Using a Generic Camera as a Scanner

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Abstract

In this paper we describe a method to turn ordinary pictures of books and papers into scanner-like images. This transforms and aligns the image such that the page takes up the entire viewing area. This makes the image more readable and enables further processing such as character recognition. We present the results of running our algorithm on a hand-annotated set of 50 images. We discuss the successes failures and future work for our algorithm.

1. Introduction

Scanning documents has been a common practice for a long time. Even before the advent of digital scanners faxes were a popular of sending documents to others. But as smartphones have become more ubiquitous and fully featured they have begun to absorb many features of other electronics. XXXXX TODO:CITE TECHONOLGY STUDY XXXXX

In this paper we present an algorithm for turning a simple smartphone camera, or any other camera, into a scanner. The properties of a scanner we will replicate are: the page scanned fills the image, it is orientated with the top of the page at the top of the image, and that the ratio of the image is the same as that of the paper.

We first discuss previous work in this area in section 2. We then describe our motivation for developing this tool in section 3. Next, we introduce our multi-step algorithm with illustrations in section 4. Following this is a description of our experimental methodology and the results of applying the algorithm to a set of images in section 5. Then, we discuss which images are problematic for our algorithm and potential solutions in section 6. Finally, in section 7 we conclude with an exploration of future work and highlight out successes.

2. Related Work

This section describes other approaches and implementations. We should probably cite them like this [1].
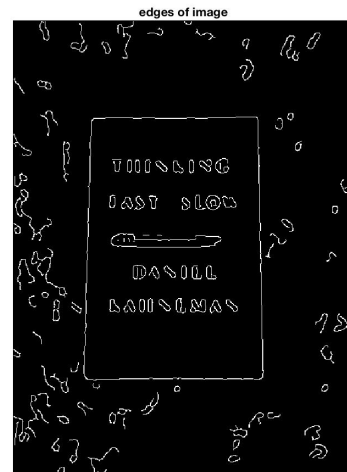

Figure 1. Example of caption. It is set in Roman so that mathematics (always set in Roman: $B \sin A = A \sin B$) may be included without an ugly clash.

3. Motivation

Here we will explain why people need our project.

4. Algorithm

Here we will describe our the steps of our algorithm. Maybe include some figures like 1 below.

5. Results

This section will summarize our results maybe in a table like 1. And maybe some largerer figures like 2.

6. Discussion

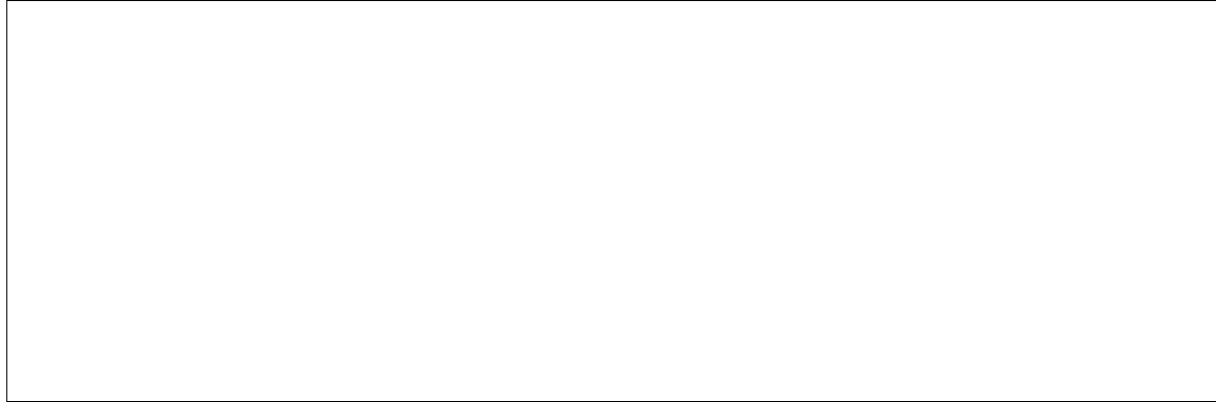We'll talk about some of the problems we had and potential future solutions.

Figure 2. Example of a short caption, which should be centered.

Method	Frobnability
Theirs	Frumpy
Yours	Frobbly
Ours	Makes one's heart Frob

Table 1. Results. Ours is better.

7. Conclusion

Our algorithm works ok. It could do with some improvement but we leave that as future work.

References

[1] Authors. The frobnicatable foo filter, 2014. Face and Gesture submission ID 324. Supplied as additional material `fg324.pdf`.