Detecting Photo Manipulation using Reflections on Curved Surfaces

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Abstract

Abstract goes here

Contents

1 Introduction

1.1 Image Forensics

importance

Emerging field because of advances in processing power, which benefits both image manipulation and its detection

examples of curved reflective surfaces in the real world

2 Prior Work

2.1 Reflections on Planar Surfaces

2.2 Other Related Work

Shadows

3 Mathematical Techniques

3.1 Assumptions

To simplify the geometry of this analysis, we will restrict the form of our non-planar mirrors to various types of quadric surfaces. This is likely to be good enough for typical use cases because most general curves encountered in the real world can be approximated as either a quadric surface or a set of quadric surfaces.
We also assume the camera used to take any of the images analyzed is a point camera, which is a reasonable assumption considering both the size of most digital camera sensors, and the fact that the camera would have to be far enough away from the subjects of the photograph to capture everything required to perform the analysis.

4 Implementation

In order to expedite the process of obtaining images that meet a variety of very specific conditions, all images used to test these algorithms were computer-generated using Blender 2.68a.

5 Conclusion

5.1 Results

5.2 Future Work