

[Home](#) | [Tech](#) | [Life](#) | [News](#) | [Back to article](#)

## Cameras know you by your walk

20 September 2012 by [Jim Giles](#)

Magazine issue [2883](#). [Subscribe and save](#)

For similar stories, visit the [Crime and Forensics](#) Topic Guide

*Improvements in gait analysis mean your characteristic way of walking could soon be used to identify you – wherever you are*

EVERYONE knows how easy it is to recognise a friend or family member from their walk - even from a distance.

But despite more than three decades of research, using gait analysis as a biometric has never taken off. Until now, perhaps. Recent advances in the accuracy of automated gait recognition suggest the technology could soon form the basis for a new generation of security systems.



We all walk in a different way (Image: [Godong/Robert Harding/Rex Features](#))

Gait analysis has attracted attention because of the shortcomings of other biometric security techniques. Iris scans and face recognition require reasonably high-quality images, for example. They also generally require a cooperative subject, as do fingerprints. By contrast, a person's gait can be recognised from low-quality CCTV footage.

In one leading technique, known as the gait energy image, computer vision techniques use video images of a person to create a blurred silhouette that is characteristic of their gait. A human operator links this gait "signature" to a person's identity, allowing the system to automatically spot that person when they are next caught on film.

This technique uses just a blank silhouette, but Martin Hofmann and colleagues at the Technical University of Munich in Germany have developed a version that also extracts information from the person's image, such as the shadows on their clothing, which leads to a more detailed signature. Hofmann also used Microsoft's gaming sensor Kinect to measure depth, allowing him to better separate the target from the background. The result is a system that is better at tackling tasks that cause problems for the standard version of the technique, such as recognising a person carrying a briefcase. In tests using videos of several hundred people the system achieved a recognition rate of almost 80 per cent, outperforming 13 other gait analysis methods, including the one using gait energy images.

Another problem that has troubled researchers is finding a way to identify a person captured at different camera angles, and Daigo Muramatsu and colleagues at Osaka University in Japan are now working on a solution. They filmed 20 people on a treadmill using 24 cameras ranged around them and used this data to write software that can model the appearance of a person's gait when viewed from different angles. In preliminary tests, the system led to lower identification error rates at almost all angles, results Muramatsu describes as "promising".

Muramatsu and Hofmann will present their work this week at the [BTAS biometrics conference in Washington DC](#).

These and other developments suggest that automated gait analysis might be ready for commercial use in the near future. Muramatsu says his group is already working with forensic scientists in Japan and has also developed gait analysis software that can be used by non-experts.

At the National Physical Laboratory in Teddington, UK, researchers have developed a demonstration system that can track people as they move through the laboratory building by their gait alone.

Hofmann cautions against thinking gait recognition will ever rival fingerprints for accuracy. Accuracy rates can plummet if a person walks more rapidly than normal, for example. But that does not mean it won't prove useful. "Gait has potential for commercial applications," he says. "Imagine a bank robber who has covered his fingers and face, but can be identified by the way he walks out of the bank."

### Ministry of suspicious walks

Could you tell if a phone has been stolen by a change in the walking pattern of the person carrying it? An Android app developed by Marios Savvides and colleagues at Carnegie Mellon University in Pittsburgh, Pennsylvania, uses data from the accelerometer and gyroscope that come as standard on modern smartphones to record the movements that a phone makes as its owner walks. In [a study](#) to be presented this week at the BTAS biometrics conference in Washington DC, Savvides shows the app can identify a particular gait with over 95 per cent accuracy. The technology could one day be used to shut a device down if it registers a gait that does not match that of its owner.

### New Scientist

#### Not just a website!

Subscribe to New Scientist and get:

New Scientist magazine delivered every week

Unlimited online access to articles from over 500 back issues

[Subscribe Now and Save](#)



Gefällt mir



If you would like **to reuse any content** from New Scientist, either in print or online, please [contact the syndication department](#) first for permission. New Scientist does not own rights to photos, but there are a [variety of licensing options](#) available for use of articles and graphics we own the copyright to.

[Back to article](#)

 PRINT  SEND  SHARE

ADVERTISEMENT

It *is* rocket science.

Subscribe &  
save up to 57%



**NewScientist**