

AUGMENTED REALITY APPLICATIONS USING VISUAL TRACKING

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ABSTRACT

In this 21st century, augmented reality has recently become a quickly developing field of computer science and engineering in which a virtual world is overlaid on top of the real world. This paper provides an up-to-date review of major visual tracking research. We surveyed recent augmented reality applications using visual tracking. A literature review of the most recent visual tracking techniques is presented. We divide methods of tracking into two main categories. The first group is color-based tracking. The second group is feature-based tracking. Description and limitations of each technique are given. Ultimately, we give a summary of the visual tracking.

Index Terms - Augmented Reality; Applications; ARTag; Image Processing; SLAM; Feature; Color

1. INTRODUCTION

In several past decades, virtual reality (VR) was a popular field of computer science and information technology. A conventional virtual reality system seeks to completely immerse the user in a computer generated environment. As the user is looking at a virtual world, sometimes it is not a natural connection. In recent years, augmented reality has rapidly become a very popular field of computer science and engineering in which a virtual world is overlaid on top of the physical world. Augmented reality can help this overlaying issue by generating imagery in live-video streams as a way to expand the physical world by applying image processing technology. In other words,

augmented reality (AR) is a growing area in virtual reality work.

Augmented reality applications have been recently presented through research laboratories in many prestigious universities around the world. The task of visual tracking in augmented reality has been actively researched in recent years. In this paper, we review visual tracking for augmented reality applications. These include SixthSense from Massachusetts Institute of Technology (MIT) and Parallel Tracking and Mapping (PTAM) from University of Oxford, MirageTable from Microsoft Research, Facial Feature Tracking from ETH Zurich, and some recent researches in this area.

Basically, we divide methods of visual tracking into two main categories. The first category is color-based tracking. The second category is