



TECHNOLOGY

Gait DNA and Its Applications in Pedestrian Surveillance

OVERVIEW

Researchers at the University of Maryland have come up with a new concept to uniquely characterize the articulating motion of human and integrate it into a complete activity monitoring system. This work has introduced a Double Helical Signature (Gait DNA) to characterize human gait topology in spatio-temporal domain and demonstrate its usefulness in a new surveillance system capable of segmentation and event recognition.

Several systems have been applied to address the problem of visual surveillance, the most prominent among which, is image based analysis. Applicability and commercial feasibility of this strategy is not possible due to the following physical constraints

- " The surveillance systems are extremely inefficient to integrate temporal information, making them inapplicable in many situations such as activity monitoring.
- " The surveillance demand expensive power and memory processing facilities which may be impractical for several applications.

The current invention addresses these concerns in the following fashion

- " It reveals a translational symmetry in spatio-temporal slices in human gait, which is used as Gait DNA to identify individuals and their activities;
- " It is compact for recovering the parameters such as cadence, step/stride length and articulation;

Novelty and Innovation

- " First theoretical analysis for gait subspace using geometry theory
- " First human activity monitoring system which naturally integrates temporal information for human body motion.

Future Plans

- " Enhancing the performance of the system by multiple view collaboration.
- " Increasing the robustness of the implemented algorithm for performing activity monitoring. Including view angle change and recognition of a wider variety of activities.
- " Validation of the ideas through hardware prototyping.

For further information, please contact the Office of Technology Commercialization, (301) 405-3947 E-mail: otc@umd.edu

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Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Patent(s) pending

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CATEGORIES

- Information Technology

EXTERNAL RESOURCES

- [US Patent 8,179,440](#)

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