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## **MAJOR RESEARCH INTERESTS**

There are two main themes of my research work: *multimedia information processing* and *multimedia information security*. Both are systems research areas which have fundamental conceptual issues arising out of real-world problems. So their flavor is a blend of both theoretical and applied research. Also, it is interdisciplinary involving synthesis of ideas from computer science, electrical engineering, cognitive science and aesthetics.

- *Multimedia Information Processing*: The aim of this research is to develop techniques for semantic content-based processing of image, video and audio, to provide intuitive access and retrieval to image, video and audio information, and to provide tools for processing, analyzing & synthesizing images, video and audio. Current projects include multimedia surveillance, multimedia e-chronicles and computational media aesthetics.
- *Multimedia Information Security*: The basic approach that we have adopted for multimedia security research theme is exploration of many unobvious links between cryptography and multimedia. For example, we have recently married ideas from threshold cryptography with video features in order to perform video authentication. Current projects include multimedia authentication, multimedia digital rights management and multimedia forensics.

## **RECENT REPRESENTATIVE PUBLICATIONS**

1. Reversible Watermarking Using a Perceptual Model, M. Awrangjeb and M.S. Kankanhalli, *Journal of Electronic Imaging*, Vol. 14, No. 1, Jan-Mar 2005.
2. Mask-based Fingerprinting Scheme for Digital Video Broadcasting, S. Emmanuel and M.S. Kankanhalli, *Multimedia Tools and Applications*, 2006.
3. Automatic Video Logo Detection and Removal, W. Yan, J. Wang and M.S. Kankanhalli, *ACM Multimedia Systems Journal*, 2006.
4. Progressive Color Visual Cryptography, D. Jin, W.Q. Yan and M.S. Kankanhalli, *Journal of Electronic Imaging*, 2005.
5. Analogies Based Video Editing, W.Q. Yan, J. Wang and M.S. Kankanhalli, *ACM Multimedia Systems Journal*, 2005.
6. Precise Pitch Profile Feature Extraction from Musical Audio for Key Detection, Y.W. Zhu and M.S. Kankanhalli, *IEEE Transactions on Multimedia*, 2006.
7. Modeling Intents for Home Video Repurposing, R. Achanta, W.Q. Yan and M.S. Kankanhalli, *IEEE Multimedia*, 2006.
8. Automatic Summarization of Music Videos, X. Shao, C.S. Xu, N.C. Maddage, M.S. Kankanhalli, Q. Tian, J.S. Jin, *ACM Transactions on Multimedia Computing, Communications and Applications*, 2006.
9. Experiential Sampling in Multimedia Systems, M.S. Kankanhalli, J. Wang and R. Jain, *IEEE Transactions on Multimedia*, 2006.
10. Experiential Sampling on Multiple Data Streams, M.S. Kankanhalli, J. Wang and R. Jain, *IEEE Transactions on Multimedia*, 2006.
11. Multimedia Simplification for Optimized MMS Synthesis, W.Q. Yan and M.S. Kankanhalli, *ACM Transactions on Multimedia Computing, Communications and Applications*, 2007.
12. A Scalable Signature Scheme for Video Authentication, P.K. Atrey, W.Q. Yan and M.S. Kankanhalli, *Multimedia Tools and Applications*, 2007.
13. Metadata Handling: A Video Perspective, C. Madhwacharyula, M. Davis, P. Mulhem and M.S. Kankanhalli, *ACM Transactions on Multimedia Computing, Communications and Applications*, 2007.