Tracking people by their 'gait signature'

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The National Physical Laboratory (NPL) has developed a walking gait recognition system that, in combination with other tools, can help track an individual though a CCTV monitored area by analysing the way that they walk.

New technology developed by NPL, the Centre for Advanced Software Technology (CAST), the BBC and BAE Systems has improved spatial awareness for CCTV and security systems. The system combines a computer model of the NPL building with feeds from CCTV cameras placed around the site. It records a person's gait signature, or specific walk, checks to see where else that person has been in the building, and displays the results in the computer model.

Improving visualisation tools in filming equipment has a range of benefits - from identifying suspects based on the way they walk, to streamlining the broadcast of sporting footage. Providing controllers with advanced interface capability will streamline transmitted material and improve security. Such a system could help monitor high-security environments such as airports.

NPL is particularly focused on the standardisation of gait recognition measurement - distinguishing someone by their walk - which currently relies on a number of variables including technical equipment, timing and position. Developing standards of gait recognition is necessary to sustain and develop critical security infrastructure including coded access to buildings and monitoring security threats.

A video of the project can be viewed below:

NPL used Computer Aided Design (CAD) to create a virtual model of a monitored area, which included gait recognition points linked with live video feeds from cameras monitoring the physical space.

Each of these recognition points recorded a gait signature when an individual passed by them. The signature separates a fixed background and moving subject during the natural cycle of walking to form silhouettes. Measurements are taken of the rise and fall of head height between each silhouette - a pattern which can be represented by a set of numbers.

The work formed part of a larger project, called VSAR (Viewers Situational and Spatial Awareness for Applied Risk and Reasoning), which is supported by the Technology Strategy Board and involves NPL, BAE Systems, the BBC and CAST.

More information: Find out more about the VSAR project.

Find out more about [NPL's Biometric research](#).

Provided by National Physical Laboratory