



BriefCam White Paper

Mission Statement

BriefCam's mission is to allow effective access to recorded surveillance video and enable the end user to find and display any event in only a few minutes.

BriefCam achieves its goal through Video Synopsis, a proprietary image-processing technology that creates a summary of the original full length video.

BriefCam can provide a complete representation of all events occurring during 24 hours of video footage in a condensed clip, as short as a few minutes long.

The synopsis is made possible by simultaneously presenting multiple objects and activities that have occurred at different times.



What Is Video Synopsis?

Video Synopsis is the simultaneous presentation of multiple objects and activities that have occurred at different times.

White Paper: Video Synopsis Technology

Background

Today, video surveillance is used in thousands of locations worldwide for enhancing public safety, investigating and preventing security breaches, criminal activity and loss prevention. It also serves as an effective tool to improve employee and operational performance. Yet, with all the technological advances that have been made in video surveillance, viewing and analysis of recorded video surveillance footage is still a costly and time intensive task that often requires a large team.

The BriefCam Product

BriefCam's product is based on its propriety, patent pending Video Synopsis (VS) technology. Video Synopsis tracks and analyzes moving objects, and converts video streams into a database of objects and

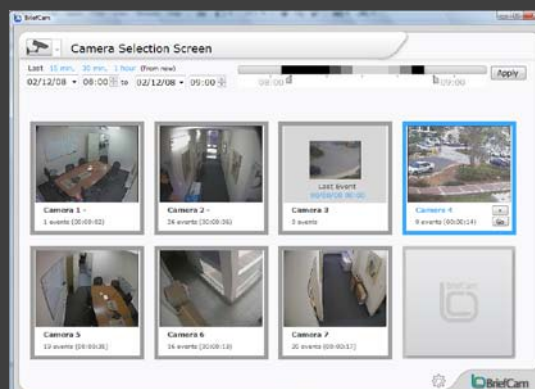
activities. When a video summary is needed, all objects from the target period are collected, and are shifted in time to create a much shorter synopsis video showing maximum activity. A synopsis video clip is generated, in real time, in which objects and activities that originally occurred in different times are displayed simultaneously. (See Figure 1).

The BriefCam system comprises a hardware unit that connects to a LAN consisting of cameras and DVR/NVR. The end user can access the BriefCam summary and index using a software client running on a PC. (See Figure 2).

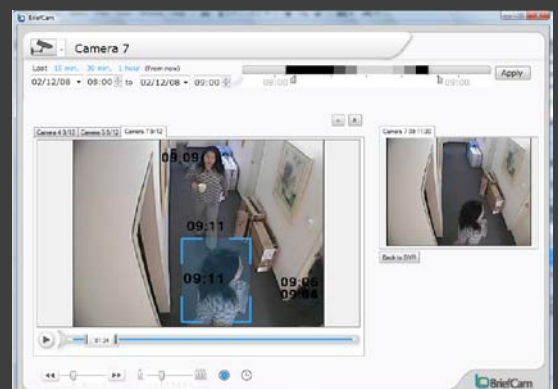
Using the BriefCam client, the end user can create and view video summaries, as well as index the original video data. The BriefCam server and client access the DVR/NVR just like any other client.

Figure 1: BriefCam screen capture

Camera Selection Screen



Selected Camera Screen



White Paper: Video Synopsis Technology

To install BriefCam Video Synopsis on your current network, simply connect the BriefCam unit to your existing network, and install the BriefCam client on your PC.

Work flow

Videos are processed in the BriefCam server soon after being recorded. The BriefCam client provides a simple and intuitive interface enabling end users to select a specific camera, and to specify a desired time range. The summarized video clip is then generated according to the specifications requested without the need for additional processing. During the review of the video clip, the original video footage of a specific event can be accessed at any time. Users can control object density and video speed for tracing events and evidence.

Technology

BriefCam's Video Synopsis technology, licensed from The Hebrew University of Jerusalem, combines a visual summary of stored video together with an indexing mechanism.

Video Synopsis supports substantial shortening of surveillance video through the simultaneous display of events that occurred at different times.

The process begins by detecting and tracking objects of interest. Each object is represented as a "tube" in "space-time" of all video frames. Objects are detected and stored in a database in approximately real time.

Following a request to summarize a time period, all objects from the desired time are extracted from the database, and are shifted in time to create a much shorter summary video containing maximum activity. (See Figure 3).

Real time propriety rendering is used to generate the summary video after object re-timing. This allows end user control on objects/events density.

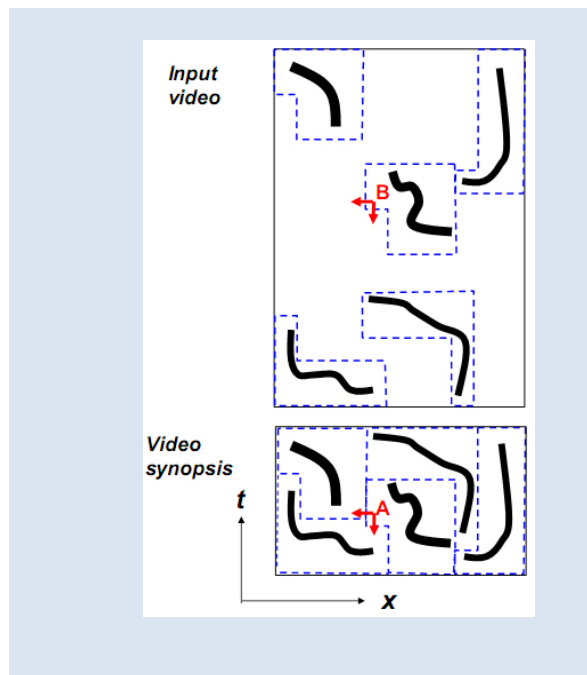
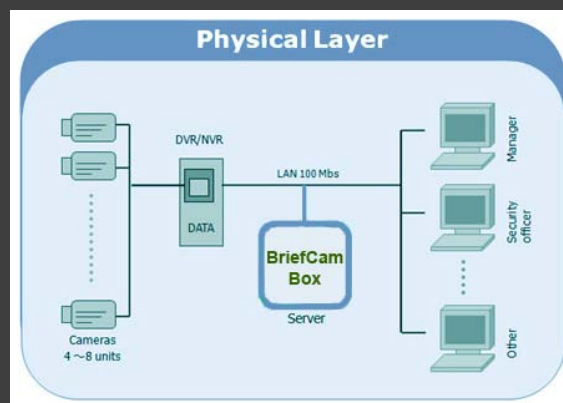
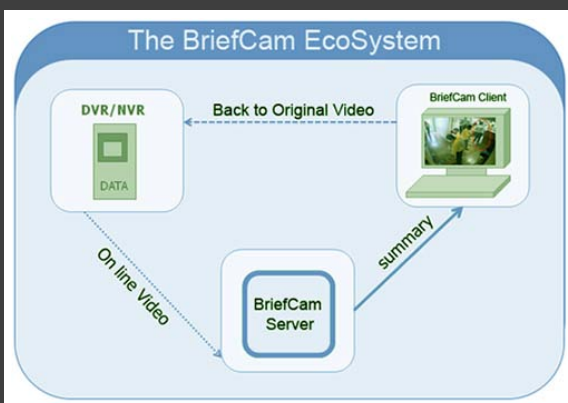


Figure 3: Tube packing

Schematic example: Creating the video summary by re-timing the space-time tubes. (X= the 2-dimensional XY axis of each frame)

Figure 2

Physical and virtual connections with the work environment.



About BriefCam

BriefCam, Ltd. is a developer and provider of video synopsis solutions for CCTV surveillance systems. BriefCam technology summarizes hours of events into a "brief" that takes just a few minutes to watch – with an index to the original source video – whether real-time feed online or archival footage offline.

Video Synopsis (VS) enables operators to use their experience and instincts to make decision faster and better, at significantly reduced cost to the public sector, businesses and individuals worldwide.

BriefCam products interface seamlessly with existing video surveillance and analytic solutions; a wide range of DVR / NVR devices, advanced IP cameras; and complement existing video surveillance and analytics solutions for municipalities, transportation centers, border control, banks, office building management, retailers and others.

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