A Survey on Vision Trajectories

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ABSTRACT

Nowadays, the widely existence of vision trajectories like handwritting [3], sports player running[4] and pedestrain moving [1] requires an efficient trajectory management database. And in this paper, we'd introduce the application scenes of vision trajectory, and then discuss the difficulty like trajectory normalization and dynamic time warping (DTW) computation complexity [2] in the process of vision trajectory similarity searching.

CCS CONCEPTS

• **Information systems → Database design and models**.

KEYWORDS

database management, handwritting trajectories

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1 INTRODUCTION

Handwritten trajectories can also be applied to computer-human intereactions [3]. The paper proposes a novel way to control computers by moving fingers in the air. They demonstrate this human input approach through an example application of handwriting recognition. A 3D finger moving trajectory is captured by the sensor and then search for the most similar trajectory in the standard character trackings database. Because while capturing, there is no explicit gesture that indicates when a character starts or stops, so that each subtrajectory should be compared with all the standard trackings. While the dynamic time warping (DTW) based similarity search algorithm is so time-consuming that searching in a 160-trajectories dataset may take about 10 seconds. So a more efficient way to manage these trajectory data is in need, especially when we are dealing with database that contains several millions of handwritten trackings.

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2 NORMALIZATION

3 DYNAMIC TIME WARPING

In measuring trajectory similairty, dynamic time warping (DTW) is a well accepted method. But the expense of computating is very large, and several optimizations is proposed in this [2], which including early abandoning Z-Normalization, reordering early abandoning, revering the Query/Document role in LB_{keogh} and casacading lower bounds.

4 DATASETS

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