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## MULTIPLE HUMAN TRACKING IN COMPLEX SITUATION BY DATA ASSIMILATION WITH PEDESTRIAN BEHAVIOR MODEL

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Abstract. A new method of multiple human tracking is proposed. The key concept is that to assume a tracking process as a data assimilation process. Despite the importance of understanding pedestrian behavior in public space with regard to achieving more sophisticated space design and flow control, automatic human tracking in complex situation is still challenging when people move close to each other or are occluded by others. For this difficulty, we stochastically combine existing tracking method by image processing with simulation models of walking behavior. We describe a system in a form of general state space model and define the components of the model according to the review on related works. Then we apply the proposed method to the data acquired at the ticket gate of the railway station. We show the high performance of the method, as well as compare the result with other model to present the advantage of integrating the behavior model to the tracking method. We also show the method's ability to acquire passenger flow information such as ticket gate choice and OD data automatically from the tracking result.

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