With the proliferation of inexpensive cameras and the availability of high-speed wired and wireless networks, video surveillance applications are becoming ubiquitous in many domains such as public safety and security, manufacturing, intelligent transportation systems, and healthcare. Today's video surveillance systems, however, are designed for a specific class of applications. For instance, one cannot use a system intended for incident detection on highways for patient monitoring in a healthcare facility. To support rapid development of various video surveillance applications, we have designed and implemented a new class of database management system, called live video database management system (LVDBMS). We view networked video cameras as a special class of storage devices, and allow the user to formulate ad hoc queries expressed over these live video feeds. Such queries are processed in real time as continuous queries using novel distributed computing techniques. With this environment, the software developers are able to develop different video surveillance systems for a variety of applications much like they would develop database applications today. In this dissertation, I present the live video data model, the query language, the query processing and optimization technique; and an cross camera tracking algorithm.

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The public is welcome to attend.