Fig. 1: In the Clouds: Vancouver from Cypress Mountain. Note that the teaser may not be wider than the abstract block.


Index Terms—Radiosity, global illumination, constant time

1 INTRODUCTION
This template is for papers of VGTC-sponsored conferences such as IEEE VIS, IEEE VR, and ISMAR which are published as special issues of TVCG. The template does not contain the respective dates of the conference/journal issue, these will be entered by IEEE as part of the publication production process. Therefore, please leave the copyright statement at the bottom-left of this first page untouched.

2 AUTHOR DETAILS
You should specify ORCID IDs for each author (see https://orcid.org/ to register) for disambiguation and long-term contact preservation. Use \authororcid{Author Name}{0000-0000-0000-0000} for each author, replacing the “Author Name” and using the 16-digit (hyphenated) ORCID ID for the second parameter. The template shows an example without ORCID IDs for two of the authors. ORCID IDs should be provided in all cases.

Each author’s affiliations have to be provided in the author footer on the bottom-left corner of the first page. It is permitted to merge two or more people from the same institution as long as they are shown in the same order as in the overall author sequence on the top of the first page. For example, if authors A, B, C, and D are from institutions 1, 2, 1, and 2, respectively, then it is ok to use 2 bullets as follows:
- A and C are with Institution 1. E-mail: {a | c}@i1.com.
- B and D are with Institution 2. E-mail: {b | d}@i2.org.

Manuscript received xx xxx. 201x; accepted xx xxx. 201x. Date of Publication xx xxx. 201x; date of current version xx xxx. 201x. For information on obtaining reprints of this article, please send e-mail to: reprints@ieee.org. Digital Object Identifier: xx.xxx/TVCG.201x.xxxxxx

3 HYPERLINKS AND CROSS REFERENCES
The style uses the hyperref package which can typeset clickable hyperlinks using \href{...}{...}, hyperlinked URLs using \url{...}, and turns references into internal links. \Cref should be used when starting a sentence to spell out the reference (e.g. “Section”) while \cref should be used when referencing within a sentence to abbreviate (e.g. “Sec.”). Here are examples for use within a sentence: Fig. 3, Tab. 1, Secs. 6 and 7, Eq. (1). The following sentences all start with a reference, so use \Cref. Figure 3 is a figure environment. Table 1 is a table environment. Sections 6 and 7 are section environments. Equation (1) is an equation environment.

4 FIGURES
4.1 Loading figures
The style automatically looks for image files with the correct extension (eps for regular \LaTeX; pdf, png, and jpg for \LaTeX), in a set of given subfolders defined above.
using \graphicspath: {figures/, pictures/, images/}. It is thus sufficient to use \includegraphics{CypressView} (instead of \includegraphics{pictures/CypressView.jpg}). Figures should be in CMYK or Grey scale format, otherwise, colour shifting may occur during the printing process.

4.2 Vector figures

Vector graphics like svg, eps, pdf are best for charts and other figures with text or lines. They will look much nicer and crisper and any text in them will be more selectable, searchable, and accessible.

4.3 Raster figures

Of the raster graphics formats, screenshots of user interfaces and text, as well as line art, are better shown with png. jpg is better for photographs. Make sure all raster graphics are captured in high enough resolution so they look crisp and scale well.

4.4 Alt texts

Add alternative texts that describe the content of the image to all figures.

4.5 Figures on the first page

The teaser figure should only have the width of the abstract as the template enforces it. The use of figures other than the optional teaser is not permitted on the first page. Other figures should begin on the second page. Papers submitted with figures other than the optional teaser on the first page will be refused.

4.6 Subfigures

You can add subfigures using the subcaption package that is automatically loaded. Inside a figure environment, create a subfigure environment. See Fig. 2 for an example. You can reference individual figures, either fully using \cref (Figs. 2a and 2b) or by letter using \subref. E.g., (b), (c). Note that \subref only works for one label at a time.

4.7 Figure Credits

In the Figure Credits section at the end of the paper, you should credit the original sources of any figures that were reproduced or modified. Include any license details necessary, as well as links to the original materials whenever possible. For credits to figures from academic papers, include a citation that is listed in the References section. An example is provided below.

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**Table 1: VIS/VisWeek accepted/presented papers: 1990–2016.**

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**5 Equations and Tables**

Equations can be added like so:

$$
\sum_{j=1}^{n} j = \frac{n(n+1)}{2}
$$

(1)

Tables, such as Tab. 1 can also be included.

6 Supplemental Material Instructions

In support of transparent research practices and long-term open science goals, you are encouraged to make your supplemental materials available on a publicly-accessible repository. Please describe the available supplemental materials in the Supplemental Materials section. These details could include (1) what materials are available, (2) where they are hosted, and (3) any necessary omissions.

7 References

An example of the reference formatting is provided in the References section at the end.

7.1 Include DOIs

All references which have a DOI should have it included in the \bibTeX for the style to display. The DOI can be entered with or without the \url{https://doi.org/} prefix.

7.2 Narrow DOI option

The -narrow versions of the bibliography style use the font PTSansNarrow-TLF for typesetting the DOIs in a compact way. This font needs to be available on your \LaTeX{} system. It is part of the paratype package, and many distributions (such as MiKTeX) have

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Fig. 2: Example of adding subfigures with the subcaption package.
it automatically installed. If you do not have this package yet and want to use a -narrow bibliography style then use your \LaTeX{} system's package installer to add it. If this is not possible you can also revert to the respective bibliography styles without the -narrow in the file name. DVI-based processes to compile the template apparently cannot handle the different font so, by default, the template file uses the abbrv-doi bibliography style.

7.3 Disabling hyperlinks
To avoid adding hyperlinks to the references (the default) you can use \bibliographystyle{abbrv-doi} instead of \bibliographystyle{abbrv-doi-hyperref}. By default, the DOI field in a \bibitem{} entry is turned into a hyperlink.

See the examples in the \bibitem{} file and the bibliography at the end of this template.

7.4 Guidelines for bib\TeX{}
• All bibliographic entries should be sorted alphabetically by the last name of the first author. This \LaTeX/bib\LaTeX{} template takes care of this sorting automatically.
• Merge multiple references into one; e. g., use \cite{2,4} (not \cite{2} \cite{4}). Within each set of multiple references, the references should be sorted in ascending order. This \LaTeX/bib\LaTeX{} template takes care of both the merging and the sorting automatically.
• Verify all data obtained from digital libraries, even ACM's DL and IEEE Xplore etc. are sometimes wrong or incomplete.
• Do not trust bibliographic data from other services such as Mendeley.com, Google Scholar, or similar; these are even more likely to be incorrect or incomplete.
• Articles in journal—items to include:
  – author names
  – title
  – journal name
  – year
  – volume
  – number
  – month of publication as variable name (i.e., \{jan\} for January, etc.; month ranges using \{jan #1/#1\} \{feb\} or \{jan #1/#1\} \{feb\})
  – series. E.g., "TVCG", "TVCG/VIS" for special issue VIS papers, "EuroVis", "CGF/EuroVis".
• Papers in proceedings—items to include:
  – author names
  – title
  – abbreviated proceedings name: e.g., “Proc.\ CONF ACRONYM” without the year; example: “Proc.\ CHI”, “Proc.\ 3DUI”, “Proc.\ Eurographics”, “Proc.\ EuroVis”
  – year
  – series. E.g., “VIS” and “EuroVis” for short papers, “CHI”...

• Article/paper title convention: refrain from using curly brackets, except for acronyms/proper names/words following dashes/question marks etc.; example:

The paper “Marching Cubes: A High Resolution 3D Surface Construction Algorithm” should be entered as “[M]arching \{C\}ubes: A High Resolution [3D] Surface Construction Algorithm” or “[M]arching \{C\}ubes: A high resolution [3D] surface construction algorithm”. It will then be typeset as “Marching Cubes: A high resolution 3D surface construction algorithm”.

• For all entries:
  – DOI can be entered in the DOI field as plain DOI number or as DOI url.
  – “pages” or “articleno”: Provide full page ranges AA–BB, OR, if an article number is available like recent ACM conferences, use that instead. E.g., see the entry for Panavas et al. [5].
• When citing references, do not use the reference as a sentence object; e.g., wrong: “In [3] the authors describe …”, correct: “Lorensen and Cline [3] describe …”

8 APPENDICES
Appendices can be specified using \appendix. For example, our Troubleshooting instructions in Appendix B.

Note that the paper submission has to end after the References section and within the page limit of the conference you are submitting to. Any version of Appendices or the paper with Appendices included has to be submitted separately as supplementary material. You can use the hideappendix class option to remove everything after \appendix. We encourage you to submit a full version of your paper to a preprint server with any appendices included.

You can use the iflabelexists macro to cross reference an appendix from the main text, but only if that label (i.e. the appendix) actually exists. For example, above we use

\label{appendix:troubleshooting}
\cref{appendix:troubleshooting}
{the appendix of the full paper at \url{https://osf.io/XXXXX}}.

in order to cross-reference to the appendix with \cref if it exists, but if the appendix is commented out then we will simply create a hyperlinked URL to it.

9 FILLER TEXT TO FLUSH OUT THE PAPER

**Supplemental Materials**

Refer to the instructions for this section (Sec. 6). Below is an example you can follow that includes the actual supplemental material for this template:

All supplemental materials are available on OSF at https://doi.org/10.17605/OSF.IO/2NBSG, released under a CC BY 4.0 license. In particular, they include (1) Excel files containing the data for and analyses for creating Tab. 1 and Fig. 3, (2) figure images in multiple formats, and (3) a full version of this paper with all appendices. Our other code is intellectual property of a corporation—Starbucks Research—and there is no feasible way to share it publicly.

**Figure Credits**

Refer to the instructions for this section (Sec. 4.7). Here are the actual figure credits for this template:

Figure 1 image credit: Scott Miller / Special to the Vancouver Sun, January 22, 2009, page A6.

Figure 3 is a partial recreation of Fig. 1 from [1], which is in the public domain.

**Acknowledgments**

The authors wish to thank A, B, and C. This work was supported in part by a grant from XYZ (# 12345-67890).

**References**


**Appendices**

Refer to Sec. 8 for instructions regarding appendices.

**Troubleshooting**

B.1 **\ifpdf error**

If you receive compilation errors along the lines of Package \ifpdf Error: Name clash, \ifpdf is already defined then please add a new line \let\ifpdf\relax right after the \documentclass[journal]{vgtc} call. Note that your error is due to packages you use that define \ifpdf which is obsolete (the result is that \ifpdf is defined twice); these packages should be changed to use \ifpdf package instead.

B.2 **pdfendlink error**

Occasionally (for some L\TeX distributions) this hyper-linked \bibTeX style may lead to compilation errors (pdfendlink ended up in different nesting level ...) if a reference entry is broken across two pages (due to a bug in hyperref). In this case, make sure you have the latest version of the hyperref package (i.e. update your L\TeX installation/packages) or, alternatively, revert back to \bibliographystyle{abbrv-doi} (at the expense of removing hyperlinks from the bibliography) and try \bibliographystyle{abbrv-doi-hyperref} again after some more editing.