



**Electrical Engineering Colloquium**  
**Dallas Chapter of IEEE Signal Processing Society Presents**

**“Tracing Traitors: Collusion Resistant Multimedia Fingerprinting”**

Prof. Ray Liu

Department of Electrical and Computer Engineering and Institute of Systems Research  
University of Maryland, College Park

**Room ECSN 2.120**  
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**11:00 am**

Digital fingerprinting is an emerging technology for identifying users who have legitimate access to plaintext content but may use the content for unintended purposes, such as duplication and redistribution. For multimedia, fingerprints can be put into the content using embedding techniques that are typically concerned with robustness against a variety of attacks mounted by an individual. Ensuring the appropriate use of multimedia content, however, is no longer a security issue with a single adversary. The global nature of the Internet has brought media closer to both authorized users and adversaries. It is now easy for a group of users with differently marked versions of the same content to work together and collectively mount attacks against the fingerprints. These attacks, known as collusion attacks, provide adversaries a cost-effective method for removing an identifying fingerprint.

In this talk, tracing traitors using collusion-resistant fingerprinting for multimedia that jointly considers the encoding, embedding, and detection of fingerprints will be presented. A general formulation of fingerprint coding and modulation provides a unified framework covering orthogonal fingerprints, coded fingerprints, and other correlated fingerprints. Under this framework, we have proposed a new class of structured codes, known as Anti-Collusion Codes (ACC), and designed algorithms that allows for gathering forensic evidence of the guilt and for identifying colluders.

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Dr. Liu is a Professor of Electrical and Computer Engineering Department and Institute for Systems Research and Director of Communications and Signal Processing Laboratories of the University of Maryland, College Park. His research contributions encompass broad aspects of multimedia communications and signal processing; wireless communications and networking; information security; signal processing algorithms and architectures; and bioinformatics, in which he has published over 300 refereed papers, books, and book chapters. Dr. Liu is the recipient of numerous awards and honors including IEEE Signal Processing Society 2004 Distinguished Lecturer, the 1994 National Science Foundation Young Investigator Award, the IEEE Signal Processing Society's 1993 Senior Award (Best Paper Award), and IEEE 50th Vehicular Technology Conference Best Paper Award, Amsterdam, 1999. He also received the George Corcoran Award in 1994 for outstanding contributions to electrical engineering education and the Outstanding Systems Engineering Faculty Award in 1996 in recognition of outstanding contributions in interdisciplinary research, both from the University of Maryland, College Park. Dr. Liu is a Fellow of IEEE. Dr. Liu is the Editor-in-Chief of IEEE Signal Processing Magazine and was the founding Editor-in-Chief of EURASIP Journal on Applied Signal Processing, and has been an Associate Editor of IEEE Transactions on Signal Processing, a Guest Editor of special issues on Multimedia Signal Processing of Proceedings of the IEEE, a Guest Editor of special issue on Signal Processing for Wireless Communications of IEEE Journal of Selected Areas in Communications, a Guest Editor of special issue on Multimedia Communications over Networks of IEEE Signal Processing Magazine, and a Guest Editor of special issue on Multimedia over IP of IEEE Trans. on Multimedia. He is the Editor-in-Chief of EURASIP book series on signal processing and communications. Dr. Liu is a Board of Governor of IEEE Signal Processing Society.