

The `gnuplottex` package*

Lars Kotthoff
lars@larsko.org

September 12, 2011

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`.

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.

[*miktex*] We're using miktex.

*This document corresponds to `gnuplottex` v0.4.4, dated 2011/09/12.

The following environments 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 T_EX 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}
```

4 Acknowledgements

Thanks to Roy Ratcliffe for the suggestion and basic code for the gnuplot terminal specification and handling. I would also like to thank all the people who sent me bug reports and feature requests. Gnuplottex wouldn't be what it is today without you.

5 Implementation

5.1 Initialization

```
1 \newif\ifShellEscape  
2 \newif\ifmiktex \miktexfalse  
3  
4 \newwrite\verbatim@out  
5  
6 \DeclareOption{shell}{\ShellEscape>true}  
7 \DeclareOption{noshell}{\ShellEscape>false}  
8 \DeclareOption{miktex}{\global\miktex>true}
```

```

9
10 \ExecuteOptions{shell}
11 \ProcessOptions\relax
12 %% test if shell escape really works
13 \ifShellEscape
14 \def\tmpfile{/tmp/w18-test-\the\year\the\month\the\day\the\time}
15 \ifmiktex
16 \def\tmpfile{w18-test-\the\year\the\month\the\day\the\time}
17 \immediate\write18{echo t > "\tmpfile"}
18 \else
19 \immediate\write18{touch \tmpfile}
20 \fi
21 \ifmiktex
22 \IfFileExists{\tmpfile.}{\ShellEscapetrue}{\ShellEscapefalse}
23 \immediate\write18{del "\tmpfile"}
24 \else
25 \IfFileExists{\tmpfile}{\ShellEscapetrue}{\ShellEscapefalse}
26 \immediate\write18{rm -f \tmpfile}
27 \fi
28 \fi
29
30 \ifShellEscape
31   \PackageInfo{gnuplottex}
32   {Automatically converting gnuplot files.}
33 \else
34   \PackageWarningNoLine{gnuplottex}
35     {Shell escape not enabled.\MessageBreak
36     You'll need to convert the graphs yourself.}
37 \fi
38 \newcounter{fignum}

```

5.2 .gnuplot write out

```

39 \def\figname{\jobname-gnuplottex-fig\thefignum}
40
41 \def\gnuplotverbatimwrite#1{%
42   \def\BeforeStream
43     {\message{Opening gnuplot stream #1}%
44     \immediate\write\verbatim@out{\string set terminal \gnuplotterminal \gnuplotterminal
45 \immediate\write\verbatim@out{\string set output '\figname.\gnuplottexextension{\gnuplotterminal
46   }
47   \@bsphack
48   \immediate\openout \verbatim@out #1
49   \BeforeStream%
50   \let\do@makeother\dospecials
51   \catcode'\^M\active
52   \def\verbatim@processline{%
53     \immediate\write\verbatim@out
54     {\the\verbatim@line}}%
55   \verbatim@start}

```

```

56 \def\endgnuplotverbatimwrite{%
57   \immediate\closeout\verbatim@out
58   \@esphack
59 \catcode'\0
60 \catcode'\1
61 \catcode'\2
62 \catcode'\3
63 \catcode'\&4
64 \catcode'\^M5
65 \catcode'\#6
66 \catcode'\^7
67 \catcode'\_8
68 \catcode'\ 10
69 \catcode'\%14}

```

5.3 Environment definition

```

70 \def\gnuplottexextension@latex{\string tex}
71 \def\gnuplottexextension@epslatex{\string tex}
72 \def\gnuplottexextension@eepic{\string tex}
73 \def\gnuplottexextension@pstricks{\string tex}
74 \def\gnuplottexextension@pslatex{\string tex}
75 \def\gnuplottexextension@pstex{\string tex}
76 \def\gnuplottexextension@emtex{\string tex}
77 \def\gnuplottexextension@jpeg{\string jpg}
78 \def\gnuplottexextension#1{\@ifundefined{gnuplottexextension@#1}{#1}{\csname gnuplottexextension@#1}
79 \define@key{pic}{scale}[1]{\def\gnuplotscale{#1}}
80 \define@key{pic}{terminal}[latex]{\def\gnuplotterminal{#1}}
81 \define@key{pic}{terminaloptions}{\def\gnuplotterminaloptions{ #1}}
82 \newenvironment{gnuplot}[1][\stepcounter{fignum}%
83 \def\gnuplotterminal{latex}
84 \def\gnuplotterminaloptions{}
85 \def\gnuplotscale{1}
86 \setkeys{pic}{#1}
87   \xdef\gnuplotCutFile{\figname.gnuplot}
88   \gnuplotverbatimwrite{\gnuplotCutFile}}
89   {\endgnuplotverbatimwrite%
90   \gnuplotgraphicsprocess%
91   \gnuplotgraphicsinclude}

```

5.4 .gnuplot file processing

```

92 \def\extension{\gnuplottexextension{\gnuplotterminal}}
93 \long\gdef\gnuplotgraphicsprocess{%
94   \ifShellEscape
95   \IfFileExists{\figname.gnuplot}{%
96     \immediate\write18{gnuplot \figname.gnuplot}
97   \IfFileExists{\figname.\extension}{%
98     \PackageInfo{gnuplottex}{\figname.gnuplot converted}}
99   {\PackageWarningNoLine{gnuplottex}
100 {Conversion of \figname.gnuplot failed}}}{%

```

```
101 \fi}
```

5.5 Graph inclusion

```
102 \long\gdef\gnuplotgraphicsinclude{%  
103 \IfFileExists{\figname.\extension}{%  
104 \ifthenelse{equal{\extension}{\string tex}}  
105 {\scalebox{\gnuplotscale}{\input{\figname.\extension}}}  
106 {\includegraphics[scale=\gnuplotscale]{\figname.\extension}}  
107 }  
108 {\PackageWarningNoLine{gnuplottex}  
109 {Please convert \figname.gnuplot manually}}  
110 }
```