Quick start for LaTeXing with IEEEtran.cls for IEEE Computer Society Conferences

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Abstract—Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

A. Introduction

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Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputa metus eu enim. Vestibulum pellentesque felis eu massa.

The remainder of the paper starts with a presentation of related work (Section -B). It is followed by a presentation of hints on LaTeX (**??**).Finally, a conclusion is drawn and outlook on future work is made (Section II).

B. Related Work

Winery [1] is a graphical modeling tool. The whole idea of TOSCA is explained by Binz et al. [2].

I. LaTeX Hints

This section contains hints on writing LaTeX. It focuses on minimal examples, which can be directly adapted to the content

A. Handling of paragraphs

One sentence per line. This rule is important for the usage of version control systems. A new line is generated with a blank line. As you would do in Word: New paragraphs are generated by pressing enter. In LaTeX, this does not lead to a new paragraph as LaTeX joins subsequent lines. In case you want a new paragraph, just press enter twice (!). This leads to an empty line. In word, there is the functionality to press shift and enter. This leads to a hard line break. The text starts at the beginning of a new line. In LaTeX, you can do that by using two backslashes (\\).
This is rarely used.

Please do *not* use two backslashes for new paragraphs. For instance, this sentence belongs to the same paragraph, whereas the last one started a new one. A long motivation for that is provided at http://loopspace.mathforge.org/HowDidIDoThat/TeX/VCS/#section.3.

```
439  One sentence per line.
440  This rule is important for the usage of version control systems.
441  A new line is generated with a blank line.
442  As you would do in Word:
443  New paragraphs are generated by pressing enter.
444  In LaTeX, this does not lead to a new paragraph as LaTeX joins
         subsequent lines.
445  In case you want a new paragraph, just press enter twice (!).
446  This leads to an empty line.
447  In word, there is the functionality to press shift and enter.
448  This leads to a hard line break.
449  The text starts at the beginning of a new line.
450  In LaTeX, you can do that by using two backslashes
         (\textbackslash\textbackslash).\\
451  This is rarely used.
452
453  Please do \textit{not} use two backslashes for new paragraphs.
454  For instance, this sentence belongs to the same paragraph,
         whereas the last one started a new one.
455  A long motivation for that is provided at
         \url{http://loopspace.mathforge.org/HowDidIDoThat/TeX/VCS/#section.3}.
```
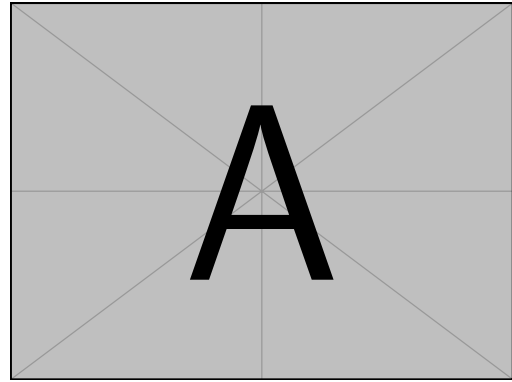

Figure 1. Example figure for cref demo

Heading1	Heading2
One	Two
Thee	Four

Figure 2. Example table for cref demo

B. Hyphenation

LaTeX automatically hyphenates words. When using microtype, there should be less hypnetations than in other settings. It might be necessary to tweak the hyphenations nevertheless. Here are some hints:

In case you write "application-specific", then the word will only be hyphenated at the dash. You can also write `applica\allowbreak{}tion-specific` (result: application-specific), but this is much more effort.

You can now write words containing hyphens which are hyphenated at other places in the word. For instance, `application"=specific` gets application"=specific. This is enabled by an additional configuration of the babel package.

```
466  In case you write \enquote{application-specific}, then the word
         will only be hyphenated at the dash.
467  You can also write \verb1applica\allowbreak{}tion-specific1
         (result: applica\allowbreak{}tion-specific), but this is
         much more effort.
468
469  You can now write words containing hyphens which are hyphenated
         at other places in the word.
470  For instance, \verb1application"=specific1 gets
         application"=specific.
471  This is enabled by an additional configuration of the babel
         package.
```

C. Typesetting Units

Numbers can written plain text (such as 100), by using the siunitx package like that: $100\,\frac{\text{km}}{\text{h}}$, or by using plain LaTeX (and math mode): $100\frac{km}{h}$.

```
477  Numbers can written plain text (such as 100), by using the
         siunitx package like that:
478  \SI{100}{\km\per\hour},
479  or by using plain \LaTeX{} (and math mode):
480  $100 \frac{\mathit{km}}{h}$.
```

$5\,\%$ of $10\,\text{kg}$

```
484  \SI{5}{\percent} of \SI{10}{kg}
```

Numbers are automatically grouped: $123\,456$.

```
488  Numbers are automatically grouped: \num{123456}.
```

D. Surrounding Text by Quotes

Please use the "enquote command" to quote something. Quoting with "quote" or "quote" also works.

```
494  Please use the \enquote{enquote command} to quote something.
495  Quoting with "`quote"' or ``quote'' also works.
```

E. Cleveref examples

Cleveref demonstration: Cref at beginning of sentence, cref in all other cases.

Figure 1 shows a simple fact, although Figure 1 could also show something else.

Figure 2 shows a simple fact, although Figure 2 could also show something else.
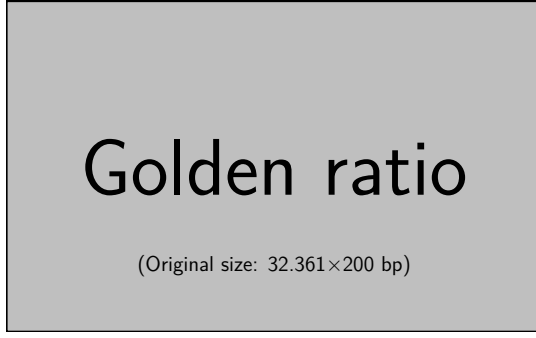
Figure 3. Simple Figure. Based on Scharrer [3].

Section I-E shows a simple fact, although Section I-E could also show something else.

Corresponding LaTeX code of `paper-conference.tex`

```
525  \Cref{fig:ex:cref} shows a simple fact, although
         \cref{fig:ex:cref} could also show something else.
526
527  \Cref{tab:ex:cref} shows a simple fact, although
         \cref{tab:ex:cref} could also show something else.
528
529  \Cref{sec:ex:cref} shows a simple fact, although
         \cref{sec:ex:cref} could also show something else.
```

F. Figures

Figure 3 shows something interesting.

Corresponding LaTeX code of `paper-conference.tex`

```
534  \Cref{fig:label} shows something interesting.
535
536  \begin{figure}
537    \centering
538    \includegraphics[width=.8\columnwidth]{example-image-golden}
539    \caption[Simple Figure]{Simple Figure. Based on \citet{mwe}.}
540    \label{fig:label}
541  \end{figure}
```

One can span a figure across mulitple columns by using `\begin{figure*}`. See Figure 4 as an example.

Corresponding LaTeX code of `paper-conference.tex`

```
549  \begin{figure*}
550    \centering
551    % note that \textwidth is used instead of \columnwidth
552    % This ensures that the graphics width is 60% of the "page",
             and not just 60% of the current text column
553    % See https://tex.stackexchange.com/a/16956/9075 for details
554    \includegraphics[width=.6\textwidth]{example-image-16x9}
555    \caption{16x9 Figure}
556    \label{fig:16x9}
557  \end{figure*}
```

G. Sub Figures

An example of two sub figures is shown in Figure 5.

Corresponding LaTeX code of `paper-conference.tex`

```
566  \begin{figure*}[!b]
567    \centering
568    \subfloat[Case
             I]{\includegraphics[width=.4\columnwidth]{example-image-a}%
569    \label{fig:first_case}}
570    \hfil
571    \subfloat[Case
             II]{\includegraphics[width=.4\columnwidth]{example-image-b}%
572    \label{fig:second_case}}
573    \caption{Example figure with two sub figures.}
574    \label{fig:two_sub_figures}
575  \end{figure*}
```

Note that often IEEE papers with subfigures do not employ subfigure captions (using the optional argument to `\subfloat[]`), but instead will reference/describe all of them (a), (b), etc., within the main caption. Be aware that for subfig.sty to generate the (a), (b), etc., subfigure labels, the optional argument to `\subfloat` must be present. If a subcaption is not desired, just leave its contents blank, e.g., `\subfloat[]`. An example is shown in Figure 6.

Corresponding LaTeX code of `paper-conference.tex`

```
588  \begin{figure*}[!b]
589    \centering
590    \subfloat[]{\includegraphics[width=.4\columnwidth]{example-image-a}%
591    \label{fig:first_case_ieee}}
592    \hfil
593    \subfloat[]{\includegraphics[width=.4\columnwidth]{example-image-b}%
594    \label{fig:second_case_ieee}}
595    \caption{Example figure with two sub figures. IEEE style. (a)
             The first case. (b) The second case.}
596    \label{fig:two_sub_figures_ieee}
597  \end{figure*}
```

H. Tables

Note that IEEE does not support `\begin{table}`, one has to use `\begin{figure}`.

Corresponding LaTeX code of `paper-conference.tex`

```
605  \begin{figure}
606    \caption{Simple Table}
607    \label{tab:simple}
608    \centering
609    \begin{tabular}{ll}
610      \toprule
611      Heading1 & Heading2 \\
612      \midrule
613      One      & Two       \\
614      Thee     & Four       \\
615      \bottomrule
616    \end{tabular}
617  \end{figure}
```
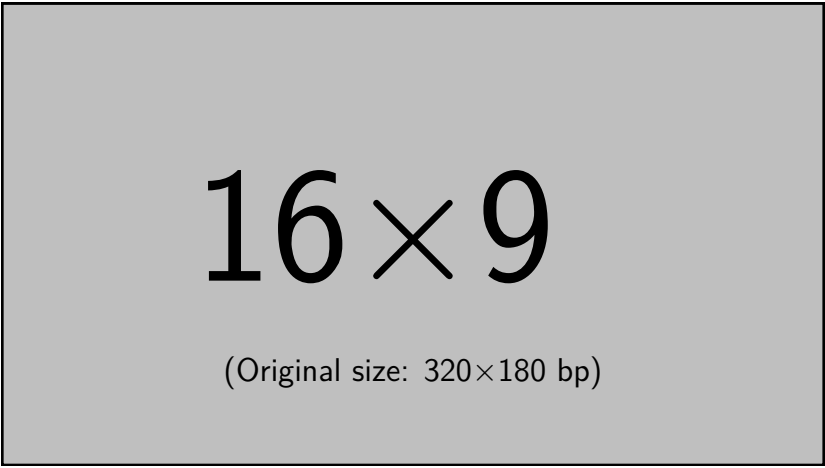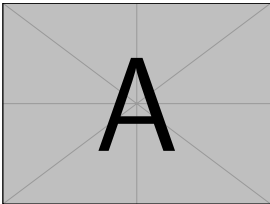
Figure 4. 16x9 Figure

Figure 7. Simple Table

Heading1	Heading2
One	Two
Thee	Four

Figure 8. Table with diagonal line
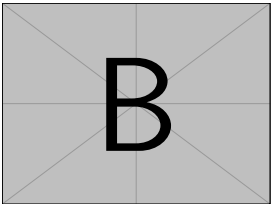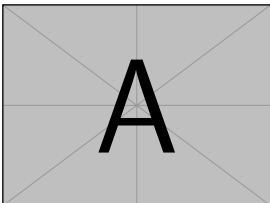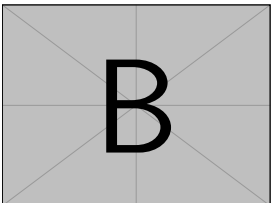
(a) Case I   (b) Case II

Figure 5. Example figure with two sub figures.

(a)   (b)

Figure 6. Example figure with two sub figures. IEEE style. (a) The first case. (b) The second case.

```
1  <listing name="example">
2    Floating
3  </listing>
```

Listing 2. Example XML listing – placed as floating figure

```
1  {
2    key: "value"
3  }
```

Listing 3. Example JSON listing – placed as floating figure

I. Source Code

Listing 1 shows source code written in XML. Line 2 contains a comment.

```
1  <listing name="example">
2    <!-- comment -->
3    <content>not interesting</content>
4  </listing>
```

Listing 1. Example XML Listing

Corresponding LATEX code of `paper-conference.tex`

```
641  \Cref{lst:XML} shows source code written in XML.
642  \Cref{line:comment} contains a comment.
643
644  \begin{lstlisting}[
645    language=XML,
646    caption={Example XML Listing},
647    label={lst:XML}]
648  <listing name="example">
649    <!-- comment --> (* \label{line:comment} *)
650    <content>not interesting</content>
651  </listing>
652  \end{lstlisting}
```

One can also add `float` as paramter to have the listing floating. Listing 2 shows the floating listing.

Corresponding LATEX code of `paper-conference.tex`

```
659  \begin{lstlisting}[
660    % one can adjust spacing here if required
661    % aboveskip=2.5\baselineskip,
662    % belowskip=-.8\baselineskip,
663    float,
664    language=XML,
665    caption={Example XML listing -- placed as floating figure},
666    label={lst:flXML}]
667  <listing name="example">
668    Floating
669  </listing>
670  \end{lstlisting}
```

One can also typeset JSON as shown in Listing 3.

```
1  public class Hello {
2      public static void main (String[] args) {
3          System.out.println("Hello World!");
4      }
5  }
```

Listing 4. Example Java listing

Corresponding LATEX code of `paper-conference.tex`

```
676  \begin{lstlisting}[
677    float,
678    language=json,
679    caption={Example JSON listing -- placed as floating figure},
680    label={lst:json}]
681  {
682    key: "value"
683  }
684  \end{lstlisting}
```

Java is also possible as shown in Listing 4.

Corresponding LATEX code of `paper-conference.tex`

```
690  \begin{lstlisting}[
691    caption={Example Java listing},
692    label=lst:java,
693    language=Java,
694    float]
695  public class Hello {
696      public static void main (String[] args) {
697          System.out.println("Hello World!");
698      }
699  }
700  \end{lstlisting}
```

J. Itemization

One can list items as follows:
- Item One
- Item Two

Corresponding LATEX code of `paper-conference.tex`

```
708  \begin{itemize}
709  \item Item One
710  \item Item Two
711  \end{itemize}
```

With the package paralist, one can create itemizations with lesser spacing:
- Item One
- Item Two

Corresponding LATEX code of `paper-conference.tex`

```
717  \begin{compactitem}
718  \item Item One
719  \item Item Two
720  \end{compactitem}
```

One can enumerate items as follows:
1) Item One

2) Item Two

```
726   \begin{enumerate}
727      \item Item One
728      \item Item Two
729   \end{enumerate}
```

With the package paralist, one can create enumerations with lesser spacing:
1) Item One
2) Item Two

```
735   \begin{compactenum}
736      \item Item One
737      \item Item Two
738   \end{compactenum}
```

With paralist, one can even have all items typset after each other and have them clean in the tex document:

1) All these items... 2) ...appear in one line 3) This is enabled by the paralist package.

```
744   \begin{inparaenum}
745      \item All these items...
746      \item ...appear in one line
747      \item This is enabled by the paralist package.
748   \end{inparaenum}
```

K. Other Features

The words "workflow" and "dwarflike" can be copied from the PDF and pasted to a text file.

```
754   The words \enquote{workflow} and \enquote{dwarflike} can be
         copied from the PDF and pasted to a text file.
```

The symbol for powerset is now correct: $\wp$ and not a Weierstrass p ($\wp$).

$\wp(1,2,3)$

```
758   The symbol for powerset is now correct: $\powerset$ and not a
         Weierstrass p ($\wp$).
759
760   $\powerset({1,2,3})$
```

Brackets work as designed: <test> One can also input backquotes in verbatim text: `` `test` ``.

```
764   Brackets work as designed:
765   <test>
766   One can also input backquotes in verbatim text: \verb|`test`|.
```

II. CONCLUSION AND OUTLOOK

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

REFERENCES

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