

Zooming in to catch the bad guys

June 30 2009

It's a frequent scene in television crime dramas: Clever police technicians zoom in on a security camera video to read a license plate or capture the face of a hold-up artist. But in real life, enhancing this low-quality video to focus in on important clues hasn't been an easy task. Until now.

Prof. Leonid Yaroslavsky of Tel Aviv University and his colleagues have developed a new video "perfection tool" to help investigators enhance raw video images and identify suspects. Commissioned by a defense-related company to improve what the naked eye cannot see, the tool can be used with live video or with recordings, in color or black-and-white.

"This enhancement of resolution can be a critical factor in locating terrorists or identifying criminal suspects," says Prof. Yaroslavsky. His team's findings were recently published in *Optical Letters* and the *Journal of Real Time Image Processing*.

Seeing using computational imaging

The new invention enhances the resolution of raw [video images](#) from security cameras, military binoculars, and standard personal-use video cameras, improving the quality at which the images were originally recorded or transmitted. This can mean the difference between "seeing" trees blowing in the wind and finding a terrorist hiding in those trees.

"Our video perfection tool works to improve visual quality and achieving a higher resolution of the video image," says Prof. Yaroslavsky. Once a

commercial partner is found, the device can be integrated into existing technology within a matter of months, he says.

Digitally calming the "turbulent atmosphere"

A major challenge in video analysis is that images of objects become distorted over long distances due to variations in the air that can affect our sight and the "sight" of a camera. In the language of optical science, this is known as a "turbulent atmosphere." A critical image of a person or object can become unstable and almost impossible to identify with any amount of accuracy.

The TAU team exploited the fact that most parts of a video scene remain still. While there are moving objects such as people, animals or vehicles, a major part of the video — the background -- does not move at all. Using specially designed algorithms, the team built a software application that lets cameras and video analysis equipment stabilize images, allowing objects that are really moving to be distinguished from chaotic atmospheric changes.

The technology will increase the odds of identifying suspects in court, says Prof. Yaroslavsky, but its civilian applications are equally significant. Instead of sending large video files over the Internet, smaller and lower-resolution files could be sent, to be enhanced at their destination points. This could save bandwidth and time.

"It's quite a new approach to [video](#) perfection," says Prof. Yaroslavsky. "A lot of work has been done in this field, so it's very gratifying to find a new and original application."

Source: Tel Aviv University ([news](#) : [web](#))

Citation: Zooming in to catch the bad guys (2009, June 30) retrieved 26 April 2024 from <https://phys.org/news/2009-06-bad-guys.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.