TTC.PA.1581: ENRICHED AND DISCRIMINATIVE CONVOLUTIONAL NEURAL NETWORK FEATURES FOR PEDESTRIAN RE-IDENTIFICATION

PROBLEM ADDRESSED

Pedestrian re-identification and tracking across multiple cameras with a non-overlapped field of view for continuous retrieval of pedestrian walking trajectories in wide areas.

APPLICATION AREAS

Smart construction
workers' safety & site analysis

Smart mobility
walkability evaluation

Smart city
urban design & mobility

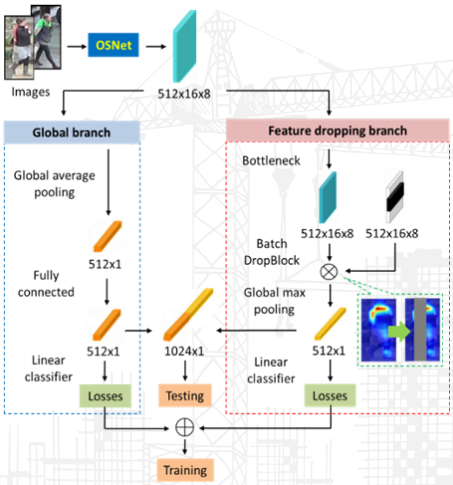
Smart transportation
traffic flow analysis

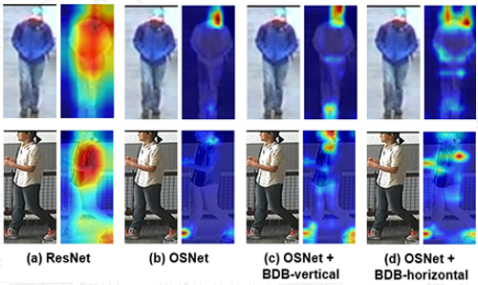
Smart retail
behavioural analysis

Smart warehouse
behavioural/ flow analysis

TECHNOLOGY INNOVATIONS

- An approach of explainable CNN design based on feature map visualization
- A new CNN to extract discriminative & distributed features for more robust pedestrian ReID
- An incremental multi-image feature aggregation mechanism for more robust pedestrian identity matching





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KEY IMPACTS & ADVANTAGES

Accurate pedestrian tracking

4-8%

improvement over baselines

Facilitate future research evaluating CNNs for image processing tasks based on an explainable approach

Enable real-world multi-camera processing to identify pedestrian walking trajectories

Support pedestrian walking behavioral analyses and what-if facility layout evaluation and design optimization

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