020
2. Mary Mwadulo, Stephen Mutua and **Angulu Raphael**. (2020) Breast Cancer Detection via Mammographic Images: A Survey, *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, Vol 6, Issue 3, Pg 173 - 195, May 2020
3. Obadia M Musau, Kelvin Omieno and **Angulu Raphael**. (2019) Towards Prediction of Students' Performance in Secondary Schools Using Decision Trees, *International Journal of Research and Innovation in Applied Science (IJRIAS)*, Vol 4, Issue 10, Pg 85 - 89, October 2019
4. Obadia M Musau, Kelvin Omieno and **Angulu Raphael**. (2019) Factors Affecting Secondary School Students' Academic Performance, Kenya, *International Journal of Research and Innovation in Applied Science (IJRIAS)*, Vol 4, Issue 9, Pg 90 - 94, September 2019
5. Mutua M. S and **Angulu R.** (2019) Quality and Effectiveness of ERP Software: Data Mining Perspective. In: Muketha G. M and Micheni E. (July 2019) Metrics and Models for Evaluating the Quality and Effectiveness of ERP Software, vol 10749. IGI Global, pp 28 - 52 Link: <https://www.igi-global.com/chapter/quality-and-effectiveness-of-erp-software/232348>
6. Bayana M.H., Viriri S., **Angulu, R.** (2018) Gender Classification Based on Facial Shape and Texture Features. In: Bebis G. et al. (eds) Advances in Visual Computing. ISVC 2018. Lecture Notes in Computer Science, vol 11241. Springer, Cham. Link: [https://link.springer.com/chapter/10.1007/978-3-030-03801-4\\_15](https://link.springer.com/chapter/10.1007/978-3-030-03801-4_15)
7. **Angulu, R**, Tapamo, J-R, Aderemi, O. A, "Human age estimation via face images: A survey", *EURASIP Journal of Image and Video Processing*, May, 2018 Link: <https://doi.org/10.1186/s13640-018-0278-6>
8. **Angulu, R**, Tapamo, J-R, Aderemi, O. A, "Age-group Estimation Using Feature and Decision Level Fusion," *The Computer Journal*, May 2018 Link: <https://doi.org/10.1093/comjnl/bxy050>
9. **Angulu, R**, Tapamo, J-R, Aderemi, O. A, "Age estimation with local statistical biologically inspired features", *2017 IEEE International Conference on Computational Science and Computational Intelligence (CSCI)*, Las Vegas, USA, December 2017
10. **Angulu, R**, Tapamo, J-R, Aderemi, O. A, "Frontal Face Landmark Displacement across Age", *2017 Pattern Recognition Association of South Africa and Robotics and Mechatronics. IEEE International Conference (PRASA-RobMech)*, CUT, Bloemfontein, South Africa, November 2017, pp. 32 - 37. Link: <http://ieeexplore.ieee.org/document/8261119/>
11. **Angulu R.**, Tapamo J.R., Adewumi A.O. (2018) Age Estimation with Local Ternary Directional Patterns. In: Paul M., Hitoshi C., Huang Q. (eds) Image and Video Technology. PSIVT 2017. Lecture Notes in Computer Science, vol 10749. Springer, Cham, pp 421-434 Link: [https://link.springer.com/chapter/10.1007/978-3-319-75786-5\\_34](https://link.springer.com/chapter/10.1007/978-3-319-75786-5_34)

12. **Angulu, R**, Tapamo, J-R, Aderemi, O. A, "Human age estimation using multi-frequency biologically inspired features (MF-BIF)", in *Proceedings of IEEE Africon Conference*, Cape Town, South Africa, pp. 32-37 September 2017, Link: <http://ieeexplore.ieee.org/document/8095450/>
13. **Angulu, R**, Tapamo, J-R, Aderemi, O. A, "Landmark localization approach for facial computing", in *Proceedings of IEEE Conference on Information and Communication Technology and Society (ICTAS)*, Durban, South Africa, pp. 1-6, March 2017. Link: <http://ieeexplore.ieee.org/document/7920664/>
14. **Angulu, R & Tapamo, J-R,** "Age Estimation Using Local Directional Histogram of Oriented Gradients", *IET Image Processing*, 2018, Under Review
15. **Angulu, R & Tapamo, J-R,** "Human Age Estimation Using Enhanced Multi-Frequency Biologically Inspired Features", *Pattern Analysis and Applications*, 2018, Under Review
16. **Angulu, R & Tapamo, J-R,** "Age estimation using significant orientation response local directional patterns", *The Computer Journal*, 2018, Under Review

## ADMINISTRATIVE RESPONSIBILITIES

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MARCH 2019 – AUGUST 2019	Ag. Head of Department Information Technology Department, Masinde Muliro University of Science and Technology,
JULY 2018 – TO DATE	Chairman School Postgraduate Studies Committee, School of Computing and Informatics, Masinde Muliro University of Science and Technology,

## POSTGRADUATE STUDENT SUPERVISION

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JULY 2016 – JUNE 2018	Mayibongwe H. Bayana, Master of Science in Computer Science, Research Topic: Gender Estimation using Face Images, UNIVERSITY OF KWAZULU NATAL, School of Mathematics, Statistics and Computer Science (COMPLETED)
JUNE 2018 – AUGUST 2020	Mwadulo M. Mary, PhD Information Technology, Research Topic: Breast Cancer Detection via Mammography Analysis, MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY, School of Computing and Informatics (COMPLETED)
JUNE 2018 – AUGUST 2020	Obadia Musau, PhD Information Technology, Research Topic: Machine Learning Model for Prediction of Student Performance, MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY, School of Computing and Informatics (COMPLETED)
JUNE 2018 – TO DATE	Harriet Wangui, Masters in Information Technology, Research Topic: Framework for Assessment of Functionality of E-Learning Systems, MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY, School of Computing and Informatics (ONGOING)

## INTERNATIONAL PEER REVIEWED JOURNAL REVIEWER

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1. IEEE Transactions on Emerging Topics in Computing
  2. EURASIP Journal on Image and Video Processing
  3. IET Computer Vision
  4. IET Image Processing
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## EDUCATION

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AUG 2015-MAR 2018	PhD in COMPUTER SCIENCE, <b>University of KwaZulu-Natal</b> , Durban, South Africa Research Area: Artificial Intelligence – Computer Vision and Pattern Recognition Thesis: “Hierarchical Age Estimation Using Enhanced Facial Features” Supervisor: Prof. Jules-Raymond TAPAMO and Prof. Aderemi O. ADEWUMI
AUG 2012-DEC 2014	Masters of Science in INFORMATION TECHNOLOGY, <b>Masinde Muliro University of Science and Technology</b> , Kakamega Research Area: Software Engineering (Adaptive Software Architectures) Thesis: “Service-Oriented Reference Architecture to Improve Functionality of Web-based E-learning Systems” Supervisor: Prof. Maurice M. AMADALO and Dr. Peters I. ANSELEMO
AUG 2007-DEC 2011	Bachelor of Science in COMPUTER SCIENCE, <b>Masinde Muliro University of Science and Technology</b> , Kakamega Advisor: Dr. Frankline WABWOBA   Final Grade: First Class Honors
JAN 2002-DEC 2005	Secondary Education – KENYA CERTIFICATE OF SECONDARY EDUCATION, <b>Teremi High School</b> , Bungoma, Kenya Final Grade: A-(Minus) 76 Points out of Possible 84
JAN 1994-DEC 2001	Primary Education – KENYA CERTIFICATE OF PRIMARY EDUCATION, <b>Sibanga Primary School</b> , Kitale, Kenya Final Grade: 321 Marks out of Possible 500

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## WORK EXPERIENCE

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AUG 2018 - TO DATE	<b>Lecturer</b> at MMUST, KAKAMEGA, KENYA <i>School of Computing and Informatics, Department of Computer Science</i> Teaching Computer Science and Information Technology courses mainly in Programming, Database Systems, Operating Systems, Artificial Intelligence, Software Engineering, Computer Graphics and Image Processing, Computational Intelligence among others. Supervision of Masters and PhD students.
JAN 2016-JUN 2018	<b>Lecturer</b> at UNIVERSITY OF KWAZULU NATAL <i>Durban, South Africa</i> <i>College of Agriculture, Engineering and Science</i> Lecturer in College of Agriculture, Engineering and Science. Teaching both in School of Engineering and School of Mathematics, Statistics and Computer Science. Teaching Operating Systems, Programming in C, C++ and Python, Computer Organization and Architecture and Software Engineering to Computer Science and Computer Engineering students.
AUG 2014 - JULY 2018	<b>Ass't. Lecturer</b> at MMUST, KAKAMEGA, KENYA <i>School of Computing and Informatics, Department of Computer Science</i>

	Teaching Computer Science and Information Technology courses mainly in Programming, Database Systems, Operating Systems, Artificial Intelligence, Software Engineering, Computer Graphics and Image Processing, Computational Intelligence among others.
JUL 2014- JUL 2015	Part-time Lecturer at UNIVERSITY OF ELDORET <i>Eldoret, Kenya</i> <i>School of Computer Science</i> Appointed to teach <i>Computer C and C++ Programming Language to 2<sup>nd</sup> years Computer Science students</i> )
JUL 2014- DEC 2014	Part-time Lecturer at MOI UNIVERSITY <i>Eldoret, Kenya</i> <i>School of Information Sciences</i> Appointed to teach <i>Computer Graphics, Distributed Systems and Databases and Data Mining to 4<sup>th</sup> Informatics students</i>
APR 2014-AUG 2014	Trainer at KIBABII UNIVERSITY <i>Bungoma, Kenya</i> <i>School of Computing and Informatics</i> Participated in students industrial training program where I was a trainer for software and database development. I trained students (hands-on training) how to develop both stand alone and online applications and how to integrate them with the database at the back-end.
AUG 2012-JUL 2014	Graduate Assistant at MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY <i>Department of Computer Science</i> Teaching Diploma, Certificate and selected undergraduate courses in Computer Science and Information Technology.
AUG 2011-AUG 2012	Software Developer at ABNO SOFTWARES INTERNATIONAL LTD, <i>Nairobi, Kenya</i> Design and development of softwares including ERPs. Software development in <i>Java, C, C++, HTML, PHP, Java-script, ASP, VB.NET</i> using various tools like Microsoft Visual Studio, Eclipse among others. Was also involved in commissioning, implementation and maintenance of developed softwares at clients sites.
APR 2010-AUG 2010	Intern at CENTER FOR DISEASE CONTROL (CDC) <i>Kisumu, Kenya</i> <i>ICT Department</i> Offering support services to users in the organization including network layout, management and support

## SCHOLARSHIPS AWARDED

AUG 2012-DEC 2014	Masinde Muliro University of Science and Technology Scholarship for outstanding performance undergraduate students with an outstanding performance
AUG 2015-MAR 2018	University of KwaZulu-Natal scholarship for graduate students

## PROFESSIONAL BODY AFFILIATION

I am a member of the following professional bodies:-

1. Association of Computing Machinery (ACM)
2. Institute of Electrical and Electronic Engineers (IEEE)

## REFEREES

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Prof. Jules-Raymond TAPAMO  
Professor of Computer Engineering & Academic Leader Teaching and Learning School of Engineering  
University of KwaZulu-Natal Howard College Campus  
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