Jiva Nath Bagale | University of West London, UK

STUDENT PROFILE

Jiva Nath Bagale

Course
*PhD in Computer Science,
University of West London, UK*

Year completed
2015

Title of thesis
On the performance of emerging wireless mesh networks

In his thesis Jiva studied wireless mesh networks with an aim to improve their performance when collecting and communicating sensor data. He investigated the limitations and challenges of low-bandwidth wireless mesh network to communicate sensor data. This research was driven by the fact that low-bandwidth networks is used increasingly in many aspects of everyday life. They are being used for example in healthcare, industrial automation, and environment monitoring. The data to be communicated can be as varied as room temperature, heartbeat, user's activities, or seismic events.

The research generated a light-weight data communication system which can be used to transfer sensor data in wireless mesh networks. The main objective was to increase the amount of sensor data communicated in real-time without affecting energy usage on the device. He examined messaging protocols that are suitable for embedded devices and devised a messaging model to communicate sensor data. He then utlised data compression techniques that can be used on devices with limited resources and that are suitable to compress typical sensor data. Data size, data transfer time, and energy consumption were evaluated to highlight the advantages and limitations of those techniques. The impact on the scalability of such networks was also evaluated.

The thesis makes a number of technical contributions to the body of knowledge on energy savings by the use of data compression and clarifies the understanding of energy consumptions of compression and network transfer. The system also allows to create bigger scale networks of sensors or mobile devices to communicate data in real-time.

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Supervisors:

**Dr. John Moore and
Prof. Peter Komisarczuk**

Dr. John Moore is Lecturer in Computing at the University of West London.

Prof. Peter Komisarczuk is Professor of Computing at Royal Holloway, University of London.