

Name of Expert:	Leonard Peter Binamungu
Country of Citizenship	Tanzania

1. Education:

Institution	Date attended	Award obtained	Score
University of Manchester, UK	2016-2020	PhD in Computer Science	Pass
Osmania University, Hyderabad, India	2010-2012	MSc in Computer Science	First class with distinction
University of Dar es Salaam	2006-2009	BSc in Computer Science	First class with honours
Mzumbe Secondary School	2004-2006	Advanced Certificate of Secondary Education	Division One
Bwiru Boys Technical Secondary School	2000-2003	Certificate of Secondary Education	Division One

2. Employment record

Period	Employing organization and your title/position. Contact information for references	Country	Summary of activities performed relevant to the Assignment
July 2020-Present	University of Dar es Salaam, Lecturer in Computer Science	Tanzania	<ul style="list-style-type: none"> • Prepare learning materials for undergraduate and postgraduate students • Conduct lectures, tutorials, labs, and seminars for undergraduate and postgraduate students • Conduct formative and

			<p>summative assessments for undergraduate and postgraduate students</p> <ul style="list-style-type: none"> • Supervise undergraduate projects and postgraduate research projects • Conduct research and publish research results • Undertake consultancy activities for various clients
August 2012-July 2020	Salaam, Assistant Lecturer in Computer Science	Tanzania	<ul style="list-style-type: none"> • Prepare learning materials for undergraduate students • Conduct lectures, tutorials, labs, and seminars for undergraduate students • Conduct formative and summative assessments for undergraduate students

			<ul style="list-style-type: none"> • Supervise undergraduate projects • Conduct research and publish research results • Undertake consultancy activities for various clients
November 2009- August 2012	Salaam, Tutorial Assistant in Computer Science	Tanzania	<ul style="list-style-type: none"> • Prepare learning materials for undergraduate students • Conduct tutorials, labs and seminars for undergraduate students • Conduct formative and summative assessments for undergraduate students • Assist the supervision of undergraduate projects • Conduct research and publish research results • Undertake consultancy activities for various clients

3. Membership in Professional Associations and Publications:

3.1. Membership in Professional Associations:

- Professional Member, Association for Computing Machinery (ACM), Membership No 2350003 (2023-to date)
- Student Member, Association for Computing Machinery (ACM), (2017-2019)
- Member of the University of Dar es Salaam Academic Staff Assembly (2009-to-date)
- Member of the Agile Software Engineering Research Group, University of Manchester (2020-to date)
- Member, Centre for Development Informatics, University of Manchester, UK (2017-2020)

3.2. Publications:

- **L.P. Binamungu**, S. Maro, G. Justo, and J. Ndanguzi: The dynamics of strengthening the skills to develop safety-critical systems in Tanzania. Computer Science Education 2025 (accepted, to appear), Taylor & Francis
- **L.P. Binamungu**, G. Justo, and S. Maro: A framework for improving the development of safety-critical systems in the Global South. Proceedings of the Symposium on Software Engineering in the Global South (SEiGS), IEEE, Ottawa, Ontario, Canada, April-May 2025 (to appear, accepted)
- **L.P. Binamungu**, and Joel S. Mtebe: A framework for diagnosing the transformative development nature of a university ICT curriculum. Proceedings of the IST-Africa 2025, IEEE, Nairobi, Kenya, May 2025 (to appear, accepted)
- **L.P. Binamungu**: Effects of Technical Debt on Software Interoperability. Tanzania Journal of Engineering and Technology 2024, 43(4):153-163
- **L.P. Binamungu**, and S. Maro: Behaviour Driven Development: A Systematic Mapping Study. The Journal of Systems and Software 2023, 203(2023) 111749, Elsevier
- **L.P. Binamungu**, and M. Mahundi: Investigating the Support for Agility in Developing Government Software Systems: A Case of Three East African Countries. Tanzania Journal of Engineering and Technology 2022, 41(3):1-13
- **L.P. Binamungu**: The role of source systems strengthening in the effective interoperability of digital health systems. Proceedings of the IFIP Working Group 9.4 Conference on the Implications of Information and Digital Technologies for Development, Cape Town, South Africa, May 2024, Cham: Springer Nature Switzerland.
- **L.P. Binamungu**, and J. T. Mbelwa: Empirical Distribution of Code Reviews in DHIS2 Repositories and the Impact of Code Reviews on the Popularity of DHIS2 Repositories on GitHub. 2020 African Conference on Software Engineering (ACSE 2020), CEUR-WS.org, Nairobi, Kenya, September 2020
- **L.P. Binamungu**, S. Maro, G. Justo, and J. Ndanguzi: Assessing software safety knowledge and skill gaps in Tanzania. Proceedings of the IST-Africa 2024, IEEE, Dublin, Ireland, May 2024

- G. Justo, **L. Binamungu**, and F. Clemence: Improving Robustness of Optimized Parameters Gradient Tree Boosting for Crime Forecast Model. 1st International Conference on Technological Advancement in Embedded and Mobile Systems (ICTA-EMOS), Arusha, Tanzania, November 2022, Cham: Springer Nature Switzerland, 2022.
- **L.P. Binamungu**, S. Embury, N. Konstantinou: Characterising the Quality of Behaviour Driven Development Specifications. 21st International Conference on Agile Software Development (XP 2020), Springer, Cham, Copenhagen, Denmark, June 2020
- A. Baryashaba, A. Musimenta, S. Mugisha, and **L.P. Binamungu**: Investigating the adoption of an integrated hospital information system in rural Uganda: A case of Kisiizi Hospital. In International Conference on Social Implications of Computers in Developing Countries, Springer, Cham, Dar es Salaam, Tanzania, May, 2019
- **L.P. Binamungu**, S. Embury, N. Konstantinou: Maintaining Behaviour Driven Development Specifications: Challenges and Opportunities. 25th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER 2018), IEEE, Campobasso, Italy, March 2018
- **L.P. Binamungu**, S. Embury, N. Konstantinou: Detecting Duplicate Examples in Behaviour Driven Development Specifications. 2018 IEEE Workshop on Validation, Analysis and Evolution of Software Tests (VST), IEEE, Campobasso, Italy, March 2018
- **L.P. Binamungu**: Detecting and Correcting Duplication in Behaviour Driven Development Specifications. PhD Thesis, Department of Computer Science, University of Manchester, 2020
- **L. Binamungu**, H. Uledi, A. Maguya, P. Komba, N.F. Joel, P. Makhandu, and W. Mteweale: Information and Computer Studies for Secondary Schools, Student's Book, Form Four. Tanzania Institute of Education. 2022. ISBN: 978-9987-09-463-9
- **L.P. Binamungu**: Using Science, Technology, and Innovation to Develop Africa: Progress, Challenges, and Opportunities. 13th Mwalimu J.K. Nyerere Centennial Intellectual Festival, University of Dar es Salaam, Dar es Salaam, Tanzania, June 2022

My website (lepebina.github.io) can facilitate access to some of the PDFs of these papers.

4. Language Skills

Language	Reading	Speaking	Writing
English	Excellent	Excellent	Excellent
Kiswahili	Excellent	Excellent	Excellent

5. Selected projects:

The following is the list of conducted consultancies that are relevant for this assignment

S/N	NAME OF THE ASSIGNMENT	CLIENT	POSITION ASSUMED:	DATES	BRIEF DESCRIPTION OF THE ASSIGNMENT AND TASKS UNDERTAKEN
1	TSCMIS Evaluation	Cambridge Education under the Shule Bora project	Consultant	August to November 2022	Conduct a high-quality diagnosis/audit of the Teachers Service Commission Management Information System, and advise Shule Bora on best way to complete development and deployment of the system.
2	Assessment of Malaria Information Systems in Zanzibar	Population Service International (PSI) under the support of President's Malaria Initiative (PMI).	Consultant	May 2023 to date	Assessment of electronic information systems that are used for Malaria surveillance in Zanzibar, to establish their strengths, weaknesses and how they could be improved to facilitate more coordinated efforts to eliminate Malaria in Zanzibar.
3	Implementation of the national e-health architecture	Ministry of Health, Tanzania	Researcher, system analyst and national implementer	2009 to date	Development, customization, training, deployment, and user support for DHIS2 in Tanzania, Africa and the rest of the world. The project has also generated scientific insights that have advanced the literature on the implementation of information systems in developing countries
4	Development of the National Human Resources for Health Information System	Ministry of Health, Tanzania	Researcher, system analyst and national implementer	2009 to date	Develop and train and support users of the Human Resource for Health Information Software (HRHIS), a software to

					<p>facilitate the collection and analysis of information related to the health workforce of the entire country of Tanzania, with the aim of informing the decision making process on the country health workforce agenda. The project has also generated scientific insights that have advanced the literature on the implementation of information systems in developing countries.</p>
5	eIDSR Tanzania	Ministry of Health, Tanzania	Team member	2013 to date	<p>Responsible for analysis, development, training and national deployment of the electronic Integrated Diseases Surveillance and Response (eIDSR) system. The system facilitates immediate and weekly reporting of certain diseases of public health importance through mobile phones, to inform diseases surveillance and response teams in a bid to contain the spread of diseases. The project has generated scientific insights on the use of mobile technology to improve surveillance of outbreak diseases in the developing world.</p>
6	Systems integration	Ministry of Health, Tanzania	Lead System Analyst	2020 to date	<p>Integrating Hospital Management Information Systems of 12 tertiary hospitals in Tanzania with</p>

					<p>the DHIS2, so that data from the referral, consultant and specialized hospitals across the country can be available in the national HMIS data warehouse (DHIS2), to inform planning, management, and decision making of healthcare services in the country. I am the Project Lead on the UDSM side. Through various meetings and workshops with stakeholders from tertiary hospitals and their respective system vendors, so far, we have managed to integrate management systems for six tertiary hospitals with the DHIS2 and talks to integrate the remaining six are still ongoing. Also, from November 2020 to date, the Ministry of Health in Tanzania is currently working on a project to improve HRHIS by integrating all HRH systems across the country--pre-service, in-service, and HRH professional council systems—to facilitate holistic analysis, planning, management, and decision making on the country's workforce agenda. A total of 8 systems are participating in this integration by exchanging data with the HRHIS.</p>
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7	Strengthening safety considerations in software engineering practices in Tanzania	Department of Computer Science and Engineering, University of Dar es Salaam and the Tanzania Information and Communication Technologies Commission (ICTC)	Principal Investigator	July 2022 to date	I have been involved in needs assessment, curriculum and materials development, and facilitating the training workshops for professional software engineers in Tanzania on the development of safety-critical software systems. Both face-to-face and self-paced versions of the course have been developed and administered to more than 100 software engineers in Tanzania Mainland and Zanzibar. The work is supported by the Royal Academy of Engineering, UK.
8	Development of templates and guidelines for Software Quality Assurance	Tanzania Revenue Authority	Consultant	February-March 2024	I was part of the team that was engaged by the Tanzania Revenue Authority to develop the templates and guidelines for Software Quality Assurance in Tanzania Revenue Authority. The developed templates and guidelines focus on ensuring quality across the software development lifecycle.
9	Assessment of the Tanzania Electronic Single Window System	Tanzania Revenue Authority	Consultant	October 2023	I was engaged by the Tanzania Revenue Authority to conduct a thorough assessment of the Tanzania Electronic Single Window System, and use the assessment results to develop a roadmap for the

					deployment, maintenance and support of the system.
10	Guardians	The University of Dar es Salaam Mwalimu Nyerere Professorial Chair on Pan-African Studies	Researcher and author	June 2023-to date	I was engaged in the Guardians project by the UDSM's Mwalimu Nyerere Professorial Chair in Pan African Studies to conduct research and write a book chapter on <i>Digitalisation and Human Mobility</i> . Using evidence from the Tanzania Immigration Services Department and the review of literature, the draft of the book chapter has been produced and is in the publication process.
11	Development of the national guidelines for the integration of ICT in technical and vocational education	Tanzania Ministry of Education, Science and Technology	Member	August 2024	I was a member of the team responsible for the development of the national guidelines for the integration of ICT in the regulatory as well as teaching, learning, and administration activities of the technical and vocational training institutions across the country. The guidelines were conducted based on the National Digital Education Strategy (2024) and other relevant policy frameworks.
12	Development of the national guidelines for the integration of ICT in basic education	Tanzania Ministry of Education, Science and Technology	Member	September 2024	I was a member of the team responsible for the development of the national guidelines for the integration of ICT in the regulatory as well as teaching, learning, and

					administration activities of the pre-primary, primary, schools, and teacher colleges across the country. The guidelines were conducted based on the National Digital Education Strategy (2024) and other relevant policy frameworks.
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6. Selected awards

- Awardee of the 2022 Engineering X programme (Engineering Skills where they are most required) offered by the Royal Academy of Engineering, UK. This was through the project on Strengthening Safety Considerations in Software Engineering Practices in Tanzania.
- First winner at the college level and first runup at the university level in the category of Best University-Industry Partnership Project during the 2024 University of Dar es Salaam Research and Innovation Exhibitions.
- Best Academic Paper Award, the 2022 Tanzania Annual ICT Professionals Conference (TAIC-2022), Zanzibar
- Recipient of the University of Manchester Tom Kilburn scholarship for international students to pursue a PhD in Computer Science at the University of Manchester from 2016.
- Recipient of Indian-African Scholarship award for MSc training in India from July 2010 to June 2012

7. Service

- Acting Principal, College of Information and Communication Technologies, University of Dar es Salaam, December 2024 – March 2025
- Board Member, College of Information and Communication Technologies, University of Dar es Salaam, 2022 to date
- Coordinator of Research, Publication, and External Links, College of Information and Communication Technologies, University of Dar es Salaam, 2021 to 2024
- Coordinator of Research and Publication, Department of Computer Science and Engineering, College of Information and Communication Technologies, University of Dar es Salaam, 2020 to 2021
- Coordinator of Curriculum Review, Department of Computer Science and Engineering, University of Dar es Salaam, 2022 to date

- Reviewer, Journal of Software: Evolution and Process ([JSME](#)), published by WILEY
- PC Member, Posters and Tools Demo track, 2024 International Conference on Requirements Engineering ([RE 2024](#))
- Reviewer, Journal of Information and Software Technology ([IST](#)), published by ELSEVIER
- Reviewer, Journal of the Brazilian Computer Society ([BCS](#)), published by Springer
- Shadow PC Member, 18th International Conference on Mining Software Repositories ([MSR 2021](#))
- PC Member, African Conference on Software Engineering ([ACSE 2020](#))
- Contribution to the development of [the Checklist for Digital-Transformation-for-Development \(DX4D\) Research](#)
- Junior PC Member, [2025 International Conference of Technical Debt](#), Ottawa, Ontario, Canada

8. **Expert's contact information:** (e-mail: lepebina@udsm.ac.tz/lepebina@gmail.com, phone: +255764876753)

9. Teaching

I have taught the following courses at the University of Dar es Salaam, and similar courses at the University of Manchester, UK.

- CS 335: Software Engineering
- IS 181: Web Programming
- IS 292: Object Oriented Programming
- IS 142: Introduction to High Level Programming
- CS 433: Software Testing and Quality Assurance
- IS 605/CS 606: Research Methodology in Science and Engineering
- IS 666: Integrated Health Information Systems Architecture

10. Referees

- Prof Joel Mtebe, Deputy Vice Chancellor - Academic, Research and Consultancy, Mwalimu Julius K. Nyerere University of Agriculture and Technology (MJNUAT), Mobile: +255715383366, Email: jmtebe@gmail.com
- Dr Honest Kimaro, Senior Lecturer and Coordinator of the UDSM DHIS2 Lab, Department of Computer Science and Engineering, College of Information and Communication Technologies, University of Dar es Salaam, Mobile: +255758392001, Email: honestck@gmail.com

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience.

Leonard Peter Binamungu



09/04/2025

Name of the expert

Signature

Date