

Tell me by the way I walk

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Biometrics is commonly associated retinal scans, iris recognition and DNA databases, but researchers in India are working on another form of biometrics that could allow law enforcement agencies and airport security to recognize suspects based on the way they were, their characteristic gait. The team reveals details of a comprehensive framework for gait recognition by computer in the inaugural issue of the Inderscience publication, the *International Journal of Biometrics*.

C. Nandini of the Vidya Vikas Institute of Engineering & Technology and C.N. Ravi Kumar of the S.J. College of Engineering in Mysore, India, explain that human gait typifies the motion characteristics of an individual. Viewed from the side, we each have a unique gait that makes us easily recognizable.

They point out that a camera with a side view can record a set of key frames, or stances, as a person heads for the security desk at an airport, military installation or bank, for instance. Key frames over the person's complete walk cycle, can then be converted into silhouette form and statistical analysis using so-called Shannon entropy, together with height measurements and the periodicity of the gait used to classify the person's gait.

The gait of individuals checking in at an airport could then be compared with the database, perhaps even before they enter the airport concourse. Such data compared with CCTV footage might also be used to track suspect terrorists or criminals who may otherwise be disguising their features or be carrying forged documents.

The researchers emphasize that gait recognition has a significant advantage over more well-known biometrics, such as fingerprinting and iris scanning in that it is entirely unobtrusive and can be used to identify an individual potentially from a considerable distance. "The ability to identify a possible threat from a distance gives personnel a longer time frame in which to react before a possible suspect becomes a real threat," the researchers say.

They carried out initial tests on 20 people recorded walk in a straight line at normal speed and stride, back and forth in front of a video camera placed perpendicular to their path. They obtained good recognition rates using the Shannon entropy equation and the individuals' height. Recognition performance of the system was sensitive to changes in big viewing angle above ten degrees but was reasonably robust even when the individuals changed walking speed.

Source: Inderscience Publishers

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