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HKUST POSTGRADUATE WINS
BEST PAPER AWARD IN IEEE CONFERENCE

HKUST Electrical and Electronic Engineering (EEE) Department postgraduate Eric Chi-Wai Yung's research paper on digital wireless audio has won first prize (Best Paper Award) in the Student Paper Contest of the 1999 IEEE International Symposium on Circuits and Systems (ISCAS).

The ISCAS is a world-renowned conference for electronic engineers, organized by the Institute of Electrical and Electronic Engineers (IEEE). There were more than 500 papers from all over the world and only eight were selected for the final round of the contest.

Mr Yung's work presents a new algorithm used in wireless transmission of audio data (music or speech) compressed according to the Motion Picture Expert Group (MPEG) standard. "Many people are fascinated by MP3 (the latest version of the MPEG audio standard) now. It is gaining popularity because it can regenerate near-original audio data with a compact player," explained Mr Yung. "However, when compressed audio data are transmitted through a wireless channel, the quality of the data can be affected by interference which occurs during transmission."

The MPEG standards divides compressed digital audio data into two segments: header and data. The header segment contains the critical parameters needed to recompose the audio data during decompression. The data segment consists of the encoded contents of the audio data. Some of the information in the data segment is more important because it can significantly affect the quality of the decompression. Mr Yung's algorithm can identify the information that is important for audio quality and assign more error-protection resources to it so as to ensure that these data can be reproduced reliably. The result is a better audio quality without consuming much transmission bandwidth, a valuable resource in wireless communication.

Mr Yung has also developed a measurement method to compare the errors generated during the compression and decompression processes using various technologies. "Now, we can use a more objective method than 'golden ear' testing, which relies on the subjective feedback of the audience," he said.

"Eric's paper combines two hottest technologies: wireless communication and multimedia in the systems level," said Dr CY Tsui, Mr Yung's thesis supervisor and Assistant Professor of HKUST's EEE Department. "In addition, the algorithm is very useful in developing wireless audio applications. This is probably the reason he beat other competitors and won the Best Paper Award."

Note to Editors:
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