umoline
The Package for Under/Mid/Overline for Long Texts

Hiroshi Nakashima
(Toyohashi Univ. of Tech.)
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Abstract
This file provides macros to draw \underline, \midline and \overline with a long text allowing line breaking in the text.

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1 Introduction

Users of \TeX{} and \LaTeX{} often complain that a text with \texttt{\underline{}} and \texttt{\overline{}} cannot have line-break points in it. This makes it hard to draw lines under a sentence in order to, for example, show that the sentence is modified by a revision.

Although it is almost impossible to find the perfect solution for the problem, we could have an acceptable approximation by introducing certain reasonable restrictions. For example, macros provided by \texttt{umoline} only accept \textit{ordinary} texts as their objective texts to draw underline, etc. In fact, many \TeX{}ackers have written macros having this restriction, including author’s \texttt{julem} which copes with texts in both Japanese and English (and other European languages). The style, however, has a few drawbacks including that it consumes a huge amount of computational time and \texttt{dvi}-file space.

The style \texttt{umoline} is designed to solve the problem minimizing the time/space consumption to some acceptable level although still they are not very small. Note that \texttt{umoline} is only for English (and possibly some other European language) and another style \texttt{jumoline} by the author is available for Japanese users.

2 Usage

2.1 Basic Usage

The package is usable to both \LaTeX{} 2\varepsilon{} and \LaTeX{}-2.09 users with their standard package loading declaration. If you use \LaTeX{} 2\varepsilon{}, simply do the following.

\begin{verbatim}
\usepackage{umoline}
\end{verbatim}

If you still love \LaTeX{}-2.09, the following is what you have to do.

\begin{verbatim}
\documentstyle[\ldots,umoline,\ldots]{⟨style⟩}
\end{verbatim}

You have the following three basic commands to draw underlines and relatives.

\begin{itemize}
  \item \texttt{\underline{(text)}}
  \texttt{\underline{}} Draw lines under the \langle text \rangle. For example, this sentence is generated by \texttt{\underline{For Example, \ldots}}.
  \item \texttt{\midline{(text)}}
  \texttt{\midline{}} Draw lines as if hyphens are overlaid on the \langle text \rangle. For example, this sentence is generated by \texttt{\midline{For Example, \ldots}}.
  \item \texttt{\overline{(text)}}
  \texttt{\overline{}} Draw lines over the \langle text \rangle. For example, this sentence is generated by \texttt{\overline{For Example, \ldots}}.
\end{itemize}

For each command shown above, its argument \langle text \rangle is the sequence of one of the following elements.

\begin{itemize}
  \item Ordinary characters excluding those for command invocation and math staffs. For example;
\end{itemize}

\footnote{This style was named by someone who distributed author’s macro set posted to a news group, and thus the author himself does not know the reason why it is called so.}
Since this sentence does not have macro invocation nor math staffs, you may path it directly to the commands.}

will produce the following result.

Since this sentence does not have macro invocation nor math staffs, you may path it directly to the commands.

- Character string surrounded by ‘{’ and ‘}’. Any string that can be passed to \TeX’s \texttt{mbox} is also able to be passed to \texttt{\underline{\hspace{1cm}}} and its relatives. Since the string is processed as if it is packed into \texttt{mbox}, line break will never occur in the string. For example:

\[ \texttt{\underline{\hspace{1cm}}} \texttt{\{textbb{\textbf{boldface}}\} part and the math part \(y=x^2\) are surrounded by brace pairs because they have special characters.} \]

will produce the following result.

The \textbf{boldface} part and the math part \(y=x^2\) are surrounded by brace pairs because they have special characters.

- Commands \texttt{\UMOspace}, \texttt{\UMOnewline} and \texttt{\hspace{1cm}} for spacing and line breaking. The usage of them will be shown later.

### 2.2 Control Lines

The default distance of the lines drawn by \texttt{\underline{\hspace{1cm}}} and its relatives from baselines are defined as follows, where \(b\) is the value of \texttt{\baselineskip} and \(a\) is the height of ‘-’. Note that positive value means the lines are drawn above baselines, while below baselines if negative.

\[
\underline{\hspace{1cm}}: -0.3b \text{ (depth of \texttt{\strutbox})}
\]

\[
\texttt{\Overline{\hspace{1cm}}}: +0.7b \text{ (height of \texttt{\strutbox})}
\]

If you wish to draw lines at the position other than the defaults, you may set the following length commands (or \texttt{dimen register} in \TeX’s jargon) to some appropriate positive values representing the distance from baselines using \texttt{\setlength}.

- \texttt{\underline{\hspace{1cm}}Depth} . . . . . . . The depth of \texttt{\underline{\hspace{1cm}}}
- \texttt{\MidlineHeight} . . . . . . . The height of \texttt{\Midline}
- \texttt{\OverlineHeight} . . . . . . . The height of \texttt{\Overline}

Setting these commands to any negative values makes corresponding lines drawn at the defaults.

- \texttt{\MidlineChar} \text{\{c\}}. That is, \texttt{\Midline\ Char\{c\}}. That is, \texttt{\Midline} will be drawn \(0.5a\) above baselines where \(a\) is the height of \texttt{c}.

- \texttt{\UMOline}\{\texttt{\height}\}\{\texttt{\texttt{text}}\}

This command draw lines \(\texttt{\height}\) above (or below if negative) baselines for the \texttt{\texttt{text}}.

- \texttt{\UMOlineThickness} The thickness of lines is the value set to the length-command \texttt{\UMOlineThickness},

\[2\text{The height of ‘-’ is not the distance between a baseline and the visible short line of the image of ‘-’. Rather, its invisible part is approximately twice as tall as the distance.}\]
whose default value is 0.4 pt.

2.3 Explicit Spacing and Line Breaking

If the argument \textit{(text)} has a command invocation, it should be surrounded by \textendash{}‘\texttt{\textbackslash{ }}’ and \textendash{}‘\texttt{\textbackslash{ }}’ and its result will be packed in a \texttt{\textbackslash{mbox}}. Therefore a space inserted by \texttt{\textbackslash{hspace}(\langle\textit{len}\rangle)} will not disappear when a line is broken just before the space. Commands for line breaking, such as \texttt{\textbackslash{(no)linebreak}}, \texttt{\newline{}} and \texttt{\textbackslash{\ \textbackslash{}}} will not have any effect in \texttt{\textbackslash{mbox}} (or cause error).

To solve these problems, the following commands for spacing and line breaking are available.

\begin{itemize}
  \item \texttt{\textbackslash{UMOspace}(\langle\textit{len}\rangle)[\langle\textit{num}\rangle]}
  \texttt{\textbackslash{UMOspace}}
  A space of \textendash{}\langle\textit{len}\rangle\textendash{}wide is inserted and will disappear if a line is broken just before the space. The optional argument \textendash{}\langle\textit{num}\rangle\textendash{}discourage or encourage the line break at the space. If \textendash{}\langle\textit{num}\rangle\textendash{}is non-negative, it discourages line breaking in the same way as the argument of \texttt{\textbackslash{nolinebreak}}. If negative, it encourages breaking and its absolute value corresponds to the argument of \texttt{\textbackslash{linebreak}}.

  Note that if \textendash{}\langle\textit{num}\rangle\textendash{}follows \texttt{\textbackslash{\*}}, \textendash{}\langle\textit{num}\rangle\textendash{}is interpreted as the value to pass \texttt{\textbackslash{TeX}}’s \texttt{\penalty}.

  \item \texttt{\textbackslash{UMOspace}\*}(\langle\textit{len}\rangle)

  \texttt{\textbackslash{UMOspace}\*}
  A space of \textendash{}\langle\textit{len}\rangle\textendash{}wide is inserted and will not disappear even if a line is broken at the space.

  \item \texttt{\textbackslash{UMOnewline}}, \texttt{\textbackslash{\newline{}}} \texttt{\textbackslash{\newline{}}}

  \texttt{\textbackslash{\newline{}}}
  Terminate a line simply leaving space.

  \item \texttt{\textbackslash{UMOnewline}\*}, \texttt{\newline{}} \texttt{\newline{}} \texttt{\newline{}} \texttt{\newline{}} \texttt{\newline{}} \texttt{\newline{}}

  \texttt{\newline{}}
  Terminate a line leaving underlined (or mid/overlined) space.
\end{itemize}

2.4 Remarks

1. No hyphenation will be performed in \textit{(text)}.

2. As other \texttt{\textbackslash{TeX}}’s commands, \texttt{\textbackslash{verb}} in \textit{(text)} may cause an error even if it surrounded by \textendash{}‘\texttt{\textbackslash{ }}’ and \textendash{}‘\texttt{\textbackslash{ }}’.

3. Also as other \texttt{\textbackslash{TeX}}’s commands, paragraph separator cannot be included in \textit{(text)} or you will have an error message.

4. Processing time for underlined (or mid/overlined) text is approximately 10 times as long as that for ordinary text. The size of dvi file also enlarged by factor three or so.