Mwawi NYIRENDA KAYUNI

Home Country
Malawi

Degree
PhD in Cryptography

Expertise
Mathematics

Research Focus
Wireless Medical
Sensor Networks

Host University
Royal Holloway, University
of London, United Kingdom

Fellowship Awarded
2012

Mwawi Nyirenda Kayuni lived, until she was 23 years old, in Blantyre, the center of commerce and second largest city in Malawi. Her father worked as an engineer at the airport, and in his spare time would mend radios and televisions to earn more money. Mwawi would often ask him questions about what he was doing, sparking her interest in science.

Mwawi was selected to attend Chancellor College, a constituent college of the University of Malawi, to study for a BSc in Education. Here she discovered she had a passion for, and excelled at, mathematics, and subsequently made it her major. She was fascinated by the range of applications of mathematics beyond the syllabus in class, and chose to focus on cryptography. In 2009 she graduated from Mzuzu University, Malawi, with a Master's degree in Information Theory, Coding and Cryptography.

The PhD research considers how cryptography can be applied to improve the security and privacy of patient information communicated wirelessly in healthcare applications. Data from sensors attached to patients is increasingly being communicated by wireless systems. In some countries, these data are transmitted between hospitals or from patient's homes. Mwawi is focusing on networks within a hospital, which is more applicable for a Malawian setting. Mwawi believes that most wireless protocols currently in use do not consider the security of data from medical sensors, and a malicious intruder could discover confidential information, substitute the data, or disrupt the system. This risk can be reduced by using appropriate cryptographic protocols.

After her PhD studies Mwawi intends to work at Chancellor College, where she will be one of the most-highly qualified cryptography experts in Malawi. She plans to introduce a course in cryptography at the college, and would like to establish a cryptography research laboratory there.