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Abstract

In this paper, we present a novel structured patch-based visual tracking method, which models the appearance of individual patches and their structural relationships within a unified framework. Specifically, this framework is defined as an optimal patch selection task, and can be further formulated as a linear programming problem, tractable and efficient in tracking scenario. To account for the changing appearance of the target object during tracking process, a pyramid local covariance descriptor is proposed to fuse multiple image characteristics. We compare the proposed method with other competing trackers by the recent large-scale benchmark. Extensive experimental results demonstrate that our tracker performs favorably against the state-of-the-art tracking algorithms.

Keywords: visual tracking, structural information, patch-based model, linear programming

1. Introduction

Visual tracking has been an active research topic for decades and is critical to many practical applications, *e.g.*, video surveillance, traffic navigation, human-computer interaction, to name a few. However, developing an efficient and robust tracker is still a challenging task, due to the difficulties such as partial occlusion, appearance change, illumination variation, background clutter, and so on.

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