

# Identifying crooks – by their blood vessels

Program can process photos of criminals to make veins more visible

BY FENG ZENGKUN

JUST as fingerprints can help nail a culprit, veins on the body can point the finger at suspects too.

This is according to an assistant professor at Nanyang Technological University (NTU), who has developed a way to identify criminals based on the veins on their bodies.

The computer program takes digital

photographs of criminals and reverse-engineers them so the veins, or blood vessels, on the bodies are more visible.

These are then compared to photos of suspects that are also put through the same process.

Dr Adams Kong, 36, who has been given new funding to develop his system, said it could be especially useful in crimes such as child sexual abuse and child pornography.

In such situations, culprits usually post online photos of their misdeeds and with their faces blurred.

“Like fingerprints, they can be another source of evidence for the police,” he said of the focus on veins.

In a test of 150 sets of photos, five un-

trained volunteers were able to match at least 80 per cent of the photos.

A larger test involving 300 people is ongoing.

Dr Kong, who is from Hong Kong, said the project started in 2008 after he was asked to help build a case against a child rapist in the United States.

The rapist was eventually convicted based on photos in which he was identified by a prominent mole.

Dr Kong said: “But not everyone has moles and they can be easily removed so I wanted to focus on something else.”

He acknowledged that the method cannot be used in all cases. To be valid as evidence, the photos have to be of a high-enough resolution so the vein pat-

terns are clear.

Dr Kong said the research team at NTU is working with the Singapore Police Force to clarify the requirements of such evidence.

Other factors that may render the method useless are the body parts seen in the photos and the colour of the skin.

Dr Kong said: “Some body parts don’t have that many veins, for example, the shoulder. If only the shoulder is exposed in the photo, then it doesn’t work.”

He said the forearm and leg have the most veins.

He added that people with darker skin might fall through the net since their veins may not show up clearly enough in photos.

The next step in the research is to improve the technology so it can derive more data from the digital photos, he said.

“Digital cameras bounce light off the skin and into the lens. Some of the light penetrates the skin and reveals the body structure underneath, which the cameras also capture,” he noted.

“If we can improve the reverse-engineering process, we can provide more data such as the criminal’s tissue structure. This would make the identifica-

## PERMANENT RECORD

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NTU Assistant Professor Adams Kong

tion more accurate.”

The team is also working on a computer program that matches the photo sets.

If all goes well, Dr Kong expects the technology to be good enough for use in criminal cases within three years.

The project received \$250,000 in funding from the National Research Foundation in its latest round of grants.

Dr Kong said: “Vein patterns remain the same throughout a person’s life, just like fingerprints. So once a criminal gets into the computer system, there will always be a record.”

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