

**FOR IMMEDIATE RELEASE**

**No. 2329**

*Product Inquiries:*

Yutaka Kamada  
Mitsubishi Electric Corporation  
Tel: +81-3-3218-2391  
[Yutaka.Kamada@hq.melco.co.jp](mailto:Yutaka.Kamada@hq.melco.co.jp)

*Media Contact:*

Oliver Cox  
Mitsubishi Electric Corporation  
Tel: +81-3-3218-2346  
[Oliver.Cox@hq.melco.co.jp](mailto:Oliver.Cox@hq.melco.co.jp)

**MITSUBISHI ELECTRIC DEVELOPS A HUMAN SEARCH  
TECHNOLOGY FOR SURVEILLANCE VIDEO SYSTEMS**

*Effective searching of long-term video records now possible*

**AMAGASAKI, Japan, Feb. 17, 2004** — Mitsubishi Electric Corporation (President and CEO: Tamotsu Nomakuchi) has developed an effective human search technology by specifying action patterns and then extracting the patterns from video data. Various features of a specified person can be searched for, including the length of time taken to complete an action, trajectory and walking speed. Large amounts of video data can now be searched extremely quickly, thereby enabling surveillance cameras and video recorders to be operated much more efficiently.

This technology is to be exhibited at the forthcoming “Security Show 2004” (March 2 - 5, 2004, at Tokyo “Big Sight”).

**Background**

Recently, the demand for video imaging security products, such as surveillance cameras and video recorders, has been steadily rising. However, other than manually checking video via fast-forward playback, searching for specific scenes from large quantities of video data is very difficult. Moreover, the increasing storage capacity of new video recorders means that an even greater length of time is required to search for information. With this in mind, Mitsubishi Electric decided to base search technology on people’s

individual action patterns. The results showed that an efficient search of video data on such a basis was possible.

## **Main Features**

### *1. Video search technology based on people's specific action patterns.*

The present technique involves analyzing video data, then detecting and tracking a person from image to image. Features of a person's actions such as trajectory and walking speed are extracted. Based on this feature data, a search can be conducted to discover who performed these specific actions. It is possible to search for people who walk in a particular direction or who wander into specific areas. For example, from a 24-hour long video recording shot at 30 frames per second in which there are 1000 people, an individual person who walked in a specified direction can be found within one second.

### *2. Accurate extraction and tracking.*

The extraction of an individual from video data is achieved by comparing a background image with the current image. The average and the distribution of brightness values within a given period of time are calculated for each pixel in the image. Adjustments are made, such as lowering the sensitivity of the extraction process, when for example there are too many small changes in brightness values. A detection accuracy rate of more than 97% has been achieved, and low levels of false detection are maintained under a variety of backgrounds, including swirling leaves, light changes and multiple people in short time periods. The match between a person's features in several different frames is made by tracking the person from one frame to the next and predicting the next position of their center of the gravity.

## **Future Developments**

This technology is intended for video surveillance systems applications.

## **Patents Pending**

Three patents relating to this development are currently pending in Japan.

## **About Mitsubishi Electric**

With over 80 years of experience in providing reliable, high-quality products to both corporate clients and general consumers all over the world, Mitsubishi Electric Corporation (TSE: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. The company has operations in 35 countries and recorded consolidated group sales of 3,639 billion yen (US\$30.3 billion<sup>\*</sup>) in the year ended March 31, 2003. For more information visit <http://global.mitsubishielectric.com>

<sup>\*</sup>At an exchange rate of 120 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2003.

###