

# cs-techrep

## Technical Reports in Computer Science and Software Engineering

Christoph P. Neumann <cyberpetaneuron@gmail.com>

Version 0.9.1

### Abstract

The **cs-techrep** class provides a convenient environment for writing technical reports in computer science and software engineering. The style is adopted from IEEE. The **cs-techrep** class requires the **latex/pdflatex** in combination with **biblatex** using a **biber** backend.

## 1 Installation

The **zip** or **tar.gz** file comes with a **cs-techrep.ins** and a **cs-techrep.dtx** file included which contains the **L<sup>A</sup>T<sub>E</sub>X** stuff.

To extract the class files call:

```
$ latex cs-techrep.ins
```

This call will extract all **L<sup>A</sup>T<sub>E</sub>X** specific files to the current directory. You can either use the files for a single cv project or you can integrate the files into your **T<sub>E</sub>X** installation.

If you just want to use **cs-techrep** for a single curriculum vitae project, the simplest way is just to copy the generated files to the folder of the project.

If you want to integrate **cs-techrep** into your **T<sub>E</sub>X** installation, create a directory **tex/latex/cs-techrep** beneath your **T<sub>E</sub>X** installation (e.g. beneath **/usr/share/texmf**) and copy all files from the current directory there. Now call:

```
$ mktexlsr
```

to update the file-cache of **L<sup>A</sup>T<sub>E</sub>X**.

Hint: The **cs-techrep** distribution contains a sample **docstrip** configuration in **docstrip.cfg** via which files can be distributed automatically to their correct positions inside a **L<sup>A</sup>T<sub>E</sub>X** installation. Feel free to adapt this file to your environment and afterwards call **latex cs-techrep.ins** to install the package to its right place.

## 2 Templates

For a quick start the `iaria-lite` distribution contains document templates. The templates can be found in the `cs-techrep-example-ctan.zip` file.

## 3 Documentclass

`documentclass cs-techrep` This package provides the documentclass `cs-techrep`. The documentclass supports the following options:

- `conference` Passed to `IEEEtran`
- `a4paper` Passed to `IEEEtran`
- `subfig` Loads `subfig` package with custom style settings
- `subcaption` Loads `subcaption` package with custom style settings
- `flushend` Activate `flushend` package (compatible with arXiv build process)
- `pbalance` Activate `pbalance` package (incompatible with arXiv build process)

A Remark about two-column document balancing on the last page: The `flushend` package is recommended, because it works within the arXiv automated build process. However, `flushend` has a major incompatibility with package `lineno`, which is, e.g., transitively loaded by package `mindflow`. Thus, in case when `flushend` does not have any effect, check whether one of your packages loads `lineno`. Usually you are stuck with your packages and, thus, will instead be forced to switch from `flushend` to `pbalance`. Please be aware that `pbalance` works great and has high compatibility, but unfortunately it will not have any effect within the arXiv automated build process. In case of both, a somehow needed `lineno` package and an intended arXiv upload, I recommend to do without two-column balancing on the last page and just to stay away from both `flushend` and `pbalance`, in order to ensure that your paper is layouted identically in any initial publication and a later arXiv upload. I hope this remark proves helpful, it took me some nerve to find out.

There is also another important difference between `flushend` and `pbalance`: the handling of footnotes on the last page. `Flushend` provides a decent result, but the result of `pbalance` is incomprehensible. I strongly recommend avoiding footnotes on the last page. If you absolutely need footnotes on the last page, consider staying away from two-column balancing on the last page.

About subfigures: Both well-known packages `subfig` and `subcaption` can be used. However, they are not compatible with each other and we can either load one or the other. The document class provides options to load them for you with some customized style settings.

## 4 Requirements

We instrument several other L<sup>A</sup>T<sub>E</sub>X packages for different purposes, which must be available under your installation.

- IEEEtran
- acronym
- afterpage
- babel
- biblatex
- biblatex-ieee
- booktabs
- ccicons
- cleveref
- csquotes
- diagbox
- doclicense
- etoolbox
- extdash
- flushend
- fontenc
- graphicx
- hypcap
- hyperref
- hyperref
- inputenc
- lipsum
- listings
- lmodern
- lscape
- microtype
- newtxtt

- orcidlink
- paralist
- pbalance
- pdfscape
- siunitx
- stfloats
- subcaption
- subfig
- tcolorbox
- times
- todonotes
- upquote
- url
- xcolor
- xpatch
- xspace

## 5 The Code

```

1 @echo off
2
3 rem *****
4 rem * author: Christoph P. Neumann
5 rem *****
6 cd /d "%~dp0"
7
8 echo == ..\examples\* ==
9 for /D %%D in (..\examples\*) do (
10  echo == %%D ==
11  xcopy /Y ".\*.cls" "%%~D"
12 )
13
14 pause
15
16 %# Copyright (c) 2023-2026 Christoph P. Neumann,
17 %# Copyright (c) 2018-2021 Oliver Kopp
18 %# Reference: https://latextemplates.github.io/
19
20 % !TeX spellcheck = en-US
21 % LTeX: language=en-US
22 % !TeX encoding = utf8

```

```

22 % !TeX program = pdflatex
23 % !BIB program = biblatex / biber
24
25 \NeedsTeXFormat{LaTeX2e}
26
27 \ProvidesClass{cs-techrep}[2026/02/24 TechReps in CS and SWE v0.9.1]
28
29 % Define marker counter for options (counter are global in latex):
30
31 \newcounter{cstechrep@subfigtracker}
32 \newcounter{cstechrep@subcaptiontracker}
33 \newcounter{cstechrep@pbalancetracker}
34 \newcounter{cstechrep@flushendtracker}
35
36 % Declare options:
37
38 \DeclareOption{subfig}{
39   \setcounter{cstechrep@subfigtracker}{1}
40   \typeout{cs-techrep class: subfig option is set (use subfloat command).}
41 }
42 \DeclareOption{subcaption}{
43   \setcounter{cstechrep@subcaptiontracker}{1}
44   \typeout{cs-techrep class: subcaption option is set (use subfigure command).}
45 }
46
47 % IEEE option onecolumn will be ignored
48 \DeclareOption{onecolumn}{\OptionNotUsed}
49
50 \DeclareOption{pbalance}{
51   \setcounter{cstechrep@pbalancetracker}{1}
52   \typeout{cs-techrep class: pbalance option is set.}
53 }
54 \DeclareOption{flushend}{
55   \setcounter{cstechrep@flushendtracker}{1}
56   \typeout{cs-techrep class: flushend option is set.}
57 }
58
59 % We'll pass any document class options along to the underlying class
60 % (recommended IEEE options: conference,a4paper)
61 \DeclareOption*{%
62   \PassOptionsToClass{\CurrentOption}{IEEEtran}
63 }
64
65 % Now we'll execute any options passed in
66 \ProcessOptions\relax
67
68 % Instead of defining each and every little detail required to create a new
69 % document class, you can base your class on an existing document class.
70 \LoadClass{IEEEtran}
71
72 % This template has been tested with IEEEtran of 2015.
73
74 % =====
75 % USER PROVIDED VARIABLES

```

```

76
77 \RequirePackage{etoolbox}
78
79 \makeatletter
80 \newcommand*\DefcstechrepVar[1]{%
81   \@namedef{cstechrep#1}{}% initialize
82   \@namedef{cstechrepSet#1}##1{%
83     \expandafter\gdef\csname cstechrep#1\endcsname{##1}}%
84 }
85 \makeatother
86
87 \DefcstechrepVar{AuthorListTex} % Use a comma ',' as author separator!
88 \DefcstechrepVar{AuthorListBib} % Use the word "and" as author separator!
89 \DefcstechrepVar{TitleTex}
90 \DefcstechrepVar{TitleBib}
91 \DefcstechrepVar{Department} % e.g., Department of Computer Science
92 \DefcstechrepVar{Institution} % e.g., OTH Amberg-Weiden
93 \DefcstechrepVar{Address} % e.g., Amberg, Germany
94 \DefcstechrepVar{Type} % e.g., Technical Report
95 \DefcstechrepVar{Year} % e.g., 2025
96 \DefcstechrepVar{Month} % e.g., 10 (for October)
97 \DefcstechrepVar{Number} % e.g., CL-TR-2024-42
98 \DefcstechrepVar{Lang} % e.g., english = en-US (or: ngerman = DE)
99
100 %%% Default values (can be overridden):
101 \cstechrepSetAuthorListTex{Vorname1 Nachname1, Vorname2 Nachname2, Vorname3 Nachname3, Vorname4 Nachname4}
102 \cstechrepSetAuthorListBib{Vorname1 Nachname1 and Vorname2 Nachname2 and Vorname3 Nachname3 and Vorname4 Nachname4}
103 % Capitalization: https://capitalizemytitle.com/style/Chicago/
104 \cstechrepSetTitleTex{FancyName: The Cloud-Native Foo for Bar}
105 \cstechrepSetTitleBib{\cstechrepTitleTex}
106 \cstechrepSetDepartment{CyberLytics\-/Lab at the Department of Electrical Engineering, Media, and Information Technology}
107 \cstechrepSetInstitution{Ostbayerische Technische Hochschule Amberg\-/Weiden}
108 \cstechrepSetAddress{Amberg, Germany}
109 \cstechrepSetType{Technical Report}
110 \cstechrepSetNumber{TR-\cstechrepYear-99}
111 \cstechrepSetLang{english}
112
113 % =====
114
115 % backticks (‘) are rendered as such in verbatim environments.
116 % See following links for details:
117 % - https://tex.stackexchange.com/a/341057/9075
118 % - https://tex.stackexchange.com/a/47451/9075
119 % - https://tex.stackexchange.com/a/166791/9075
120 \RequirePackage{upquote}
121
122 % Set English as language and allow to write hyphenated=words
123 %
124 % Even though ‘american’, ‘english’ and ‘usenglish’ are synonyms
125 % for babel package (according to
126 % https://tex.stackexchange.com/questions/12775/babel-english-american-usenglish),
127 % the llncs document class is prepared to avoid the overriding of certain
128 % names (such as "Abstract." -> "Abstract" or "Fig." -> "Figure")
129 % when using ‘english’, but not when using the other 2.

```

```

130 % english has to go last to set it as default language
131 \RequirePackage[ngerman,main=english]{babel}
132 %
133 % Hint by http://tex.stackexchange.com/a/321066/9075 -> enable "=" as dashes
134 \addto\extrasenglish{\languageshorthands{ngerman}\usesshorthands{""}}
135
136 % CM variant with scalable font
137 % (to prevent "pdfTeX error (font expansion):
138 % auto expansion is only possible with scalable")
139 \RequirePackage{lmodern}
140 % Times New Roman, because IEEE is based on Times (and not CM/lmodern),
141 % however, package times is not a scalable font, thus, lmodern is required
142 % additionally and must be loaded before times.
143 \RequirePackage{times}
144
145 % Links behave as they should. Enables "\url{...}" for URL typesettings.
146 % Allow URL breaks also at a hyphen, even though it might be confusing:
147 % Is the "-" part of the address or just a hyphen?
148 % See https://tex.stackexchange.com/a/3034/9075.
149 \RequirePackage[hyphens]{url}
150
151 % When activated, use text font as url font, not the monospaced one.
152 % For all options see https://tex.stackexchange.com/a/261435/9075.
153 % \urlstyle{same}
154
155 % Improve wrapping of URLs - hint by http://tex.stackexchange.com/a/10419/9075
156 \makeatletter
157 \g@addto@macro{\UrlBreaks}{\UrlOrds}
158 \makeatother
159
160 % nicer // - solution by http://tex.stackexchange.com/a/98470/9075
161 % DO NOT ACTIVATE -> prevents line breaks
162 \makeatletter
163 %\def\Url@twoslashes{\mathchar'\@ifnextchar/{\kern-.2em}{}}
164 %\g@addto@macro\Url@twoslashes{\do/{\Url@twoslashes}}
165 \makeatother
166
167 % use nicer font for code
168 \RequirePackage[zerostyle=b,scaled=.75]{newtxtt}
169
170 % inputenc must be loaded before biblatex
171 \RequirePackage[utf8]{inputenc}
172
173 % Has to be loaded AFTER any font packages.
174 % See https://tex.stackexchange.com/a/2869/9075.
175 \RequirePackage[T1]{fontenc}
176
177
178 % Character protrusion and font expansion.
179 % See http://www.ctan.org/tex-archive/macros/latex/contrib/microtype/
180 \RequirePackage[
181   babel=true, % Enable language-specific kerning
182   expansion=alltext,
183   protrusion=alltext-nott, % Ensure no changes at the edge of the listing.

```

```

184 nopatch=eqnum, % fix unable to apply patch eqnum
185 final % Always enable microtype, even if in draft mode.
186     % This helps finding bad boxes quickly. In the standard
187     % configuration, this template is always in the final mode, so
188     % this option only makes a difference if "pros" use the draft mode.
189 ]{microtype}
190
191 % \texttt{test -- test} keeps the "--" as "--"
192 % (and does not convert it to an en dash)
193 \DisableLigatures{encoding = T1, family = tt* }
194
195 \RequirePackage{graphicx}
196
197 % Creative Commons
198 \RequirePackage{ccicons}
199
200 % Diagonal lines in a table
201 % http://tex.stackexchange.com/questions/17745/diagonal-lines-in-table-cell
202 % Slashbox is not available in texlive (due to licensing)
203 % and also gives bad results. Thus, we use diagbox
204 \RequirePackage{diagbox}
205
206 \RequirePackage[cmyk, table]{xcolor}
207
208 \RequirePackage{relsize} % allows for \textsmaller{..}
209
210 \RequirePackage[nolist,smaller]{acronym}
211
212 % Code Listings
213 \RequirePackage{listings}
214
215 \definecolor{eclipseStrings}{RGB}{42,0.0,255}
216 \definecolor{eclipseKeywords}{RGB}{127,0,85}
217 \colorlet{numb}{magenta!60!black}
218
219 % JSON definition
220 % Source: https://tex.stackexchange.com/a/433961/9075
221
222 \lstdefinlanguage{json}{
223     basicstyle=\normalfont\ttfamily,
224     commentstyle=\color{eclipseStrings}, % style of comment
225     stringstyle=\color{eclipseKeywords}, % style of strings
226     numbers=left,
227     numberstyle=\scriptsize,
228     stepnumber=1,
229     numbersep=8pt,
230     showstringspaces=false,
231     breaklines=true,
232     frame=lines,
233     % backgroundcolor=\color{gray}, %only if you like
234     string=[s]{"}{"},
235     comment=[l]{:\ "},
236     morecomment=[l]{:."},
237     literate=

```

```

238      *{0}{{{ \color{numb}0}}}{1}
239      {1}{{{ \color{numb}1}}}{1}
240      {2}{{{ \color{numb}2}}}{1}
241      {3}{{{ \color{numb}3}}}{1}
242      {4}{{{ \color{numb}4}}}{1}
243      {5}{{{ \color{numb}5}}}{1}
244      {6}{{{ \color{numb}6}}}{1}
245      {7}{{{ \color{numb}7}}}{1}
246      {8}{{{ \color{numb}8}}}{1}
247      {9}{{{ \color{numb}9}}}{1}
248 }
249
250 \lstset{
251   % everything between (* *) is a latex command
252   escapeinside={(*}{*)},
253   %
254   language=json,
255   %
256   showstringspaces=false,
257   %
258   extendedchars=true,
259   %
260   basicstyle=\footnotesize\ttfamily,
261   %
262   commentstyle=\slshape,
263   %
264   % default: \rmfamily
265   stringstyle=\ttfamily,
266   %
267   breaklines=true,
268   %
269   breakatwhitespace=true,
270   %
271   % alternative: fixed
272   columns=flexible,
273   %
274   numbers=left,
275   %
276   numberstyle=\tiny,
277   %
278   basewidth=.5em,
279   %
280   xleftmargin=.5cm,
281   %
282   % aboveskip=0mm,
283   %
284   % belowskip=0mm,
285   %
286   captionpos=b
287 }
288
289 % Enable Umlauts when using \lstinputputlisting.
290 % See https://stackoverflow.com/a/29260603/873282 für details.
291 % listingsutf8 did not work in June 2020.

```

```

292 \lstset{literat=
293   {\acute{\a}}1 {\e}{\e'}1 {\i}{\i'}1 {\o}{\o'}1 {\u}{\u'}1
294   {\AA}{\A}1 {\E}{\E'}1 {\I}{\I'}1 {\O}{\O'}1 {\U}{\U'}1
295   {\a}{\a'}1 {\e}{\e'}1 {\i}{\i'}1 {\o}{\o'}1 {\u}{\u'}1
296   {\AA}{\A}1 {\E}{\E'}1 {\I}{\I'}1 {\O}{\O'}1 {\U}{\U'}1
297   {\ae}{\ae}1 {\e}{\e}1 {\i}{\i}1 {\o}{\o}1 {\u}{\u}1
298   {\AA}{\AA}1 {\E}{\E}1 {\I}{\I}1 {\O}{\O}1 {\U}{\U}1
299   {\a}{\a}1 {\e}{\e}1 {\i}{\i}1 {\o}{\o}1 {\u}{\u}1
300   {\AA}{\AA}1 {\E}{\E}1 {\I}{\I}1 {\O}{\O}1 {\U}{\U}1
301   {\AA}{\AA}1 {\a}{\a}1 {\O}{\O}1 {\o}{\o}1
302   {\ae}{\ae}1 {\E}{\E}1 {\ae}{\ae}1 {\E}{\E}1 {\ss}{\ss}1
303   {\H}{\H}1 {\H}{\H}1 {\H}{\H}1 {\H}{\H}1
304   {\c}{\c}1 {\C}{\C}1 {\o}{\o}1 {\a}{\a}1 {\A}{\A}1
305 }
306
307 % Allows for column type X
308 % In tabularx environment, e.g., \begin{tabularx}{\textwidth}{lX}
309 \RequirePackage{tabularx}
310 % Definition of booktabs commands (\toprule, \midrule, \bottomrule)
311 % without booktabs package:
312 % (However, the smallskip still breaks vertical lines!)
313 \newcommand{\toprule}{\hline\noalign{\smallskip}}
314 \newcommand{\midrule}{\noalign{\smallskip}\hline\noalign{\smallskip}}
315 \newcommand{\bottomrule}{\noalign{\smallskip}\hline}
316
317 % Extended enumerate, such as \begin{compactenum}
318 \RequirePackage[alwaysadjust]{paralist}
319
320 % Read: Is there a disadvantage to using natbib=true with biblatex?
321 % https://tex.stackexchange.com/questions/149313
322 % /is-there-a-disadvantage-to-using-natbib-true-with-biblatex
323 % Substitutions:
324 % Natbib \textcite = biblatex \textcite
325 % Natbib \citep = biblatex \parencite
326
327 \RequirePackage[
328   defernumbers=true, % required due to self-cite
329   %style=ieee, % english only
330   sorting=none, % nty, nyt, nyvt, anyt, anyvt, ynt, ydnt, none, debug
331   sortcites=false,
332   citestyle=numeric-comp, % BEWARE: ieee-comp would improve IEEE-style-compatibility, but i
333   bibstyle=numeric,
334   backend=biber,
335   bibencoding=utf8, % = auto, utf8, ascii
336   hyperref=true, % activate hyperref support
337   backref=false, % activate backrefs
338   isbn=true,
339   url=true,
340   doi=true,
341   urldate=iso, % = iso, iso8601, year, short, long, terse (terse is like iso/iso8601
342   seconds=true, % iso requires also seconds=true
343   maxnames=5, % max number of names in text ??
344   minnames=1, % min number of names in text ??
345   maxbibnames=99, % max number of names in bibliography

```

```

346 minbibnames=1,      % number of names in bibliography (bevor et al)
347 maxcitenames=99,    % max number of names in text ??
348 mincitenames=1,     % max number of names in text ??
349 giveninits=false,   % abbreviate first names
350 uniquename=init,    % otherwise option conflict with firstinits=true
351 autolang=other
352 ]{biblatex}
353
354 % Due to applied option defernumbers=true:
355 % Prevent citations in the references are being numbered as '0' in ArXiv
356 % https://tex.stackexchange.com/questions/463556
357 % /all-the-citations-in-the-references-are-being-numbered-as-0-in-arxiv-while-upl
358 \makeatletter
359 \let\blx@rerun@biber\relax
360 \makeatother
361
362 % selfref.bib needs to be generated, containing a bibentry with key selfref
363 \addbibresource{selfref.bib}
364 \DeclareBibliographyCategory{selfref}
365 \addtocategory{selfref}{selfref}
366 % How to use: \printbibliography[notcategory=selfref]
367
368 % Same fontsize as without natbib
369 \renewcommand{\bibfont}{\normalfont\small}
370
371 % Zotero generates wrong language fields with wrong "en"
372 % instead of correct "english" option, thus, despite
373 % default biblatex clearlang, the "en" will incorrectly
374 % be printed out, even in english papers.
375 % Make "en" equivalent to "english" and/or its derivatives:
376 \DeclareRedundantLanguages{en}{english,american,british,
377   canadian,australian,newzealand,USenglish,UKenglish}
378
379 % Enable hyperlinked author names in the case of \textcite
380 % Source: https://tex.stackexchange.com/a/76075/9075
381 \RequirePackage{etoolbox}
382 \makeatletter
383 \patchcmd{\NAT@test}{\else \NAT@nm}{\else \NAT@hyper@{\NAT@nm}}{}{}
384 \makeatother
385
386 \makeatletter
387 \DeclareCiteCommand{\citemonth}
388   {\usebibmacro{prenote}}
389   {%
390     \let\oldabx@bibmonth\abx@bibmonth%
391     \setkeys{blx@opt@pre}{dateabbrev=false}% nowork
392     \mkbibmonth{\thefield{month}}%
393     \let\abx@bibmonth\oldabx@bibmonth% restore
394   }
395   {\multicitedelim}
396   {\usebibmacro{postnote}}
397 \makeatother
398
399 %% Enable nice TODO comments

```

```

400 \RequirePackage[colorinlistoftodos,prependcaption,textsize=tiny]{todonotes}
401 \newcommand{\TODO}[1]{\todo[%
402   linecolor=red,backgroundcolor=red!25,bordercolor=red]{#1}}
403
404 % bring the table caption in the same line as label "Table I" (with etoolbox)
405 \makeatletter
406 \patchcmd{\@makecaption}
407   {\}
408   {\.\ }
409   {}
410   {}
411 \makeatother
412
413 % For controlling the placement of the captions
414 % (table: top | figure: bottom), the package caption
415 % recommends to use package floatrow:
416 % (Without floatrow, the positioning is determined by
417 % the textual (!) position of command \label in relation to
418 % includegraphics/begin-tabular; a well-known latex aspect.)
419 \RequirePackage{floatrow}
420 \floatsetup[table]{capposition=top,captionskip=5pt}
421 \floatsetup[figure]{capposition=bottom,captionskip=8pt}
422
423 % Put footnotes below floats
424 % Source: https://tex.stackexchange.com/a/32993/9075
425 % and allow floats in a twocolumn document with [t] or [b]
426 \RequirePackage{stfloats}
427 \fnbelowfloat
428
429 \RequirePackage[group-minimum-digits=4,per-mode=fraction]{siunitx}
430 \addto\extrasgerman{\sisetup{locale = DE}}
431
432 % Enable that parameters of \cref{}, \ref{}, \cite{}, ...
433 % are linked so that a reader can click on the number
434 % and jump to the target in the document
435 \RequirePackage{hyperref}
436
437 % Enable hyperref without colors and without bookmarks
438 \hypersetup{
439   hidelinks,
440   colorlinks=true,
441   allcolors=black,
442   pdfstartview=Fit,
443   breaklinks=true
444 }
445
446 % Enable correct jumping to figures when referencing
447 \RequirePackage[all]{hypcap}
448
449 \RequirePackage{orcidlink}
450
451 % For easy quotations: \enquote{text}
452 % This package is very smart when nesting is applied,
453 % otherwise textcmds (see below) provides a shorter command

```

```

454 \RequirePackage[autostyle=true]{csquotes}
455
456 % Enable using "‘quote’"
457 % See: https://tex.stackexchange.com/a/150954/9075
458 \defineshorthand{"‘}{\openautoquote}
459 \defineshorthand{"’}{\closeautoquote}
460
461 % amsmath must be loaded before cleveref
462 \usepackage{amsmath,amssymb,amsfonts}
463
464 % Extensions for references inside the document (\cref{fig:sample}, ...)
465 % Enable usage \cref{...} and \Cref{...} instead of \ref:
466 % Type of reference included in the link.
467 % That means, "Figure 5" is a full link instead of just "5".
468 % !! Underlying rules for "capitalize" and "noabbrev": APA style
469 % http://www.sagepub.com/upm-data/27160\_APA\_Style.pdf
470 % Use a capital letter "S" when saying "In Section 2, we..."
471 % Don't use capital letters when saying "There are four sections, ..."
472 % Capitalize when figure is followed by a number, e.g., "In Figure 3, we..."
473 % Don't use when no number follows, e.g., "The two figures ..."
474 % (Please notice: CMOS would prefer lower letters, in contrast to APA.)
475 \RequirePackage[capitalise,nameinlink,noabbrev]{cleveref}
476
477 \crefname{listing}{Listing}{Listings}
478 \Crefname{listing}{Listing}{Listings}
479 \crefname{lstlisting}{Listing}{Listings}
480 \Crefname{lstlisting}{Listing}{Listings}
481
482 \RequirePackage{lipsum}
483
484 \RequirePackage{tcolorbox}
485 \tcboxlibrary{listings}
486
487 %introduce \powerset
488 % See: http://matheplanet.com/matheplanet/nuke/html/viewtopic.php?topic=136492&post\_id=997377
489 %
490 \DeclareFontFamily{U}{MnSymbolC}{}
491 \DeclareSymbolFont{MnSyC}{U}{MnSymbolC}{m}{n}
492 \DeclareFontShape{U}{MnSymbolC}{m}{n}{
493   <-6> MnSymbolC5
494   <6-7> MnSymbolC6
495   <7-8> MnSymbolC7
496   <8-9> MnSymbolC8
497   <9-10> MnSymbolC9
498   <10-12> MnSymbolC10
499   <12-> MnSymbolC12%
500 }{}
501 \DeclareMathSymbol{\powerset}{\mathord}{MnSyC}{180}
502
503 \RequirePackage{xspace}
504 %\newcommand{\eg}{e.\,g.\,xspace}
505 %\newcommand{\ie}{i.\,e.\,xspace}
506 \newcommand{\eg}{e.\,g.\,\ }
507 \newcommand{\ie}{i.\,e.\,\ }

```

```

508
509 % Enable hyphenation at other places as the dash.
510 % Example: application\hydash specific
511 \makeatletter
512 \newcommand{\hydash}{\penalty\@M-\hskip\z@skip}
513 % Definition of "="
514 % See: http://mirror.ctan.org/macros/latex
515 % /contrib/babel-contrib/german/ngermanb.dtx
516 \makeatother
517
518 % Enable copy and paste of text from the PDF
519 % Only required for pdflatex. It "just works" in the case of lualatex.
520 \input glyphtounicode
521 \pdfgentounicode=1
522
523 \RequirePackage{lscapex}
524 \RequirePackage{pdfscape}
525 \RequirePackage{afterpage}
526
527 % requires, e.g., \PassOptionsToPackage{
528 % type=CC,modifier=by,version=4.0}{doclicense} before \documentclass
529 \RequirePackage[hyperxmp=false,lang=English]{doclicense}
530
531 % Improve wrapping of URLs
532 % See: http://tex.stackexchange.com/a/10419/9075
533 \makeatletter
534 \def\ps@IEEEtitlepagestyle{
535   \def\@oddfoot{\mycopyrightnotice}
536   \def\@evenfoot{}
537 }
538 \def\mycopyrightnotice{
539   {\footnotesize
540     \begin{minipage}{0.8\textwidth}
541       \centering
542       % License based on doclicense package:
543       \href{\doclicenseURL}{\doclicenseIcon}
544       This work is licensed under a \doclicenseLongNameRef{}
545       (\doclicenseNameRef{}) license.}
546       % Citation advice:
547       \Please cite as: \fullcite{selfref}.
548     \end{minipage}
549   }
550 }
551 \makeatother
552
553 \makeatletter
554 % allows for forcing command expansion inside a filecontents* environment
555 % (cf. https://tex.stackexchange.com/questions/534035
556 % /macros-commands-inside-a-filecontents-environment-does-not-expand)
557 \def\filecontentsForceExpansion#1#2#3{
558   \global\let\ltxspecials\dospecials
559   \gdef\dospecials{\ltxspecials
560     \catcode'#1=0
561     \catcode'#2=1

```

```

562 \catcode'#3=2
563 \global\let\dospecials\ltxspecials
564 }
565 }
566 \makeatother
567
568 \title{\cstechrepTitleTex}
569
570 \author{
571 IEEEauthorblockN{\cstechrepAuthorListTex}
572 IEEEauthorblockA{%
573 \cstechrepDepartment\\
574 \cstechrepInstitution\\
575 \cstechrepAddress
576 }}
577
578 IEEEspecialpapernotice{\cstechrepType: \cstechrepNumber,
579 \citemonth{selfref} \cstechrepYear}
580
581 % subfigure captions with parentheses and footnotesize:
582 \ifnum\value{cstechrep@subfigtracker}=1
583 \typeout{cs-techrep class: load subfig package (use subfloat command).}
584 \RequirePackage[caption=false,font=footnotesize]{subfig}
585 \fi
586 \ifnum\value{cstechrep@subcaptiontracker}=1
587 \typeout{cs-techrep class: load subcaption package (use subfigure command).}
588 \RequirePackage{subcaption}
589 \captionsetup[subfigure]{labelformat=parens,font=footnotesize}
590 \fi
591
592 % Balance/level columns at the last page / in bibliography
593 % DISCLAIMER: No solution is a 100%/perfect one!
594 % Mainstream option: pbalance (see https://ctan.org/pkg/pbalance)
595 % BUT: incompatible with arxiv automated process (!)
596 \ifnum\value{cstechrep@pbalancectracker}=1
597 \typeout{cs-techrep class: load pbalance package.}
598 \RequirePackage{pbalance}
599 \fi
600 % Flushend => works with arxiv, but major incompatibility with lineno
601 % (and, thus, also with mindflow et al.)
602 \ifnum\value{cstechrep@flushendtracker}=1
603 \typeout{cs-techrep class: load flushend package.}
604 \RequirePackage{flushend}
605 \fi
606
607 % =====
608 % Packages that need to be loaded last:
609
610 % Allows to hyphenate a word that contains a dash:
611 % https://stackoverflow.com/questions/2193307
612 % /how-do-i-get-latex-to-hyphenate-a-word-that-contains-a-dash
613 % Use \-/ for a breakable dash that does not prevent the remainder
614 % of the word to be hyphenated.
615 \RequirePackage[shortcuts]{extdash}

```

```
616 % =====
617
618 % Finally, we'll use \endinput to indicate that LaTeX can stop reading
619 % this file. LaTeX will ignore anything after this line.
620 \endinput
```