LaTeX Guidelines for Stony Brook Computer Vision Lab

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Abstract

This is the latex guide for members of Stony Brook's Computer Vision Lab. It help you to create accurate and consistent references, nicely looking tables and figures. This is not meant for latex beginner. This assumes you want to write a paper in CVPR and IEEE reference format.

1. References and Citation

1.1. Use Natbib

Use Natbib package exactly as follows:

```
\usepackage[numbers,sort,compress]{natbib}
```

The options are for:

- numbers: use numerical citations.

- sort: orders multiple citations into the sequence in which they appear in the list of references; e.g., [2, 3, 9, 42] instead of [42, 2, 9, 3].

- compress: multiple numerical citations are compressed if possible (as 3-6, 15);

1.2. Use abbrvnat instead of ieee

For bibliography style, the default of CVPR is to use 'ieee.bst'. However, ieee.bst does not work with natbib. Use 'abbrvnat.bst' instead.

```
\setlength{\bibsep}{0pt}
\bibliographystyle{abbrvnat}
%\bibliographystyle{ieee} % Do not use ieee.
```

When using *abbrvnat* with *bibsep = 0*, the reference section will look similar to reference section of *ieee*. The benefit of *abbrvnat* is that we can use the citation command *citet*.

1.3. Use citet

Sometimes we need to refer to the authors of a particular prior work in the text. Instead of manually typing the author names, use either *citet* for automatic propagation. E.g., the following

```
\citet{Wang-Hoai-CVPR16} show A.
\citet{Nguyen-etal-ICCV17} invent B.
```

will generate:

Wang and Hoai [3] show A.

Nguyen et al. [2] invent B.

1.4. Use proper format for the bibtex entries

Create an identification string for popular conferences and journals. In the bibtex entries, use the identification string in place of the full conference/journal name. For example, we will use cvpr or Computer Vision and Pattern Recognition. The bibtex entry would look like:

```
@inproceedings{Wang-Hoai-CVPR16,
Author = {Yang Wang and Minh Hoai},
Booktitle = cvpr,
Title = {Improving Human Action Recognition
        by Non-action Classification},
Year = {2016}}
```

Note that for the Booktile filed of the above, cvpr is not inside the curly brackets. It is just a placeholder that must be defined elsewhere. For example, use the following definitions for short and long formats respectively:

```
@string{cvpr = "Proc. CVPR"}

@string{cvpr = "Proceedings of the {IEEE}
        Conference on Computer Vision
        and Pattern Recognition"}
```

File *shortstrings.bib* and *longstrings.bib* already define identification strings for popular conferences and journals such as cvpr, iccv, ijcv. You can choose short or long format by telling bibtex what file to use. For example, for short format, use:

```
\bibliography{shortstrings,your_bib_file}
```

The reference section of this document is generated with shortstrings format.

1.5. Page numbers and other info

Be consistent with the bibtex entries. For journal papers, you should include information about volume, issue, and page numbers (e.g., see [1]). For conference papers, omit all page numbers (consistently).

2. Table

Use booktabs package:

```
\usepackage{booktabs}
```

Do not use vertical lines. Don't need horizontal lines to separate between different methods. Compare Table 1 and Table 2 below. Table 2 looks nicer. Do not use `\hline`. Use `\toprule`, `\midrule`, and `\bottomrule` to draw horizontal lines instead.

Method	Frobnability	Accuracy
Theirs	Frumpy	60%
Yours	Frobbly	70%
Ours	Makes one's heart Frob	98%

Table 1. Ugly table. No need for horizontal and vertical lines.

Method	Frobnability	Accuracy
Theirs	Frumpy	60%
Yours	Frobbly	70%
Ours	Makes one's heart Frob	98%

Table 2. Nicer looking. Easier to read.

3. Figures

Always use PDF figures. From Matlab, Powerpoint, Excel, or your favorite drawing program, directly export the figure/plot using PDF format. Do not use PNG or JPG figures. Using PNG and JPG at an intermediate step, e.g., `Matlab->PNG->PDF` is also not good. You can compare the quality of PNG and PDF figures in Figure 1. For PDF, text lines and curves are saved as vector graphics so the quality is preserved even when you magnified the figure. A good program to crop PDF figure for Mac user is Preview: 1) Open the figure with Preview; 2) Go to Tool/Rectangular selection to select the area for cropping; 3) Press Cmd+K to crop.
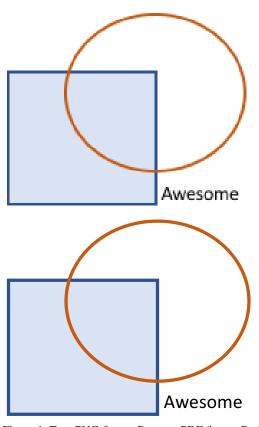

Figure 1. Top: PNG figure. Bottom: PDF figure. Both figures are exported from PowerPoint. Can you see the difference in quality of the two figures? Magnify the paper if you cannot.

References

[1] M. Hoai and F. De la Torre. Max-margin early event detectors. *IJCV*, 107(2):191–202, 2014.
[2] V. Nguyen, T. F. Y. Vicente, M. Zhao, M. Hoai, and D. Samaras. Shadow detection with conditional generative adversarial networks. In *Proc. ICCV*, 2017.
[3] Y. Wang and M. Hoai. Improving human action recognition by non-action classification. In *Proc. CVPR*, 2016.