TRAJECTORY EXTRACTION AND DENSITY ANALYSIS OF INTERSECTING PEDESTRIAN FLOWS FROM VIDEO RECORDINGS

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ABSTRACT:

Empirical data of human crowd behaviors are indispensable for the further understanding of pedestrian dynamics. In this paper, we describe a technique for the semi-automatic extraction of pedestrian trajectories from video recordings of human crowds. This method works on data obtained from an arbitrary observation angle and does not require additional information like the heights of the pedestrians etc. It is thus suitable for the analysis of data that have not been specifically prepared for this purpose, such as surveillance videos. We employ this method to analyze video recordings from a series of experiments that we conducted last year to reproduce pedestrian flows under controlled conditions. From these data we also estimate the continuous density of these pedestrian flows via a nearest-neighbor kernel density method which we argue is particularly suited for particle densities in general and human crowds consisting of multiple populations in particular.

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