High Efficiency Image Compression over Encrypted Domain

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**DATE**  3 February 2015 (Tuesday)  
**TIME**  11:00 am - 12:00 noon  
**VENUE**  CS Seminar Room, Y6405, 6th Floor  
Yellow Zone, Academic 1  
City University of Hong Kong  
83 Tat Chee Avenue  
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**ABSTRACT**

Recently, the research on signal processing over encrypted domain has gained increasing attention, primarily driven by the needs from cloud computing platforms and various privacy-preserving applications. In this talk, I would like to present some of our recent results on high efficiency compression of encrypted images. We first consider the case that both encryption and compression algorithms can be designed simultaneously. We propose a prediction-error domain image encryption scheme, and show that the resulting encrypted file can be very efficiently compressed. The averaged compression performance for high rates is even better than the state-of-the-art JPEG 2000. We then consider a more practical scenario where encryption approach is fixed to be a traditional one, while only the compression engine can be designed. We suggest a scalable compression scheme for stream-cipher encrypted images through an adaptive sampling mechanism. Much better RD performance as well as visual quality can be achieved at low and medium rate regions.

**BIOGRAPHY**

Dr Jiantao Zhou is currently an Assistant Professor with the Department of Computer and Information Science, Faculty of Science and Technology, University of Macau. He received the B.Eng. degree from the Department of Electronic Engineering, Dalian University of Technology, Dalian, China, in 2002, the M.Phil. Degree from the Department of Radio Engineering, Southeast University, Nanjing, China, in 2005, and the Ph.D. degree from the Department of Electronic and Computer Engineering, Hong Kong University of Science and Technology, Hong Kong, in 2009. He held various research positions with the University of Illinois at Urbana-Champaign (Fulbright Scholar), the Hong Kong University of Science and Technology, and the McMaster University. His research interests include multimedia security and forensics, and high-fidelity image compression. He was a co-author of a paper that received the Best Paper Award at the IEEE Pacific-Rim Conference on Multimedia in 2007. He holds three granted US Patents and two granted Chinese Patents.

All are welcome!

In case of questions, please contact Dr Cong Wang at Tel: 3442 2010, E-mail: congwang@cityu.edu.hk, or visit the CS Departmental Seminar Web at [http://www.cs.cityu.edu.hk/](http://www.cs.cityu.edu.hk/).