Call for Application for Postdocs Candidates in Digital Health under the UR-Sweden Research Training Partnership Programme 2019-2024

1. Background

The University of Rwanda-Centre of Excellence in Biomedical Engineering and eHealth (UR-CEBE) in partnership with Stockholm University, Sweden, through the Research Training Partnership Programme, Rwanda, 2019-2014 received funding from the Swedish International Development Agency (SIDA), Sweden, to establish a research project entitled: ***Strengthening Research Capacity and Expertise in Digital Health***. The research training sub-programme has a goal to strengthen research and postgraduate training in Digital health as well as to develop and disseminate home-grown e-Health solutions through innovative research and development (R&D) activities involving the Government, academia, and private sector as partners.

It is in this regards that the UR cordially invites motivated candidates to apply for a Postdoctoral fellowship in the field of digital health starting January 2020. The Postdoc training intends to upgrade knowledge, methodologies and technologies in digital health to enable staff to supervise and guide research students in developing new knowledge and skills in digital health to address health issues. The Postdoc training program is two years and the candidates will spend three months in Sweden per year and carrying out their research in Rwanda for the rest of the period. Two Postdoc candidates will be attached to UR and mentored by senior researchers from Stockholm University.

2. Research areas

The Postdoc training falls into multidisciplinary research including from health and life sciences, information technology, computer science, design and engineering, and related field. The Postdoctoral fellowship aims to nurture and prepare candidates for successful careers and leadership that will span multidisciplinary research through innovative and technical solutions that address healthcare challenges and the role of technologies in healthcare systems. The research activities will be in close collaboration with partners from the healthcare sector, industry, and academia. The Postdoc candidates are invited to perform research on one of the following research themes:

- **Research theme A: Interoperability Framework for Health Information Systems**
  - **Backgound and objective**: Patients frequently obtain healthcare services from multiple healthcare providers in distinct locations, including hospitals, independent physician offices, pharmacies, retail clinics, labs and imaging facilities, etc. However, there is a limitation of health information exchange and integration; limited timely information for easy and quick decision making; limited ability to track service levels across the whole health systems. In addition, these health information systems (e.g., EMR, RapidSMS, etc) were developed on different platforms and information generated is presented in different electronic formats and data are stored in several health information systems. In this context, healthcare system interoperability, which can allow medical information to be shared across multiple healthcare providers in Rwanda, is required.
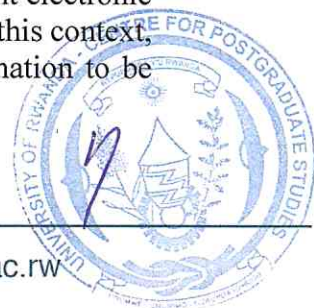
The objective of this research theme A is to develop a common refined Rwanda framework for managing interoperability and standardization challenges in digital health systems in order to allow medical information to be shared across multiple healthcare providers in Rwanda.

> **Requirements**: A PhD degree is required, preferable within the areas of Health informatics, Medicine, Computer science. However, other PhD degrees can be possible, as long as the applicants can describe how their profiles match with the research theme A. It is advantageous if the applicants have prior experience with digital health systems like Electronic medical records or similar. Other merits could include experience or knowledge about systems integration or interoperability issues

- **Research theme B: Healthcare Big Data Analytics**
  > **Backgound and objective**: Health care data is growing rapidly and is becoming more complex, with huge amounts of medical and clinical data rapidly generated and collected daily among multiple healthcare systems, health insurers, and government entities. However, in most developing countries, the collected data remains mostly underutilized, and the challenge lies on how to align decision-making in healthcare with knowledge discovery and decision support frameworks for complex and massive data sources to extract useful insights for policy makers. The objective of this research theme B is to develop novel data mining models, healthcare analytics platforms, and visual analytics tools for healthcare using computational methods and algorithmic solutions from the area of machine learning for the purpose of knowledge extraction; hence providing insights, evidence, and recommendations for decision and policy-making, as well as clinical risk modeling. In addition, national policies and strategies regulating the usage of big data in healthcare will be explored, formulated, and proposed to policy makers and governmental instruments.

  > **Requirements**: A PhD degree is required, preferably within the areas of Computer Science, Health informatics, or equivalent. An applicant with a PhD degree in healthcare-related areas, such as Medicine, is acceptable as long as the applicant can provide some proof of knowledge and experience in computer science and can describe how his/her profile corresponds to the actual research theme. It is a merit if the applicant has prior experience in data science, machine learning, data mining, or equivalent areas, as well as some good programming skills in languages such as Python, Matlab, R, or C++.

- **Research theme C: eLearning Solutions for digital heath**
  > **Background and objective**: eLearning can contribute to achieving universal health coverage by improving the knowledge and skills of the health workforce and educating health sciences students. Additionally, many remote villages lack easy access to hospitals and medical facilities. This can be addressed by the usage of digitized health information to raise professional's level of clinical expertise and to support patient education and self-care, both aiming to improve the citizens' daily life. The objective of this research theme C is to develop eLearning models for continuous education and training for medical students and healthcare professionals.
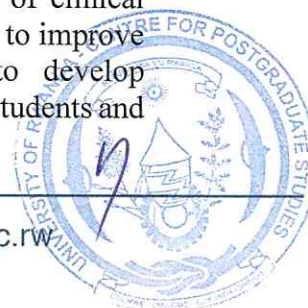
This will be done in a number of sub-tasks, including the use of virtual patient cases for effective training and remote capacity building. In addition, various technologies and models for telehealth services (delivered from a distance and encompasses remote clinical diagnosis, monitoring, and includes a wide range of non-clinical functions for prevention, promotion, and curative elements of health) will be developed and studied in both central and rural areas.

➤ **Requirements**: A PhD degree is required, preferable within the areas of Health informatics, Technology enhanced learning/eLearning, Education, Public health, Medicine or other health related areas. However also other PhD degrees can be possible, as long at the applicants can describe how their profiles match theme C. It is advantageous if the applicant have prior experience in developing health eLearning or Educational solutions.

- **Research theme D: Privacy, Integrity and Security for health information systems**
  - ➤ **Background and objective**: Issues like data integrity, data protection and data confidentiality are important in digital health, for example, in case of health information sharing and access. This research theme D will provide detailed technical measures, tools, guidance and operational procedures to safeguard data and health systems from any unauthorized access to or modification of information taking into account the multiple stages of a cyber attack. Topics of interests cover, for example, security and resilience for digital health systems and services, security management practices and access control systems as well as a legal framework focusing on privacy, confidentiality, data quality, integrity, access, ownership and sharing.
  - ➤ **Requirements**: A PhD degree is required, preferable in Health informatics, Computer Sciecne, Public health, Medicine, Cyber security or Law or other health related areas. However other PhD degrees can be possible, given that candidates' profile match the research theme D. It is advantageous if the applicant have prior experience with Electronic information systems and/or knowledge or experience of Privacy/Integrity, Legal or other relevant issues.

3. **Funding:**

The study will be supported by Sida through UR Sweden Program for Research, Higher Education and Institutional Advancement.

4. **Eligibility and requirements for Postdoc fellowship:**

The Postdoctoral candidates should possess a PhD degree or equivalent and are expected to demonstrate their interest to articulate plans for the research to pursue as part of their Postdoc training. The position holder (depending on his/her qualifications) will be required to perform the following tasks:

- Shaping research directions and producing results in the area of digital health
- Disseminating results through high impact journals and conference publications
- Providing guidance and supervision to PhD and MSc students
- Teaching, organize scientific seminars and workshops, research grants proposal writing under the scope of digital health
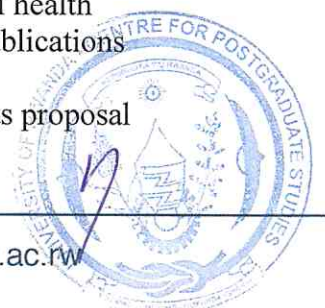
i) **Eligibility**:

- Be a Rwanda Citizen
- Holder of a PhD degree or equivalent in a relevant field and documented competence in areas relevant to the position, including research experience
- Demonstrated ability to think and work independently and in a team
- Ready to adhere to UR capacity building policies and regulations
- Having interest and passion in digital health (teaching, research, inter-institution collaboration for digital related matters)
- All things being equal, priority will be given to UR staff. Candidates from collaborating Rwandan Government institutions are eligible and invited to apply. When successful, such candidates shall have to produce commitment letters from their respective institutions to release them to undertake the Postdoc on sandwich model. Furthermore, UR shall have an agreement with these institutions how the acquired expertise shall benefit both the institution of origin of the candidate and UR.
- In line with UR's gender policy and UR's commitment to bridge gender gap in academic (teaching and research) jobs; all things being equal, female candidate shall be preferred

ii) **Key documents to be submitted by the applicant**:

- A cover letter/Motivation letter detailing commitment, statement of goals, objectives and reasons for interest in the Postdoc scholarship
- An updated CV (maximum three pages), including the listing of possible previous scientific publications as well as supervision
- A project proposal/research concept note (maximum three pages) describing:
    - ✓ why you are interested in the field/project described in the call
    - ✓ why and how you wish to complete the project
    - ✓ what makes you suitable for the project in question

The research proposal should highlight the area of research on which the candidate intends to focus as described in *Section 2*.

- A certified copy of PhD degree with a summary of the courses/subjects included in the degree (Academic transcripts)
- Other professional certificates if available
- A summary of research projects conducted (no more than three pages)
- List of postgraduate supervision projects
- Letters of recommendation (two or three letters) with contact details for references
- Provide evidence of proficiency in writing and speaking English
- Your contact details and personal data

Note: It is the responsibility of the applicant to ensure that the application is complete in accordance with the instructions in the call, and that it is submitted before the deadline.

5. Selection

The selection among the eligible candidates will be based on their capacity to benefit from the training, and emphasis is placed on previous study results that must be demonstrated by academic work (research, projects, etc.). If the applicant has published in peer-reviewed journals, the published article/s can be enclosed to the application. The applicant must present his/her research plan in such a way that it appears clearly which research area/s the applicant wishes to associate to the planned research project. In addition, the following criteria will be applied to assess the applicant's capacity:

- Independence in the analysis and organization of earlier work
- Problem formulation and rigor in previous work and in the research plan
- Previously shown ability to keep the specified time limits
- Methodological and scientific maturity
- Communication and cooperation skills
- Subject-specific knowledge relevant to education
- Research, supervision, and teaching

6. Important Dates to note:

- Application deadline: Applicants are requested to submit the required documents no later than **19 September 2019**
- Selection of candidates and notification to shortlisted candidates: **17 October 2019**
- Date for Interview: **24 October 2019**
- Final results: successful applicants will be notified on **25 October 2019**
- Study leave and residence permit/Visa process: **October 2019-December 2019**
- Starting date: **06 January 2020**

7. How to apply:

All applications must be submitted in soft copy and should be sent to to the Scholarships Officer at UR CPGS, Mrs Glories UMULISA GASHAYIJA (email: *gashayijagloriose@gmail.com*) and copy to Dr Louis Sibomana (*lewis.sis@gmail.com*), and Dr Celestine Twizere (email: *celestintwizere@gmail.com*). Applications must be received no later than **19th September 2019**.

For more information: Applicants can contact the Project PI, Dr Louis Sibomana (email: lewis.sis@gmail.com)

Done at Kigali, on 19th August 2019

Dr Celestin NTIVUGURUZWA
Acting Director, University of Rwanda Centre for Postgraduate Studies (UR CPGS)