ROP Auto Detection with Deep Neural Network

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Abstract

ROP(Retinopathy of Prematurity) is a blinding disease, which primarily occurs on premature infants whose birth weights about 1250 grams or gestation less than 31 weeks. Premature infants in advance separate theirselves from the maternal environment to receive artificial oxygen, the development of the blood vessels are very sensitive to high concentrations of oxygen, resulting in retinal vascular hyperplasia, even resulting in ROP. Nowadays, in many developing countries, it would take much time and energy to train an ophthalmologist, which means making ROP diagnosis on each premature infant is not realistic. In order to overcome this dilemma, we have developed an automation system to analyse premature infant retinal photographs using deep nerual network, judging the existence and the severity of ROP.

1. Introduction

With the rapid progress of Internet technology, large-scale visual data can be found on the Internet, bringing significant opportunities for novel processing of visual information, as well as commercial applications. The Computational Visual Media Conference series, of which this is to be the first conference, is intended to provide a major new international forum for exchanging novel research ideas and significant practical results both underpinning and applying Visual Media. The primary rationale for this new conference series is to target cross disciplinary research which amalgamates aspects of computer graphics, computer vision, machine learning, image processing, video processing, visualization and geometric computing. Original research is sought in areas concerning the classification, composition, retrieval, synthesis, and understanding of visual media.

1.1. Date

Computational Visual Media Conference will be held on xxx to xxx.

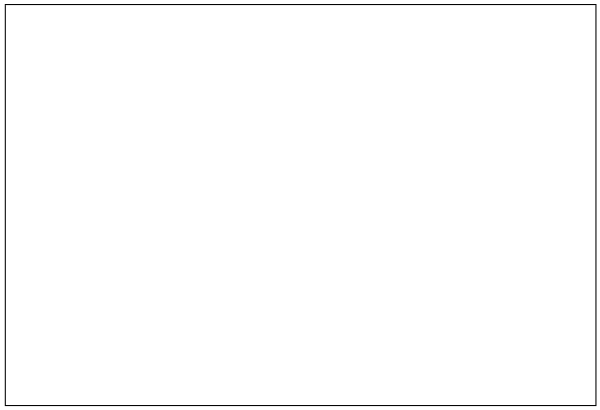

Figure 1. Example of caption.

1.2. Language

English is the official language of the conference.

2. About the paper submission

2.1. Paper length

cvm papers may be between 4 pages and 14 pages. Over length papers will simply not be reviewed.

2.2. Draft and final copy

The LaTeX style defines a printed ruler which should be present in the version submitted for review. The ruler is provided in order that reviewers may comment on particular lines in the paper without circumlocution. The camera ready copy should not contain a ruler. (LaTeX users may uncomment the `\cvmfinalcopy` command in the document preamble.)

2.3. Blind review

Many authors misunderstand the concept of anonymizing for blind review. Blind review does not mean that one must remove citations to one's own work—in fact it is often impossible to review a paper unless the previous citations are known and available. Blind review means that you do not use the words "my" or "our" when citing previous work.

Name	Performance
A	OK
B	Bad
Ours	Great

Table 1. An example for using tables.

2.4. Miscellaneous

Compare the following:
`$conf_a$` $conf_a$
`$\mathit{conf}_a$` conf_a
See The TEXbook, p165.

The space after *e.g.*, meaning "for example", should not be a sentence-ending space. So *e.g.* is correct, *e.g.* is not. The provided `\eg` macro takes care of this.

When citing a multi-author paper, you may save space by using "et alia", shortened to "*et al.*" (not "*et. al.*" as "*et*" is a complete word.) However, use it only when there are three or more authors. Thus, the following is correct: " Frobnication has been trendy lately. It was introduced by Alpher [1], and subsequently developed by Alpher and Fotheringham-Smythe [2], and Alpher *et al.* [3]."

This is incorrect: "... subsequently developed by Alpher *et al.* [2] ..." because reference [2] has just two authors. If you use the `\etal` macro provided, then you need not worry about double periods when used at the end of a sentence as in Alpher *et al.*

For this citation style, keep multiple citations in numerical (not chronological) order, so prefer [2, 1, 4] to [1, 2, 4].

2.5. References

List and number all bibliographical references in 9-point Times, single-spaced, at the end of your paper. When referenced in the text, enclose the citation number in square brackets, for example [4]. Where appropriate, include the name(s) of editors of referenced books.

2.6. Illustrations, graphs, and photographs

All graphics should be centered. Please ensure that any point you wish to make is resolvable in a printed copy of the paper. Resize fonts in figures to match the font in the body text, and choose line widths which render effectively in print. Many readers (and reviewers), even of an electronic copy, will choose to print your paper in order to read it. You cannot insist that they do otherwise, and therefore must not assume that they can zoom in to see tiny details on a graphic.

When placing figures in LATEX, it's almost always best to use `\includegraphics`, and to specify the figure width as a multiple of the line width as in the example below

```
\usepackage[dvips]{graphicx} ...
\includegraphics[width=0.8\linewidth]
{myfile.eps}
```

References

[1] A. Alpher. Frobnication. *Journal of Foo*, 12(1):234–778, 2002. 2

[2] A. Alpher and J. P. N. Fotheringham-Smythe. Frobnication revisited. *Journal of Foo*, 13(1):234–778, 2003. 2

[3] A. Alpher, J. P. N. Fotheringham-Smythe, and G. Gamow. Can a machine frobnicate? *Journal of Foo*, 14(1):234–778, 2004. 2

[4] Authors. The frobnicatable foo filter, 2012. Face and Gesture submission ID 324. Supplied as additional material `fg324.pdf`. 2