MULTI-TARGET MULTI-CAMERA TRACKING OPTIMIZATION USING PROBABILISTIC TARGET SEARCH

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Declaration

I declare that this dissertation does not incorporate, without acknowledgment, any material previously submitted for a Degree or a Diploma in any University and to the best of my knowledge and belief, it does not contain any material previously published or written by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organizations.

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Abstract

Smart surveillance in smart cities has become an important feature to be used in resource utilization and city-wide security areas. Multi-target multi-camera tracking has been one of the core areas in smart surveillance since the overlapped field of views within cameras cannot be expected in the real world scenarios. The inefficiency in MTMCT has caused this feature to not be used in real time applications. Hence how to make vehicle re-identification feature signature matching efficient in multi target multi camera tracking has become a research problem.

This research introduces a trajectory based probabilistic search algorithm to reduce target search space and increase the efficiency of the MTMCT. The solution consists of a YOLO v4 based object detection module, IOU based single camera tracking module, OSNet based feature extraction module and a cross camera identification module using probabilistic target search algorithm. The system takes video streams in and outputs the global trajectory of each target target. The evaluation is done using identification F1 score and the efficiency was measured using the number of frames processed in a second.

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Abbreviation	Description
MTMCT	Multi Target Multi Camera Tracking