

CURRICULUM VITAE

PERSONAL PROFILE

NAME: DR. STEPHEN NG'ANG'A MBURU, PhD

DATE OF BIRTH: 5th October 1973

GENDER: Male

MARITAL STATUS: Married

LANGUAGES: English, German, Kiswahili and Kikuyu

CAREER OBJECTIVES

- Contribute to scientific research and applications in the fields of mobile computing, computer communication networks, software engineering, distributed systems, health informatics, design thinking and innovations.
- Predictive modelling, design optimization, deployment and application of eHealth and mHealth interventions in low-resource settings to potentially save life of underserved communities in Kenya.
- Share knowledge, collaborate and undertake projects aimed at integrating ICT and innovations in education and health sectors in order to solve social and technical challenges within our local communities.

EDUCATION PROFILE

2011 – 2014: University of Nairobi and Technische Universität Dresden

Having enrolled for PhD in Computer Science of the University of Nairobi in November 2011, I graduated with PhD, Information Systems (Health Informatics) on 5th December 2014.

- During the three-year PhD study, I was awarded scholarship by Erasmus Mundus under the European commission between September 2012 and October 2014. The scholarship help me conduct my PhD research at Technische Universität Dresden (TUD), in Germany.
- My doctoral thesis entitled “*A Model for Design of mHealth Solutions Fit for Deployment in Low-resource Settings*” is available in digital repositories and the University libraries.

2007– 2009: University of Nairobi

Having enrolled for Masters of Science in Information Systems of the University of Nairobi in 2007, I graduated with MSc. (Information Systems) on 18th September 2009. My area of research was on security and privacy in mobile payment systems in Kenya.

- A copy of my MSc. research project entitled “*Mobile Wireless Transactions: A Framework for Secure Funds Transfer Services*” is available in digital repositories and the University libraries.

1993– 1997: Kenyatta University

I joined Kenyatta University (KU) in 1993 for a four-year Bachelor of Education degree. I graduated with B.Ed (Double Mathematics), Second Class upper division on 17th October 1997.

- During my undergraduate study, I specialized in Mathematics and Education course units covering Probability and Statistics, Computer Science, Education Foundation, and Instructional methods.

EMPLOYMENT PROFILE

2015–Date: Lecturer, University of Nairobi

Lecturer of Computer Science and Information Systems at the University of Nairobi since 2015. Before promotion to lecturer grade, I served as Tutorial Fellow in the School from November 2007 to December, 2015. In my capacity as an academic member of staff in the School of Computing and Informatics, I have also undertaken the following responsibilities:

- Development of undergraduate and postgraduate Computer Science and Information Systems syllabuses and course contents.
- Coordination of Computer Science and ICT programmes at Kenya Science Campus since January 2015.
- Coordination of BSc. Computer Science Projects, and chairing Panels for MSc. Research Projects between 2009 and 2013.
- Supervision of diploma, undergraduate, Masters and PhD projects and research from 2008 to date.

2003– 2007: Kenya Science Teachers College

I served as a lecturer of Computer Science in the former Kenya Science Teachers College (KSTC) from 2003 to 2007 before the college was upgraded to a Campus of the University of Nairobi. During my five years of my service at KSTC, I was under the Teachers Service Commission (TSC). Some of the responsibilities I was charged with include:

- Conducting lectures, tutorials and supervision of certificate and diploma students in Computer Science.
- Deputizing the Head of ICT department in managing the department's hardware, software, and human resources.
- Establishing collaborations with universities, Ministry of Education and ICT industry for mutual benefits and growth of the college.
- Design, implementation and evaluation of Computer Science and ICT curricula for Certificate and Diploma in Teacher Education.
- Supervisions of Student research and projects in the KNEC diploma programmes.

CONSULTANCY AND MEMBERSHIP

- *Association for Computing Machinery (ACM)*: Professional member of ACM, the world largest educational and scientific computing body that advances computing field as a science and profession.
- *Kenya Institute of Curriculum Development (KICD)*: Member of the Panel involved in design, implementation, and review of ICT and Computer Studies syllabi, and curriculum support materials for Kenyan Schools and Colleges.
- *Totohealth*: Advisory member for Totohealth (www.totohealth.net) – Totohealth located in iHub is one of the most successful mHealth innovations focusing on reversing trends in maternal and child mortality in developing countries.
- *m:Lab* (www.mlabs.co.ke): This is a World bank funded mobile innovation Lab for Eastern Africa region, in which University of Nairobi is a consortium member.

- *CADlab* (www.c4dlab.ac.ke): I am an active member of Computing for Development Lab, which is an incubation centre established by the School of Computing and Informatics in 2013.
- *National Consortium of ICT & Innovation for Schools*: Co-founder of the ICT and Innovation Consortium whose purpose is to promote ICT and innovations in schools right from early childhood education to University level.
- *Kenya National Examinations Council (KNEC)*: I have been involved in design, implementation, and evaluation of Computer Studies, ICT and Information Science assessment tools for Kenyan Schools and Colleges.

BOOKS PUBLISHED

I have published with Longhorn Publishers Computer Studies and ICT resource books for use in Secondary Schools and tertiary Colleges in Kenya, Malawi, and Zambia for both students and instructors. The following is a list of books I have published. The books have been approved by relevant authorities in Kenya, Malawi and Zambia. For details, visit:

<http://www.longhornpublishers.com/index.php/products/main-cats/secondary/computer-studies>

#	Book Title	ISBN	Co-author(s)	Year
KENYA BOOKS				
1	Longhorn Secondary Computer Studies Form 1	9966 49572 X	G. Chemwa	2009
2	Longhorn Secondary Computer Studies Form 2	9966 49 574 6	G. Chemwa	2009
3	Longhorn Secondary Computer Studies Form 3	9966 49 576 2	G. Chemwa	2009
4	Longhorn Secondary Computer Studies Form 4	9966 49 578 9	G. Chemwa	2009
5	Gateway Secondary Revision Computer Studies	9966 49 627 0	G. Chemwa	2013
6	Quick Reading Computer Studies Form 1	9966 36 050 6	G. Chemwa	2011
7	Quick Reading Computer Studies Form 2	9966 36 051 4	G. Chemwa	2011
8	Quick Reading Computer Studies Form 3	9966 36 052 5	G. Chemwa	2011
9	Quick Reading Computer Studies Form 4		G. Chemwa	2011
10	Secondary Computer Studies Teacher's Guide	9966 49 579 7	G. Chemwa	2009
MALAWI BOOKS				
1	Senior Secondary Computer Studies Form 1		Nasalangwa, Chemwa	2013
2	Senior Secondary Computer Studies Form 2	9996 03 893 8	Nasalangwa, Chemwa	2013
3	Senior Secondary Computer Studies Form 3	9996 01 417 9	Nasalangwa, Chemwa	2014
4	Senior Secondary Computer Studies Form 4	9996 01 448 7	Nasalangwa, Chemwa	2014
ZAMBIA BOOKS				
1	Excel & Advance Computer Studies Grade 12 SB	9982 76 116 1	G. Chemwa	2015
2	Excel & Advance Computer Studies Grade 12 TG	9982 76 116 1	G. Chemwa	2015

JOURNAL AND CONFERENCE PAPERS

- S. Mburu, E. Franz and T. Springer, “*A Conceptual Framework for Designing mHealth Solutions for Developing Countries*”, MobileHealth Proceedings of MobileHealth’13, pp. 31-36, ISBN: 978-1-4503-2207-2, ACM New York, 29 July 2013.
- Working on Reviewers’ Comments – S. Mburu, E. Franz, T. Springer, R. Oboko, W. Okelo-Odongo, A. Schill, “*Predictive Model for Design of mHealth Solutions Fit for Deployment in Low-Resource Settings*.” IEEE Journal of Biomedical and Health Informatics, August 2015.

S. Mburu, E. Franz, T. Springer, R. Oboko, W. Okelo-Odongo, A. Schill, “*A Predictive Model for Design of mHealth Solutions Fit for Deployment in Low-Resource Settings*”, Transforming Africa

through Technology, Innovation and Entrepreneurship, Innovation Week Book of Abstracts, ISBN: 978-9966-092-87-8, 3-7th August 2015.

CONFERENCE AND SEMINAR PRESENTATIONS

- *A Model for Deployment of Secure Context-aware mHealth Solutions for Developing Countries*, PhD Progress at Technische Universität Dresden (TU Dresden), Presented on 29 October 2012.
- *A Model for Deployment of Secure mHealth Solutions for Developing Countries*, PhD Progress at TU Dresden, Presented on 9 April 2013.
- *A conceptual Framework for Designing mHealth Solutions for Developing Countries*, ISBN: 978-1-4503-2207-2, Presented during the 14th ACM Symposium on Mobile Ad Hoc Networking and Computing, MobileHealth'13 Workshop in Bangalore, India, July 29-August 2013.
- *A Model for Deployment of Secure mHealth Solutions for Developing Countries*, PhD Progress at SCI, University of Nairobi, Presented on 11 September 2013.
- *A Model for Design of mHealth Solutions Fit for Deployment in Low-resource Settings: Case of Maternal Care*, A closed Workshop by Chair Network Group, PhD Progress at TU Dresden, Presented on 25 September 2014.
- *A Model for Design and Deployment of mHealth Solutions Fit for Low-Resource Settings: Case of Maternal Care*, PhD Pre-defence presented on 29 October 2014.
- *A Model for Design and Deployment of mHealth Solutions Fit for Low-Resource Settings: Case of Maternal Care*, PhD Defence presented on 28 November 2014.
- *A Predictive Model for Design of mHealth Solutions Fit for Deployment in Low-resource Settings*, Presented at m:Lab as advice and consultancy on mHealth Interventions, 13 April 2015.
- *A Predictive Model for Design of mHealth Solutions Fit for Deployment in Low-resource Settings*, Presented during Nairobi Innovation Week, 06 August 2015.

THESIS, REPORTS AND ONLINE TOOLS

- Ph.D. Thesis entitled: *A Model for Design and Deployment of mHealth Solutions Fit for Low-Resource Settings: Case of Maternal Care*, University of Nairobi, December 2014.
- Health Research Protocol entitled: *A model for Deployment of mHealth Solutions for Developing Countries*. The protocol was approved by Kenyatta National Hospital Ethics and Research Committee on 26th November 2013. The protocol formed the basis for initiatives, implementation and investments towards the realization of cost-effective maternal health interventions in low-resources settings in Kenya.
- MSc. (Information Systems) Research Project. *Mobile Wireless Transactions: A Framework for Secure Funds Transfer Services*. University of Nairobi, July 2009.
- Mamacare web portal (*mamacare.uonbi.ac.ke*): Mamacare is a context-aware mobile web application based on responsive design to run multiple execution environments. The application is cost-effective maternal healthcare tool suitable for hospitals with limited access to computers, electricity and internet connectivity.

CURRENT RESEARCH AREAS

- *Distributed Systems*: Involved in research and configuration of heterogeneous computers and mobile devices to allow them access to, and sharing of resources across distributed local area networks.

- *Health Informatics*: I'm involved in research on use of available, affordable and accessible technologies and tools to accelerate deployment of innovative healthcare solutions. Some of the outcomes from my research include automated patient medical record, home-based care, and models to scale-up mHealth and eHealth adoption.
- *Mobile Money Research*: This involves research on use of available, affordable and accessible open source technologies and tools to develop innovative solutions that enhance secure access to financial services through mobile devices.
- *Design Thinking and Innovations*: Provide evidence-based research outcome and framework on design and deployment of cost-effective, and innovative solutions that have positive impact on social, economic and political development.
- *Mobile Communication and Applications*: There are interesting mobile applications that we are developing for deployment in mobile communication networks. These include: data collection tools for health workers, surveillance reporting, alert and reminders (mamacare.uonbi.ac.ke), and other mobile-based solutions.

SCHOLARSHIPS AND GRANTS AWARDED

Donor	Narration	Grant
Deans Committee, University of Nairobi	Research grant to undertake PhD data collection during field experiments	Ksh. 250,000
European Commission through Erasmus Mundus	Scholarship for 17 months mobility research at TU Dresden, Germany	€25,500

UNIVERSITY APPOINTMENTS

- 2015 – Lecturer, School of Computing and Informatics
- 2015 – Coordinator, School of Computing and Informatics, Kenya Science Campus
- 2007 – Tutorial Fellow, School of Computing and Informatics

COURSE UNITS TAUGHT

Diploma and Undergraduate Level

Since November 2007, I have assisted in teaching BSc. Computer Science as a tutorial fellow in the school of Computing and Informatics. The following table shows a summary of course units that I'm currently teaching or I have taught at diploma and undergraduate levels:

Course Unit Taught	Specialization Areas
Introduction to Programming	Computer Architecture
Web Programming and Applications	Computer Communication Networks
Object Oriented Analysis and Design	Information Systems
Distributed Systems	Distributed Systems
Operating Systems	Computer Architecture
Data structures and Algorithms	Computer Architecture
Data communication and Computer Networks	Computer Communication Networks
Mobile Programming and Application	Computer Communication Networks
ICT Project Management	Information Systems

Postgraduate Level

Since 2009, I have assisted in teaching MSc. Information Systems in the school of Computing and Informatics, as well as Health Information Systems in the School of Medicine. Currently, I'm teaching ICT project management and supervising two PhD students. The following table shows a summary of course units that I'm currently teaching or I have taught at Masters level:

Course Unit	Specialization Areas
Object Oriented Technologies	Information Systems
Health Informatics	Distributed Systems
Database Design and Development	Distributed Systems
Health Information Systems	Information Systems
Information Systems security and Audit	Computing Systems security
ICT Project Management	Information Systems

STUDENTS SUPERVISION

POSTGRADUATE STUDENTS

PhD (Ongoing):

1. Abraham Mutua, 2015, Proposal on: Conceptual Framework for Disease Intervention through Mobile Phone Technology among Pastoralist Communities.
2. Paul O. Rabala 2016, Draft Proposal on: Developing a Model for Predicting Cholera Outbreaks in Nyanza

MSc. Information Systems/Computer Science: (Selected Research)

1. Jama Taqal Abbas, 2014, Framework for Evaluating ICT Adoption and Usage in Higher Institutions of Learning in Somalia: A Case of Mogadishu University Management System (MUMS).
2. Paul O. Rabala, 2012, e-Solution for Fish Marketing in Lake Victoria. Case study of Muhuru Bay and Kirongwe.
3. Cecilia Wavinya Mutua, 2012, A model for Implementation and Assessment of Context-aware Mobile-based Advertising Solutions.
4. Dickson O. Gisiora, 2012, A Framework for Implementation of Information Security Management in Government Ministries: Case Study of Youth Affairs and Sports, Kenya.
5. Peter Kyalo Mulwa, 2011, Enhancing Web-based e-Government Models Through Integrated e-Mail-SMS Alert System.
6. Rufus M. Muchiri, 2011, A Framework for Adopting Green IT in Kenyan Organizations: A Case Study.
7. Joseph Kinyua Mwangi, 2011, A Framework for e-Publishing Technology Adoption By Kenya Publishers.
8. Gideon W. Mwangi, 2011, Development of Integrated Land Information Management System In Kenya.

UNDERGRADUATE STUDENTS

BSc. Computer Science: (Selected Research Projects)

1. Kinanga Dominic M., 2014, *Police Duties Management System*
2. Njoroge Joseph Ndung'u, 2012, *Phoneshop Android Mobile Application*
3. Gitau Charles Njau, 2012, *Pepea Kenya Flight Search Application*
4. Stephen Kibuci Wanjohi, 2012, *Kenyan Land Surveying Mobile Application (KenSurv)*
5. Muchina Peter Ndegwa, 2010, *Public Danger Notification System-Vigil*

SEMINARS AND CONFERENCES ORGANIZED

- *Seminar on ICT and Innovations for School, 25-26th June, 2015.* Co-founder and Principal organizer of the premier seminar on technology innovations for schools held at Kenya Science Campus on 25th and 26th June, 2015. For details, See page 11 of the **VarsityFocus** of September, 2015 Issue.
- *Nairobi Innovation Week hosted by the University of Nairobi from 3-7th August, 2015.* I was involved in planning of the event as a member of the local organizing committee. For details, please visit www.c4dlab.ac.ke, or see the Book of Abstracts.

REFEREES

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