Time & Location: February 15, 2013 at 1:30 PM in HEC 356
Title: SCENE UNDERSTANDING FOR REAL TIME PROCESSING OF QUERIES OVER BIG DATA STREAMING VIDEO

With heightened security concerns across the globe and the increasing need to monitor, preserve and protect infrastructure and public spaces to ensure proper operation, quality assurance and safety, numerous video cameras have been deployed. Accordingly, they also need to be monitored effectively and efficiently. However, relying on human operators to constantly monitor all the video streams is not scalable or cost effective. Humans can become subjective, fatigued, even exhibit bias and it is difficult to maintain high levels of vigilance when capturing, searching and recognizing events that occur infrequently or in isolation.

These limitations are addressed in the Live Video Database Management System (LVDBMS), a framework for managing and processing live motion imagery data. It enables rapid development of video surveillance software much like traditional database applications are developed today. Such developed video stream processing applications and ad hoc queries are able to "reuse" advanced image processing techniques that have been developed. This results in lower software development and maintenance costs. Furthermore, the LVDBMS can be intensively tested to ensure consistent quality across all associated video database applications. Its intrinsic privacy framework facilitates a formalized approach to the specification and enforcement of verifiable privacy policies. This is an important step towards enabling a general privacy certification for video surveillance systems by leveraging a standardized privacy specification language.

With the potential to impact many important fields ranging from security and assembly line monitoring to wildlife studies and the environment, the broader impact of this work is clear. The privacy framework protects the general public from abusive use of surveillance technology; success in addressing the "trust" issue will enable many new surveillance-related applications. Although this research focuses on video surveillance, the proposed framework has the potential to support many video-based analytical applications.

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Approved for distribution by Kien A. Hua, Committee Chair, on January 11, 2013.

The public is welcome to attend.