# NJENGA STEPHEN THIIRU

P.O. Box 351 – 00520,                          Languages: English, Swahili and Kikuyu

Nairobi                                         Date of birth: 27th September 1973

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## RESEARCH INTERESTS

Mobile and Collaborative Learning, Intelligent Agents, Machine Learning and Distributed Ledger Technology

## EDUCATION

| | | |
|---|---|---|
| UNIVERSITY OF NAIROBI(UON) | **PhD Information Systems** | Jan 2013 – September 2018 |
| | "Facilitating Group Learner Interactions using Intelligent Agents to Improve Group Knowledge Construction in Collaborative M-Learning: Case of Higher Learning Institutions in Kenya" | |
| UNIVERSITY OF NAIROBI(UON) | **Masters in Computer Science** | May 2008 – September 2011 |
| | "Use of Concept Map Scaffolds to Promote Adaptive e-Learning in Web-Based Systems" | |
| EGERTON UNIVERSITY | Bachelor of Science in **Computer Science** | April 1993 – March 1998 |
| CHANIA HIGH SCHOOL. | **Kenya Certificate of Secondary Education** | January 1988 - December 1991 |
| KIBIKU PRIMARY SCHOOL | **Kenya Certificate of Primary Education** | January 1979 - December 1987 |

## PROFESSIONAL QUALIFICATIONS AND MEMBERSHIP

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|---|---|---|
| MICROSOFT | Microsoft Certified Solutions Developer (MCSD) | January 2002 |
| IEEE | IEEE Professional Member (94444170) | August 2017 |
| IBM | IBM Blockchain Trainer | October 2018 |
| IBM | Big Data Engineer – Mastery Award for Educators. | March 2019 |
| IAENG | International Association of Engineers (331611) | February 2023 |

## TEACHING WORK EXPERIENCE

MURANG'A UNIVERSITY OF TECHNOLOGY

**Lecturer**                                    October 2018 – to date
- Teaching undergraduate courses in Computer Science and Information Technology
- Teaching postgraduate courses in Msc. Information Technology, Msc. Computer Science, PhD. Information Technology and PhD. Computer Science

**Assistant Lecturer:**                          July 2013 – October 2018
- Undergraduate courses in Computer Science and Information Technology

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| DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY | **Assistant Lecturer:** <br> • Undergraduate courses in Computer Science and Information Technology | May 2010 – June 2013 |

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|---|---|---|
| INOORERO UNIVERSITY (FORMERLY KENYA SCHOOL OF PROFESSIONAL STUDIES (KSPS) | **Lecturer:** <br> • JKUAT Degree and Diploma courses in Information Technology <br> • KSPS Diploma courses in Information Technology <br> • IMIS (UK) Diploma, Higher and Graduate Diploma | September 1998 – April 2010 |

## CURRICULUM DEVELOPMENT

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|---|---|
| OPEN UNIVERSITY OF KENYA (OUK) | • Was in the team that developed the Bsc. in Cybersecurity and Digital Forensics (2023) as the Programme Leader. <br> • Participated in development of Msc. Computer Science programme (2024) as the Programme Leader. |
| MURANG'A UNIVERSITY OF TECHNOLOGY | • Was in the team that developed the Bsc. Computer Science, Bsc. Information Technology, Bsc. Software Engineering, Bsc Computer Technology, Msc IT and Msc Computer Science curricula for Murang'a University of Technology (2015). <br> • Took part in review of existing programmes including Bsc. Computer Science, Bsc. Information Technology, Bsc. Software Engineering, Bsc Computer Technology, Msc IT and Msc Computer Science, Phd in Information Technology and Phd in Computer Science (2024) <br> • Was programme leader in the team that developed the Bsc. in Computer Security and Digital Forensics programme (2024). |
| DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY | • Was in the team that developed the Bsc. Computer Science and Bsc. Information Technology curricula for Dedan Kimathi University of Technology (2010) |
| INOORERO UNIVERSITY (FORMERLY KENYA SCHOOL OF PROFESSIONAL STUDIES (KSPS) | • Was in the team that developed the KSPS Diploma in Information Technology (2005). |

## PUBLICATIONS

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| JOURNAL PUBLICATIONS | David Marangu, Stephen Njenga, Rachael Ndungu (2024). Systematic Review of Models used to Handle Class Imbalance in Anomaly Detection for Energy Consumption. International Journal of Artificial Intelligence and Applications (IJAIA). Vol 15 No 3. ISSN: 0975-900X[Online]; 0976-2191[print] <br><br> Benard Ondiek, Lucy Mburu, **Stephen Njenga** (2023). Recommender System For Stem Enrolment In Universities Using Machine Learning Algorithms: Case Of Kenyan Universities. International Journal of Science Technology and Management. DOI: https://doi.org/10.46729/ijstm.v4i6.1009 <br><br> Benard Ondiek, Lucy Mburu, **Stephen Njenga** (2023). Machine Learning Applications for Recommender Systems in Higher Education: A Systematic Review. INTERNATIONAL JOURNAL OF APPLIED |

RESEARCH AND TECHNOLOGY 12/2023; 8(6) DOI: https://doi.org./10.24163/ijart/2017/8(6):189-206

K. Wasike, H., T. **Njenga, S.**, & Wambugu, G. M. (2021). A Review: Diseased Leaf Feature Extraction Using Machine Learning Classification Techniques. International Journal of Formal Sciences: Current and Future Research Trends, 10(01), 10-29.

Munyua, J. G., Wambugu, G. M., & **Njenga, S. T.** (2021). A Survey of Deep Learning Solutions for Anomaly Detection in Surveillance Videos. International Journal of Computer and Information Technology(2279-0764), 10(5). https://doi.org/10.24203/ijcit.v10i5.166

**Njenga, S. T.**, Oboko, R. O., & Omwenga, E. I. (2018). Use of intelligent agents to facilitate group learner participation in collaborative mlearning. International Journal of Computing Sciences Research, 2(1), 36-54. https://doi:10.25147/ijcsr.2017.001.1.23

**Stephen T. Njenga**, Robert O. Oboko, Elijah I. Omwenga, Elizaphan M. Maina (2017), "Use of Intelligent Agents in Collaborative M-Learning: Case of Facilitating Group Learner Interactions", International Journal of Modern Education and Computer Science (IJMECS), Vol.9, No.10, pp. 18-28, 2017. https://doi.org/10.5815/ijmecs.2017.10.03. Available at http://www.mecs-press.org/ijmecs/ijmecs-v9-n10/IJMECS-V9-N10-3.pdf

**Stephen Njenga** & Robert Oboko, "Use of Concept Map Scaffolds to Promote Adaptive E-learning in Web-Based Systems" (2011), International Journal of Computing and ICT Research (IJCIR) Pp 59-66

CONFERENCES PROCEEDINGS

**Stephen T. Njenga**, Robert O. Oboko, Elijah I. Omwenga, Elizaphan M. Maina. Facilitating Group Learner Participation using Intelligent Agents in Collaborative M-Learning. ISTAfrica Conference 2018. May 9-11, 2018 at Gaborone, Botswana.

Gabriel Kamau, Caroline Boore, Elizaphan Maina, **Stephen Njenga**. Blockchain Technology: Is this the Solution to EMR Interoperability and Security Issues in Developing Countries? ISTAfrica Conference 2018. May 9-11, 2018 at Gaborone, Botswana.

**Stephen T. Njenga**, Robert O. Oboko, Elijah I. Omwenga, Elizaphan M. Maina. Regulating Group Cognitive Conflicts using Intelligent Agents in Collaborative M-Learning. IEEE Africon 2017 Proceedings. pp 44-49. DOI: 10.1109/AFRCON.2017.8095452

**Stephen Njenga** & Elijah Omwenga. Use of Swarm Intelligence to Promote Collaborative Concept Maps in mLearning. ISTAFRICA Conference in Safari park, Nairobi, Kenya on 19th to 31st May 2013.

## POSTGRADUATE SUPERVISION AND THESIS EXAMINED

PHD SUPERVISION

Bernard Ondieki. A Recommender Model for STEM Enrollment Using Ensemble Machine Learning: Case of Kenyan Universities. KCA University. Supervisors: Dr Lucy Mburu and **Dr Stephen Njenga**. Thesis Defended and submitted final thesis awaiting graduation.

David Marangu. A Hybrid Process-based Software Inspection Technique for Component Based Systems. Murang'a University of Technology. Supervisors: **Dr. Stephen Njenga** and Dr. Gabriel Kamau. Proposal Defended.

Peter Kimemia. Improved Scalability Model of a Distributed IOT Ledger using Surrogate Node Agents. Murang'a University of Technology. Supervisors: **Dr. Stephen Njenga** and Dr. Gabriel Kamau. Proposal Defended

Watson Kanuku. A Hybrid Model for Improving Performance of Fog Layer in the Internet of Things. Supervisors: **Dr. Stephen Njenga** and Dr. Gabriel Kamau. Proposal Defended

MASTERS SUPERVISION

John Gatara. Enhanced Deep Learning Model to Detect Anomalies in Surveillance Videos. Murang'a University of Technology. Graduated in 2022

Priscillah Wangui. A Crypto-Ransomware Detection Model in the Pre-Encryption Stage using Machine Learning. KCA University. Graduated in 2022

Hellen Wasike. A Tomato Leaf Disease Classification Model based on Convolutional Neural Network and Gray Level Co-occurrence Matrix Techniques. Murang'a University of Technology. Graduated in 2021

Doreen Bundi. Machine Learning Model for Predicting Cancer Patients using Genomic Data in Kenya: A Case of Kenyatta National Hospital. KCA University. Graduated in 2021

Kennedy Wambua. An Adoption Model for Electronic Health Records System in the Healthcare Facilities: Case of Siaya County, Kenya. KCA University. Graduated in 2021

Stephen Waweru. A Descriptive Model for Quality-Assurance in Learning through Students Feedback in Kiambu Technical Colleges. KCA University. Graduated in 2021

Victor Assanga. A Systems Dynamic Simulation Model to Estimate Formal Employability of Graduates in Kenya. KCA University. Graduated in 2020

Micah Kiprono. A Model for Predicting Consumer Behavior on Liquor Products during COVID-19 Pandemic: A Case Study of EABL. Submitted

Patrick Mwenda. A Block-chain Technology Based Model for Mobile Banking Credit Authorization to Curb Double Borrowing. Murang'a University of Technology. Submitted

PHD THESIS EXAMINED

An Extended Low Energy Adaptive Clustering Hierarchy Protocol for Efficient Energy Consumption in Wireless Sensor Network by Peter Maina Mwangi (2023)

A Hybrid Deep Learning Based Brute Force Attack Detection Model in High-Speed Networks by Stephen Kahara Wanjau (2023)

Hybrid Recommender Model using Naïve Bayes Classifier and Association Rule Mining for Mobile Marketplace Applications by Rachael Njeri Ndungu (2021).

MASTERS THESIS EXAMINED

An Improved Transformer-Based Model for Text Summarization of News Articles by Charles Munyao Muia (Msc Computer Science) - 2024

Modeling of Temperature and Humidity Controller based on PSO for Chicken Banda by Patrick O. M. Ogutu (2022)

A Meta-Learning Model for Detection of Diabetic Retinopathy by Jackson Wambugu Kamiri (2022)

A Metrics based Fuzzy Logic Model for Predicting the Reusability of Object-Oriented Software by Kevin Onyango Agina (2021).

Data Privacy Preserving Cloud Model for Healthcare Management Systems based on Multifactor Authentication by Kenneth Ntonja Gitonga (2021).

An Enhanced Multi-view Test Case Generation Technique for Object Oriented Software using Class and Activity Diagrams by James Maina Mburu (2021).

## WORKSHOPS AND TRAININGS

Content Validation Workshop organised by Open University of Kenya from 30th September to 3rd October September 2024 at Lake Naivasha Resort in Naivasha.

Content Development Workshop organised by Open University of Kenya from 2nd to 6th September 2024 at Lysark Haven Hotel in Machakos.

E-content Development Training Workshop organised by Murang'a University of Technology on 5th August 2024 at Murang'a University.

Programmes Evaluation Workshop organised by Open University of Kenya from 23rd to 24th May 2024 at Eagle Palace Hotel in Nakuru.

Curriculum Development Workshop organised by Open University of Kenya from 13th to 17th May 2024 at the NACOSTI premises in Nairobi..

E-content Development and Delivery Training organised by Murang'a University of Technology from 16th to 18th August 2023.

Curriculum Development Workshop organised by Open University of Kenya from 18th to 22nd May 2023 at Nakuru

Content Development Workshop organised by Open University of Kenya from 11th to 20th April 2023 at Sarova Woodlands Hotel in Nakuru

Workshop on establishment of Open University of Kenya organised by State Department for Higher Education and Research from 11th to 20th March 2023 at Sarova Woodlands Hotel in Nakuru

Workshop on establishment of Open University of Kenya organised by State Department for Higher Education and Research from 2nd to 6th March 2023 at Waterbuck Hotel in Nakuru Town.

Appointed as a member of the Working Committee for the establishment of Open University of Kenya for period of three months from January to March 2023

Workshop on Systems Modelling with Unified Modelling Language (UML) organised by IEEE held on 30th to 31st August 2016 at Kenyatta University.

Workshop on Programmes Stakeholders organised by The Cooperative University of Kenya on 21st March 2019 at the Cooperative Retreat and Conference Centre in Nairobi.

Workshop/Seminar on Presentation Skills Education Measurement and Evaluation Tools organised by Kenya School of Professional Studies held on 31st January 2004 in Nairobi.

Training on Pedagogical Skills organised by Eduscope 2000 held on 30th January 1999 at Fairview Hotel in Nairobi.

## RESEARCH GRANTS

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| KENET | Full ISTAfrica Conference Funding to Botswana – USD 1,518. |
| NACOSTI | PhD Research Grant  - Kshs. 490,000/= |
| DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY | Awarded a Grant (as a team) for developing an Examination Management System for Dedan Kimathi University of Technology amounting to Ksh. 600,000/=. |

## ADMINISTRATIVE DUTIES

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| DEPARTMENT TIMETABLER (DEKUT) | **Timetabler :** | Jan 2011 to July 2013 |
| | Timetabling of Lectures and Examinations in the Department of Computer Science in Dedan Kimathi University of Technology. | |
| ACTING CHAIR OF DEPARTMENT (MUT) | **Acting COD :** | May 2015 to September 2015 |
| | Performing administrative duties in the office of the Chair of IT Department in Murang'a University of Technology | |

## REFEREES

Prof. Elijah I. Omwenga,

**Vice Chancellor**

Open University of Kenya
P.O. BOX 2440-00606

**Nairobi**

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Email: eomwenga@gmail.com

Prof. Robert O. Oboko,

**Professor,
School of Computing and Informatics,**
University of Nairobi,
**Nairobi.**

Cellphone : +254 722 320 525

Email: roboko@uonbi.ac.ke

Dr . Elizaphan M. Muuro,

**Coordinator (Post Graduate Studies) – Computing and Information Technology Department,**
Kenyatta University,
**Nairobi.**

CellPhone : +254 722 508 793

Email: maina.elizaphan@ku.ac.ke