

## THE CHALLENGE

Transform unmanageable visual libraries into strategic assets in the field of investigation.

LTU was approached by several police organizations around the world to create a system to aid in the investigation of child abuse criminals and distribution rings.

Since the content managed by those organizations is sensitive and prohibited by law, it is necessary to create an internal, restricted-access system to automate the comparison of current seizures with the organization's thousands of confidential, documented images. A system is needed which facilitates the correlation between the elements found in current cases (hard-to-describe, undocumented, unqualified) with images, clues, and evidence.

- Image-based search within a centralized data center
- Content-based search within large image databases
- Easy and intuitive access to visual assets
- Identification of series of images using visual comparison techniques
- Automatic comparison of large sets of images with a reference



## THE SOLUTION

Implement LTU's powerful image recognition application to increase the efficiency of the investigation process.

LTU implemented within several police organizations a specialized version of its LTU engine (Image-Seeker) application with an Autoscan function. These law enforcement agencies are now able to compare and match images, a task previously impossible with their manual procedures.

The LTU system has improved the investigation speed and success rate by giving the investigator ability to:

- Compare recently seized images, about which little or no information is known, to a police database of images and videos that have identifiers or characteristics attached. By comparing visual clues, the investigator is able to identify the source of an image, links between known criminals and suspects, details about the location a picture was taken, and sometimes the people within the images.
- Match single images to a series of images or videos. Since images are often sourced from a roll or a video segment, there are rarely many stand-alone images. Investigators can now find and match a "missing link" image to its original series, or a similar series. This information provides investigators with insights into details about the camera used, the style of the photographer, and even camera angles which may reveal facial features not previously seen.
- Link apparently harmless images of children to a series that has been documented and captured as illegal. For instance, a photo from a recent seizure of a child smiling might actually be part and parcel of a porn series, which would have otherwise gone unlinked without an image similarity recognition system.

**Help identify similar features of images, such as clothing or backgrounds. This information allows the police to identify victims who have been abused repeatedly, but in different locations, for instance.**

## THE BENEFITS FOR LAW ENFORCEMENT ORGANIZATIONS

Improve the fight against child abuse activities and help in dismantling image distribution rings.

Since several police organizations use the LTU system in current criminal affairs, the information that can be released to the public is restricted. However, feedback is positive and indicates that LTU technology has been instrumental in helping solve many cases. In one instance, images found in the seizure of a suspect were compared using LTU's system to the police database. The results of the comparison revealed similar images, which contained the very suspect. The specialized police department concerned was able, therefore, to charge the suspect not only on possession and duplication charges, but on criminal participation charges, as well.

In current seizures, the police often capture more than 100,000 child abuse images in one location. Previously, investigators would have been unable to sort through or pull information from these images manually, and the images would have gone unused due to time restrictions. With LTU's technology, the automated investigation system is now able to extract incriminating evidence from these images regarding the suspect in question, and potentially other participants.

## THE LTU IMAGE-SEEKER APPLICATION

Image-Seeker (now LTU engine) can be used for:  
 Direct implementation for organizations with large volumes of strategic visual data. Integration with knowledge management and media asset management software via API's. LTU can provide consulting expertise on the integration of its software with other applications.



## L T U t e c h n o l o g i e s

Founded in 1999 by veteran scientists of MIT, Oxford and INRIA, LTU technologies is today established as the standard software for content-based search, retrieval and classification of images -- a technology referred to as "Image Mining". LTU's technology has found mission-critical applications within the Government sector, namely in child abuse and stolen art investigations, in computer forensics, in intelligence and in counter-terrorism. LTU also operates in various commercial markets such as brand & copyright protection, enterprise security, digital asset management, e-commerce, and mobile imaging. LTU is backed by a major Japanese company, Jastec [TSE:9717], and has offices in Paris and Washington D.C.

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