The **myTCB-V1** Package

Figures

Written by:
Norbert EHART (norbert@ehart.net)

Contents

Latex is mainly used in scientific fields such as electrical engineering, mechanical engineering and computer science. Especially in these fields it is sometimes necessary that certain text sections are explained with a graphic.

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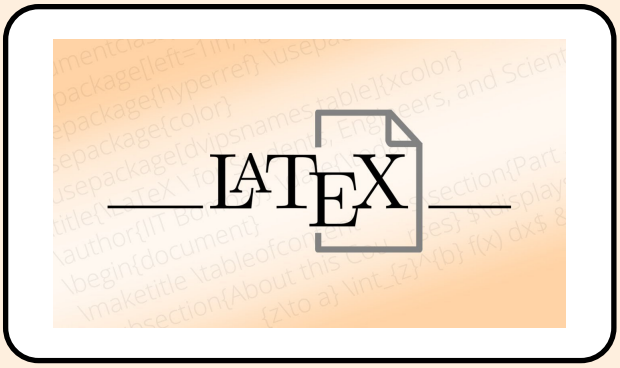

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The *myTCB-V1* package provides an environment for this.

The *myTCB-V1* package loads automatically the packages shown in LaTeX Definition 1.

LaTeX Definition 1

```
\RequirePackage{lipsum}

\RequirePackage{graphicx}
\RequirePackage{wrapfig}

\RequirePackage{xcolor}

\RequirePackage{verbatim}
\RequirePackage{fancyvrb}
\RequirePackage{listings}

\RequirePackage{float}

\RequirePackage{refstyle}

\RequirePackage{tcolorbox}
  \tcbuselibrary{skins,breakable,listings,xparse}
```

To load the package, write `\usepackage{myTCB-V1}` in the preamble of your document. To use this package, it is highly recommended to have the complete LaTeX distribution installed. This will avoid problems with dependencies.

LaTeX Example 1

```
\usepackage{myTCB-V1}
```

The Figure Environment without a List Index

The *myTCB-V1* package has a predefined environment, which is called `myFIG`. In this environment there is no list index available and no captions are created.

LaTeX Example 2

```
\setlength{\parskip}{3mm}

\lipsum[4]

\qquad
\begin{myFIG}{}
  \includegraphics[scale=0.15]{LaTeX.jpg}
\end{myFIG}

\lipsum[2]
```

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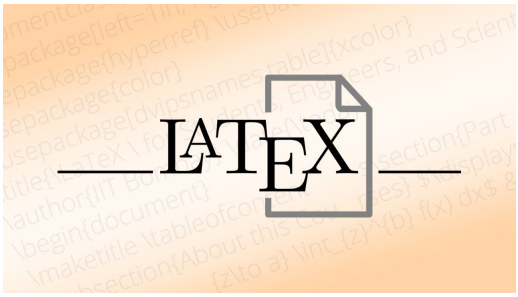

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A title can be submitted as an optional argument, which appears in the lower center part of the box.

LaTeX Example 3

```
\setlength{\parskip}{3mm}

\lipsum[4]

\qquad
\begin{myFIG}{title={This is a picture}}
  \includegraphics[scale=0.15]{LaTeX.jpg}
\end{myFIG}

\lipsum[2]
```

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This is a picture

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The Figure Environment with a List Index

The *myTCB-V1* package has a predefined environment, which is called `myFIGlst`. In this environment is a list index available. A title (`TITLE1`) must be passed as a mandatory argument. This title does not appear on the box, instead it is found in the list index. The box itself is titled with *Figure* and a sequential number.

LaTeX Example 4

```
\setlength{\parskip}{3mm}

\lipsum[4]

\qquad
\begin{myFIGlst}{TITLE1}{}
  \includegraphics[scale=0.15]{LaTeX.jpg}
\end{myFIGlst}

\lipsum[2]
```

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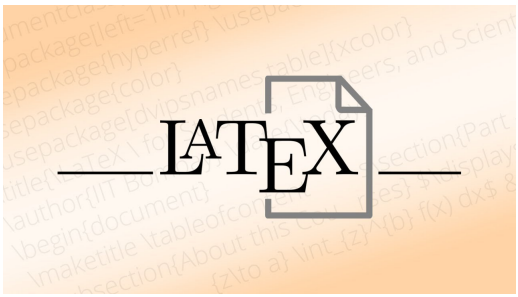

Figure 1

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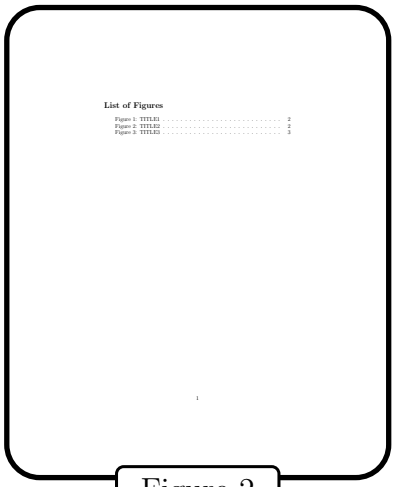

Figure 2

You can create the list index with the command `\listofmyFIG`.

LaTeX Example 5

```
\listofmyFIG
```

This will create a list index which looks like the picture in Figure 2.

If you want to change the horizontal spacing of the list entries, you can do this quite simple with the following code in the preamble, which is illustrated in LaTeX Example 6.

LaTeX Example 6

```
\makeatletter
  \renewcommand{\l@myFIG}{\@dottedtocline{1}{0mm}{0mm}}
\makeatother
```

If you want to change the vertical spacing of the list entries, you can do this quite simple with the following code in the preamble, which is illustrated in LaTeX Example 7.

LaTeX Example 7

```
\makeatletter
  \addtocontents{myFIG}{\protect\vspace{12mm}}
\makeatother
```

If you want to get rid of the page numbers in the list index, you can do this quite simple with the following code in the preamble, which is illustrated in LaTeX Example 8.

LaTeX Example 8

```
% copy cmd \listofmyFIG into cmd \oldlistofmyFIG
\let\oldlistofmyFIG\listofmyFIG

% renew cmd \listofmyFIG
\renewcommand\listofmyFIG
{
  \pagestyle{empty} % .... % disable headers/footers
  \oldlistofmyFIG % ..... % call \oldlistofmyFIG
  \clearpage % ........... % create a new page
  \pagestyle{plain} % .... % enable headers/footers; use fancy if you use fancyhdr
}
```

A label can be specified as an optional argument. The box can then be referenced in the text with `\figref{}`.

LaTeX Example 9

```
\centering
\begin{myFIGlst}{TITLE2}{label={fig:FIG001}}
  \includegraphics[scale=0.15]{LaTeX.jpg}
\end{myFIGlst}
```

Figure 3

LaTeX Example 10

```
This example is shown in \figref{FIG001}
```

This example is shown in Figure 3

It is notable that the label has to contain the `fig:` prefix in order to reference the label appropriately.

Images

Images are essential elements in most of the scientific documents. LaTeX provides several options to handle images and make them look exactly what you need. [Ove23]

LaTeX can not manage images by itself, so we need to use the *graphicx* package. [Ove23]

To use it, we include the following line in the preamble.

LaTeX Example 11

```
\usepackage{graphicx}
```

The `\includegraphics{file}` command is the one that actually included the image in the document. Here *file* is the name of the file containing the image without the extension, then file.PNG becomes universe. The file name of the image should not contain white spaces nor multiple dots. The file extension is allowed to be included, but it's a good idea to omit it. If the file extension is omitted it will prompt LaTeX to search for all the supported formats. [Ove23]

The path inside the command `\includegraphics{file}` has to be relative to the current working directory or absolute.

The command `\includegraphics[scale=0.07]{LaTeX}` will include the image `LaTeX` in the document, the extra parameter `scale=0.07` will do exactly that, scale the image 7% of its real size.

LaTeX Example 12

```
\setlength{\parskip}{3mm}

This is an example.

\centering
\begin{myFIGlst}{TITLE2}{}
  \includegraphics[scale=0.07]{LaTeX.jpg}
\end{myFIGlst}

\justifying
We see here how it actually works.
```

This is an example.

Figure 4

We see here how it actually works.

With `\centering` we center everything after the command. With `\justifying` we switch back to the default alignment. Instead of `\centering`, you can use other methods for horizontal text alignment. There are several methods in LaTeX to do this.

- create a small space (`\,`)
- create a medium space (`\:`)
- create a large space (`\;`)
- create a really large space (`\quad`)
- create a huge space (`\qquad`)
- create a negative space (`\!`)
- create a space that have a specific length (`\hspace{3mm}`)
- create as much horizontal space as possible (`\hfill`)

It is notable that after a whitespace creation, we do not need to switch back to the default with `\justifying`.

You can also scale the image to a some specific `width` and `height`. [Ove23]

LaTeX Example 13

```
\centering
\begin{myFIGlst}{TITLE2}{}
  \includegraphics[width=80mm]{LaTeX.jpg}
\end{myFIGlst}
```

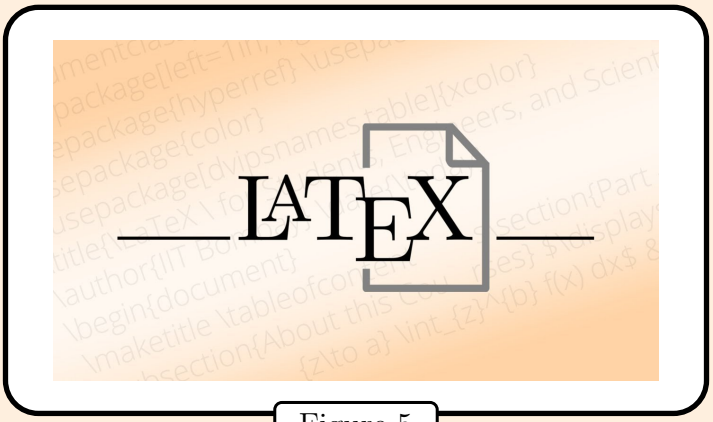

Figure 5

If only the `width` parameter is passed, the `height` will be scaled to keep the aspect ratio. [Ove23]

The same rule applies if only the `height` parameter is passed.

LaTeX Example 14

```
\centering
\begin{myFIGlst}{TITLE2}{}
  \includegraphics[height=40mm]{LaTeX.jpg}
\end{myFIGlst}
```

Figure 6

The length units can also be relative to some elements in document. If you want, for instance, make a picture the same width as the text. [Ove23]

LaTeX Example 15

```
\centering
\begin{myFIGlst}{TITLE2}{}
  \includegraphics[width=0.9\textwidth]{LaTeX.jpg}
\end{myFIGlst}
```

Figure 7

Another common option is the angle option to rotate the image.

LaTeX Example 16

```
\centering
\begin{myFIGlst}{TITLE2}{}
  \includegraphics[width=80mm, angle=20]{LaTeX.jpg}
\end{myFIGlst}
```

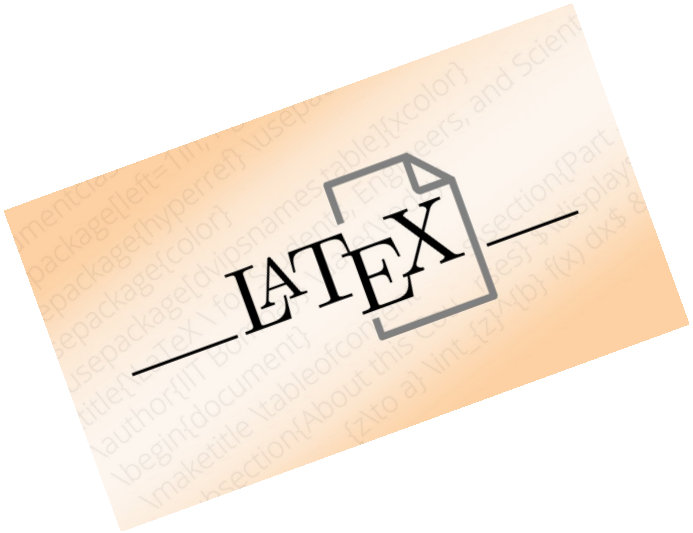

Figure 8

It's also possible to wrap the text around a figure. When the document contains small pictures this makes it look better. [Ove23]

LaTeX Example 17

```
\vspace{5mm}
\section*{Test Page}
\begin{wrapfigure}{l}{0.45\textwidth}
  \centering
  \begin{myFIGlst}{TITLE3}{}
    \includegraphics[scale=0.1]{LaTeX.jpg}
  \end{myFIGlst}
\end{wrapfigure}
\lipsum[4] \lipsum[4]
```

Test Page

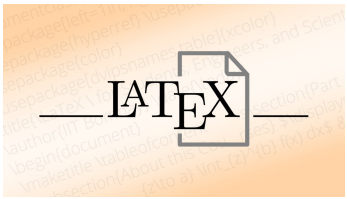

Figure 9

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To use wrapfig, include the following line in the document preamble.

LaTeX Example 18

```
\usepackage{wrapfig}
```

To crop images, you can use the *trim* option of the *graphicx* package. The option *trim* expects 4 values, which are the lengths that should be trimmed from the left, bottom, right and top side. After setting these values you must activate the cropping with *clip*. If you combine trim with height or something similar the image will be cropped and then resized.

LaTeX Example 19

```
\centering
\begin{myFIGlst}{TITLE2}{}
  \includegraphics[scale=0.15,trim=80mm 80mm 80mm 60mm,clip]{LaTeX.jpg}
\end{myFIGlst}
```

Figure 10

You can even insert a PDF file (on a specific page) with the *graphicx* package.

LaTeX Example 20

```
\centering
\begin{myFIGlst}{TITLE2}{}
  \includegraphics[page=2, scale=0.22, trim=20mm 20mm 20mm 20mm, clip]{myFIGV000.pdf}
\end{myFIGlst}
```

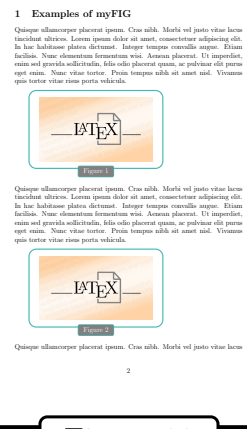

Figure 11

You can also put 2 pictures side by side.

LaTeX Example 21

```
\centering
\begin{myFIGlst}{TITLE2}{}
  \includegraphics[scale=0.15,trim=80mm 80mm 80mm 60mm,clip]{LaTeX.jpg}
  \includegraphics[scale=0.15,trim=80mm 80mm 80mm 60mm,clip]{LaTeX.jpg}
\end{myFIGlst}
```

Figure 12

References

[Car03] http://users.ece.utexas.edu/~garg/dist/listings.pdf.

[D P21] https://mirror.easyname.at/ctan/macros/latex/required/graphics/grfguide.pdf.

[Dan22] https://ctan.math.illinois.edu/macros/latex/contrib/refstyle/refstyle.pdf.

[Den23] https://texdoc.org/serve/fancyvrb/0.

[Don03] https://mirror.easyname.at/ctan/macros/latex/contrib/wrapfig/wrapfig-doc.pdf.

[Ove23] https://www.overleaf.com/learn.

[Rai22] https://mirror.kumi.systems/ctan/macros/latex/required/tools/verbatim.pdf.

[She95] http://webhome.phy.duke.edu/~rgb/General/latex/ltx-79.html.

[Tho23] https://texdoc.org/serve/tcolorbox.pdf/0.

[Uwe22] https://mirror.kumi.systems/ctan/macros/latex/contrib/xcolor/xcolor.pdf.