Modern wireless technologies could save bushfire lives

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Mobile technologies, including the global system for mobile communication (GSM) and the ZigBee short-range wireless data connection technology could be used to monitor and detect bushfires, according to two research papers to be published in the *International Journal of Computer Aided Engineering and Technology*.

Dry, but often vegetated regions, of the world, such as the Australian outback and West Coast USA, repeatedly succumb to wildfires. These serious natural disaster can have devastating effects on the landscape, agriculture, and dwellings as well as causing significant loss of life, property, and the environment.

In order to prevent bushfires from occurring or minimise their impact, accurate and early detection is essential. There are numerous monitoring and alarm systems available, but they do have various shortcomings.

Now, Liu Liu, Rong Sun, Ying Sun and Said Al-Sarawi of The University of Adelaide, Australia, are developing a smart bushfire monitoring system that can provide an early warning message. Their system uses the short message service (SMS) carried by GSM telephones. Temperature and humidity sensors are connected to a microcontroller, which is interfaced with a GPS receiver to report the module position and a GSM module to communicate the sensory information. This system offers several benefits over earlier detection and alarm systems, not least that of which is that it can be adapted to different settings easily at no great expense.

In parallel work, Sun, Yuan and Al-Sarawi have also investigated the potential of ZigBee technology for smarting monitoring of bushfires. The same system of sensors and monitors are hooked up to a base station via wireless ZigBee modules that feed into a wireless LAN (local area network), thus providing the option to monitor a property or site remotely via the internet rather than receiving status alerts via SMS.

The team points out that the ZigBee approach could also be expanded by linking modules together using a GPRS network to provide much wider coverage. This would enhance the benefits of both mobile networks and the internet in collecting data from different sources in a similar way to distributed sensory network, but with a much simpler initial setup.

More information: "A smart bushfire monitoring and detection system using GSM technology" in International Journal of Computer Aided Engineering and Technology, 2010, vol 2, pp. 218-233 and " A bushfire monitoring and detection system for smart homes using ZigBee technology" pp. 234-249

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