

The `gnuplottex` package*

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July 23, 2013

1 Introduction

This package allows you to include gnuplot graphs in your \LaTeX documents.

The gnuplot code is extracted from the document and written to `.gnuplot` files. Then, if shell escape is used, the graph files are automatically processed to graphics or \LaTeX code files which will then be included in the document. If shell escape isn't used, the user will have to manually convert the files by running gnuplot on the extracted `.gnuplot` files.

Shell escape is available in the web2c \TeX compiler, it allows the execution of shell code during the compilation of a \TeX document. It's disabled by default, you'll have to edit your configuration files or give the `-shell-escape` option to `latex`.

The package also allows you to include gnuplot code in a file verbatim, generating and including the plot automatically.

2 Requirements

To use `gnuplottex`, you'll need the `graphicx`, `latexsym`, `keyval`, `ifthen`, and `moreverb` packages and, of course, gnuplot.

3 Usage

To load the package, simply `\usepackage{gnuplottex}` in your document preamble. Options that can be passed to the package are

[*`<shell>`*] Use shell escape to automatically generate the graphs from the gnuplot source files. This is the default. Normally, you don't need to specify this option.

[*`<noshell>`*] Don't use shell escape, graphs must be generated manually.

*This document corresponds to `gnuplottex` v0.7, dated 2013/07/23.

[*/miktex*] We're using mikt \TeX .

[*/siunitx*] Use `siunitx` to typeset numbers in the graphs. You need to load the `siunitx` package before `gnuplottex` for this to work. If the `gnuplot` terminal does not support \TeX , a warning will be given and the functionality not used.

[*/subfolder*] Put the generated graphs in a "gnuplottex" subfolder, which will be created automatically.

[*/cleanup*] Delete the `.gnuplot` files after conversion.

The following environment can be used to include graphs:

`gnuplot` Within this environment, you can specify arbitrary `gnuplot` code, for example `plot sin(x)`.

The code necessary to write the plot to a file will be inserted by this package. It adds 'set terminal *terminal*' and the name of the output file. The terminal can be specified by the user and defaults to `latex`. It may be set to anything supported by `gnuplot`. If set to a terminal which produces \TeX output, such as `latex`, `tex`, `epslatex`, or `pstricks`, the file processed by `gnuplot` will be included with the `\include` command, else the `\includegraphics` command is used. The file extension of the intermediate file is in some cases different from the terminal name, this is taken care of for most common terminals in the package code. If graphics inclusion fails for a specific terminal, the intermediate file extension may be the cause.

The terminal name can be specified as a value to the key `terminal` as an argument to the environment,

```
\begin{gnuplot}[terminal=terminal]
```

```
...
```

```
\end{gnuplot}
```

The graph can be scaled by providing an argument to the `scale` key, similar to the specification of the terminal name. It defaults to 1, i.e. no scaling will be done. Additional options to the terminal can be given as argument to the `terminaloptions` key, e.g.

```
\begin{gnuplot}[terminal=pdf,terminaloptions=font ",10" linewidth 3]
```

```
...
```

```
\end{gnuplot}
```

`\gnuplotloadfile`

In addition to the environment, you can use the command `\gnuplotloadfile` to directly include `gnuplot` source code. It accepts the same options as the environment, e.g.

```
\gnuplotloadfile[terminal=pdf]{example.gnuplot}
```

4 Acknowledgements

In addition to the people mentioned in the changelog, I would like to thank Roy Ratcliffe for the suggestion and basic code for the `gnuplot` terminal specification and handling. Additional thanks to Michel Voßuhle for the implementation of

\gnuplotloadfile. I would also like to thank all the people who sent me bug reports, feature requests and patches. Gnuplottex wouldn't be what it is today without you.

5 Implementation

5.1 Initialization

```
1 \newif\ifShellEscape
2 \newif\ifmiktex \miktexfalse
3 \newif\ifusesiunitx
4 \newif\ifcleanup
5 \newif\ifusesubfolder
6
7 \newwrite\verbatim@out
8
9 \DeclareOption{shell}{\ShellEscapetrue}
10 \DeclareOption{noshell}{\ShellEscapefalse}
11 \DeclareOption{miktex}{\global\miktextrue}
12 \DeclareOption{siunitx}{\usesiunitxtrue}
13 \DeclareOption{cleanup}{\cleanuptrue}
14 \DeclareOption{subfolder}{\usesubfoldertrue}
15
16 \ExecuteOptions{shell}
17 \ProcessOptions\relax
18 %% test if shell escape really works
19 \ifShellEscape
20 \def\tmpfile{w18-test-\the\year\the\month\the\day\the\time.tex}
21 \ifmiktex
22 \immediate\write18{echo t > "\tmpfile"}
23 \else
24 \immediate\write18{touch \tmpfile}
25 \fi
26 \ifmiktex
27 \IfFileExists{\tmpfile.}{\ShellEscapetrue}{\ShellEscapefalse}
28 \immediate\write18{del "\tmpfile"}
29 \else
30 \IfFileExists{\tmpfile}{\ShellEscapetrue}{\ShellEscapefalse}
31 \immediate\write18{rm -f \tmpfile}
32 \fi
33 \fi
34
35 \ifusesubfolder
36   \ifmiktex
37     \immediate\write18{mkdir gnuplottex}
38     \immediate\write18{echo test > "gnuplottex/\tmpfile"}
39   \else
40     \immediate\write18{mkdir -p "gnuplottex"}
41     \immediate\write18{touch "gnuplottex/\tmpfile"}
```

```

42 \fi
43 \IfFileExists{gnuplottex/\tmpfile}{
44     \ifmiktex
45         \immediate\write18{del "gnuplottex\@backslashchar\tmpfile"}
46         \def\subfolder{gnuplottex\@backslashchar}
47     \else
48         \immediate\write18{rm -f "gnuplottex/\tmpfile"}
49         \def\subfolder{gnuplottex/}
50     \fi
51 }{
52     \PackageWarningNoLine{gnuplottex}
53     {Creation of subfolder failed.\MessageBreak
54     You'll need to create the folder yourself}
55     \def\subfolder{}
56 }
57 \else
58     \def\subfolder{}
59 \fi
60
61
62 \ifShellEscape
63     \PackageInfo{gnuplottex}
64     {Automatically converting gnuplot files.}
65 \else
66     \PackageWarningNoLine{gnuplottex}
67     {Shell escape not enabled.\MessageBreak
68     You'll need to convert the graphs yourself.}
69 \fi
70 \newcounter{fignum}

```

5.2 .gnuplot write out

```

71 \def\figname{\jobname-gnuplottex-fig\thefigum}
72
73 \def\usesiunitxingnuplot{\immediate\write\verbatim@out{set format '\@backslashchar num{\@per
74
75 \def\gnuplotverbatimwrite#1{%
76     \def\BeforeStream
77     {\message{Opening gnuplot stream #1}%
78     \immediate\write\verbatim@out{\string set terminal \gnuplotterminal \gnuplotterminal
79 \immediate\write\verbatim@out{\string set output '\subfolder\figname.\gnuplottexextension{\
80     \ifusesiunitx
81         \ifthenelse{\equal{\extension}{\string tex}}{\usesiunitxingnuplot}{\PackageWarningNo
82     \else
83         \relax
84     \fi
85 }
86 \@bsphack
87 \immediate\openout \verbatim@out #1
88 \BeforeStream%

```

```

89 \let\do\@makeother\dospecials
90 \catcode'\^M\active
91 \def\verbatim@processline{%
92     \immediate\write\verbatim@out
93     {\the\verbatim@line}}%
94 \verbatim@start}
95 \def\endgnuplotverbatimwrite{%
96     \immediate\closeout\verbatim@out
97     \esphack
98 \catcode'\0
99 \catcode'\{1
100 \catcode'\}2
101 \catcode'\$3
102 \catcode'\&4
103 \catcode'\^M5
104 \catcode'\#6
105 \catcode'\^7
106 \catcode'\_8
107 \catcode'\ 10
108 \catcode'\%14}

```

5.3 Environment definition

```

109 \def\gnuplottexextension@latex{\string tex}
110 \def\gnuplottexextension@epslatex{\string tex}
111 \def\gnuplottexextension@cairolatex{\string tex}
112 \def\gnuplottexextension@eepic{\string tex}
113 \def\gnuplottexextension@pstricks{\string tex}
114 \def\gnuplottexextension@pslatex{\string tex}
115 \def\gnuplottexextension@pstex{\string tex}
116 \def\gnuplottexextension@emtex{\string tex}
117 \def\gnuplottexextension@jpeg{\string jpg}
118 \def\gnuplottexextension@tikz{\string tex}
119 \def\gnuplottexextension#1{\ifundefined{gnuplottexextension@#1}{#1}{\csname gnuplottexextension@#1\endcsname}}
120 \define@key{pic}{scale}[1]{\def\gnuplotscale{#1}}
121 \define@key{pic}{terminal}[latex]{\def\gnuplotterminal{#1}}
122 \define@key{pic}{terminaloptions}{\def\gnuplotterminaloptions{#1}}
123 \newenvironment{gnuplot}[1][\stepcounter{fignum}%
124 \def\gnuplotterminal{latex}
125 \def\gnuplotterminaloptions{}
126 \def\gnuplotscale{1}
127 \setkeys{pic}{#1}
128 \xdef\gnuplotCutFile{\subfolder\figname.gnuplot}
129 \gnuplotverbatimwrite{\gnuplotCutFile}
130 {\endgnuplotverbatimwrite%
131 \gnuplotgraphicsprocess%
132 \gnuplotgraphicsinclude}

```

5.4 .gnuplot file processing

```

133 \def\extension{\gnuplottexextension{\gnuplotterminal}}

```

```

134 \long\gdef\gnuplotgraphicsprocess{%
135 \ifShellEscape
136 \IfFileExists{\subfolder\figname.gnuplot}{%
137 \immediate\write18{gnuplot \subfolder\figname.gnuplot}
138 \IfFileExists{\subfolder\figname.\extension}{%
139 \PackageInfo{gnuplottex}{\subfolder\figname.gnuplot converted}
140 \ifcleanup
141 \ifmiktex
142 \immediate\write18{del "\subfolder\figname.gnuplot"}
143 \else
144 \immediate\write18{rm -f "\subfolder\figname.gnuplot"}
145 \fi
146 \fi
147 }
148 {\PackageWarningNoLine{gnuplottex}
149 {Conversion of \subfolder\figname.gnuplot failed}}{}
150 \fi}

```

5.5 Graph inclusion

```

151 \long\gdef\gnuplotgraphicsinclude{%
152 \IfFileExists{\subfolder\figname.\extension}{%
153 \ifthenelse{\equal{\extension}{\string tex}}{
154 {\scalebox{\gnuplotscale}{\input{\subfolder\figname.\extension}}}
155 {\includegraphics[scale=\gnuplotscale]{\subfolder\figname.\extension}}
156 }
157 {\PackageWarningNoLine{gnuplottex}
158 {Please convert \subfolder\figname.gnuplot manually}}
159 }

```

5.6 .gnuplot file processing

```

160 \newcommand{\gnuplotloadfilewrite}[2]{%
161 \immediate\openout \verbatim@out #1%
162 \message{Opening gnuplot stream #1}%
163 \immediate\write\verbatim@out{\string set terminal \gnuplotterminal \gnuplotterminaloption}
164 \immediate\write\verbatim@out{\string set output '\subfolder\figname.\gnuplottexextension'}
165 \ifusesiunitx
166 \ifthenelse{\equal{\extension}{\string tex}}{\usesiunitxingnuplot}{\PackageWarningNoLine{gnuplottex}
167 \else
168 \relax
169 \fi
170 \ifusesiunitx
171 {\escapechar=-1\edef\percentforgnuplot{\string\%}
172 \escapechar=-1\edef\backslashforgnuplot{\string\\}
173 \immediate\write\verbatim@out{set format '\backslashforgnuplot num{\percentforgnuplot}}
174 \else
175 \relax
176 \fi
177 \immediate\write\verbatim@out{\string load '#2'}%
178 \immediate\closeout\verbatim@out%

```

```

179 }
180
181 \newcommand{\gnuplotloadfile}[2][]{
182   \stepcounter{fignum}%
183   \def\gnuplotterminal{latex}
184   \def\gnuplotterminaloptions{}
185   \def\gnuplotscale{1}
186   \setkeys{pic}{#1}
187   \xdef\gnuplotCutFile{\subfolder\figname.gnuplot}
188   \gnuplotloadfilewrite{\gnuplotCutFile}{#2}
189   \gnuplotgraphicsprocess%
190   \gnuplotgraphicsinclude
191 }

```