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- [Faculty Search](#)
- [Digital library](#)
- [asblib](#)
- [ICTS Helpdesk](#)

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- [CSE](#)
- [IT](#)
- [EEE](#)
- [EIE](#)
- [ME](#)
- [CHE](#)
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- [Civil](#)
- [Mathematics](#)
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Amrita's Wireless Sensor network

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Written by Administrator

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NEWS FLASH

AMRITA's Wireless Sensor Network predicts possible landslide at Munnar, Kerala this monsoon

AMRITA University's landmark wireless sensor network system for landslide detection, deployed at Anthoniar colony, Munnar, warns of a possible landslide considering the torrential rains that have been falling through this region and the state of Kerala. This wireless sensor system, which is the first in India, has detected certain signals that indicate vulnerability of this region to possible landslides and the signals have been made available online at the website, www.winsoc.org and thereby researchers across the world can study the signal variations and patterns on a real-time basis.

On July 21, the data analysis shows increase in pore pressure and also noticeable soil movements. The authorities and the district collector have been notified accordingly and AMRITA has requested the government authorities to issue an advisory to the people of this region to relocate to another area till the region comes back to normalcy in terms of pore pressure and underneath soil movements. A team of researchers from AMRITA are currently working on exact measurement details on site as well as closely monitoring at the data centre in Amritapuri (Kollam) campus of AMRITA University. Any updates would be informed to the concerned authorities from the state-of-the-art Wireless Sensor Network laboratory at Amritapuri.

AMRITA's system which is deployed at Anthoniar Colony, Munnar, Idukki district of Kerala, consists of 50 geological sensors and 10 wireless sensor nodes. The system is functional from June 2009 in an area which is very prone to rainfall-induced landslides. In the past, landslides at Munnar have caused considerable losses to human life. The deployment of this system has come as a lifeline for this region. This technological breakthrough system was developed as part of the research project "WINSOC" (Wireless Sensor Network with Self Organization Capabilities for Critical and Emergency Applications), which is co-funded by INFISO DG of European Commission. The project consists of a consortium of 11 partners from 8 different countries. AMRITA University and ANTRIX (the commercial arm of Indian Space Research Organization) are the only partners participating from India, and all other partners are from Europe.

This system can also be suitably modified for applications to gas leakage detection, avalanche and large scale temperature field monitoring (forest fire detection). Within the next 3 months, AMRITA has plans to extend this network to 150 geological sensors and 25 wireless sensor nodes as part of the research funding provided by Department of Information Technology of the Government of India. These sensors will also be deployed at various sensitive locations in other parts of the country. Dr. Maneesha V Ramesh, head of the Center at Amritapuri campus and the Principal Investigator of this project, is currently in Canada touring Universities, and in fact was able to analyze all of the signals live on the Internet to arrive at landslide possibility.

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Wireless sensor network system deployed for landslip detection

At present in Munnar it has 50 geological sensors and 20 wireless sensor nodes

Amutha Kannan

COIMBATORE: A wireless sensor network system for landslide detection has been developed by Amrita Vishwa Vidyapeetham in collaboration with the European Commission.

The technological breakthrough was developed as part of the research project WINSOC (Wireless Sensor Network with Self-Organisation Capabilities for Critical and Emergency Applications). The project was co-funded by the Information Society and Media Directorate General (INFSO-DC) of the European Commission.

It was a consortium of 11 partners from eight countries. Amrita University and Amrita Corporation Limited (the commercial arm of Indian Space Research Organisation) are the partners from India.

Venkat Rangan, Vice-Chancellor of the University, was the principal investigator and Manvesha V. Ramesh, faculty, Department of Computer Science and Engineering, was the co-investigator.

WINSOC's goal was to develop a general purpose innovative wireless sensor network having the distributed processing capabilities and to test applications on environmental risk management, where heterogeneous networks composed of nodes with degrees of complexity and capabilities are made to work under realistic scenarios.

According to the Vice-Chancellor, the project was to



FUTURISTIC: Venkat Rangan, Vice-Chancellor, Amrita Vishwa Vidyapeetham (right) and Manvesha V. Ramesh, faculty, Department of Computer Science and Engineering of the university, in Coimbatore, are involved in the development of the wireless sensor network system for landslip detection.

- The project will have applications for landslip detection, gas leakage detection among others
- The sensors will be deployed at various sensitive locations of the country

address applications for landslip detection, gas leakage detection and large scale temperature field monitoring (forest fire detection).

"The pilot deployment of this system has already been done at Munnar, which is an area prone to rainfall induced landslips," he said.

"Once fully operational, the system can be deployed in all parts of the country which are prone to landslips, industrial sites prone to gas leakage, areas having regular forest fires, etc.," he added.

At present, the system consisted of 50 geological sensors and 20 wireless sensor nodes.

The geological sensors were used for monitoring moisture content, pore pressure and terrain movement at the deployment sites.

In another three months, the network would be extended to 100 geological sensors

and approximately 25 wireless sensor nodes as part of the funding provided by the Department of Information Technology, Government of India. These sensors would also be deployed at various sensitive locations in Tamil Nadu, Kerala and other parts of the country.

Representatives from University of Rome, Selex Communications, Intracom Telecom, Gauch Centre for Science and Technology, Federal Institute of Technology, Switzerland, etc. were recently on a visit to the Vidyapeetham for deliberations and also to visit the site where the pilot deployment of the system had been done.

The Hindu, June 15, 2009

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