Wi-Fi Data Access in Harsh Environments

Professor Gary Chan (Computer Science and Engineering) has been working on improving Wi-Fi network access since 2007. Current Wi-Fi networks suffer from limited coverage, high interference and costly setup. In certain harsh environments such as airports, container terminals, central business districts or mining fields where cabling is costly or blinds spots are many, providing pervasive Wi-Fi access is very challenging indeed. To overcome these problems, Professor Chan invented Lavinet, a software solution enabling an adaptive and high-performance multi-hop Wi-Fi network. The software implements innovative channel selection and routing algorithms that effectively eliminate dynamic and complex blind spots, avoid traffic congestion and reduce signal interference. Lavinet can simply be installed in most Wi-Fi access points and wireless routers without modifying the existing infrastructure. A Wi-Fi client in the network, without having to install any software, can connect to the network to enjoy reliable and fast Wi-Fi data service. Lavinet intelligently searches for and assigns optimal wireless channels and routing paths. This greatly enhances the performance and maximizes the wireless coverage areas.

The Lavinet technology is protected intellectually through a patent (pending) and software copyrights. The research and development work on Lavinet started in 2007 and has since received over HK$10m in funding from ITC, Boeing Company, Hong Kong Aircraft Engineering Company (HAECO), Modern Terminals Limited, OpenPlatform Technology, Ruckus Wireless and Altai Technologies Ltd. The R&D team currently comprises more than 20 postgraduate and undergraduate researchers.

Lavinet has received several awards including HP Labs Innovation Research Awards in 2011, Silver Award of Boeing Research and Technology in 2009, Bronze Award for Best Innovation and Research Award at the HK ICT Awards in 2012, and Merit Award in Asia-Pacific ICT Award in 2012. It is currently deployed in the Tsing Yi terminals of Modern Terminal Limited. Lavinet has also been licensed to OpenPlatform Technology, successfully demonstrating the technology transfer of world-class research results to industry.
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