LaTeX Support for Microsoft Georgia and ITC Franklin Gothic In Text and Math

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Abstract

This package provides LaTeX support for Microsoft Georgia and ITC Franklin Gothic fonts, supplied, for example, with Microsoft Windows. You need to convert the fonts to Type 1 format to use this package. The package provides full support for text and math.

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1 Introduction

Georgia is a baroque serif typeface designed by Matthew Carter in 1993 and distributed by Microsoft Corporation. Franklin Gothic is a realist sans-serif typeface designed by Morris Fuller Benton in 1902. ITC Franklin Gothic, designed by David Berlow, are distributed by Microsoft. In this package we add LaTeX support files for both packages.

An alternative support for these fonts is provided by `winfonts` [1] package. However, there are several reasons why we chose to re-implement the LaTeX support:

1. `winfonts` package uses True Type fonts, and these fonts do not work well with `dvips`. The present package uses Postscript Type 1 versions of these fonts, which work nicely with both `pdftex` and `dvips`.

2. `winfonts` package does not provide a number of fonts such as Franklin Gothic Demi and Franklin Gothic Heavy variants.

3. The most important reason for the reimplementation is that we want to use text fonts with matching math fonts.

Since `winfonts` may be installed on a number of computers, we took care not to clash with it. For this we were forced to slightly deviate from the conventions of the `fontname` scheme [2]. Namely, according to this scheme the font families should be called `jgi` and `ifg`. To make unique names, we choose our text fonts to be called `xjgi` and `xifg`, and our math fonts to be called `zjgi` and `zifg` correspondingly.

This package is released under BSD license to make updating the fonts metrics easier.

The support of text fonts is limited to T1 and TS1 encoding. No VTeX support files are included.

The math support is very preliminary: there is a lot of work to do on individual kerning and glyph placement!

2 Installation

First, you need to transform the fonts to the Type 1. Actually, `pdflatex` can use fonts in TTF format too, but to use the fonts when making PostScript output we need Type 1. Due to legal constraints we do not include Type 1 fonts in the distribution; you need either to buy them, or to create them yourself if you have the fonts in the TrueType (TTF) formats. In the first case you need to rename them accordingly to Table 1. In the second case you need the TTF files, named similarly to the ones in Table 1, and the conversion program, for example, `ttf2pt1` (`http://ttf2pt1.sourceforge.net/`)[1]. Convert the files to Type 1 format with the commands like

[1] This program is a part of many Linux distributions.

Table 1: PFB Files

File	Font	NFSS Code
georgia.pfb	Georgia	m
georgiai.pfb	Georgia Italic	mi
georgiab.pfb	Georgia Bold	b
georgiaz.pfb	Georgia Bold Italic	bi
frabk.pfb	Franklin Gothic Book Regular	k
frabkit.pfb	Franklin Gothic Book Italic	ki
framd.pfb	Franklin Gothic Medium Regular	m
framdit.pfb	Franklin Gothic Medium Italic	mi
framdcn.pfb	Franklin Gothic Medium Cond Regular	mc
fradm.pfb	Franklin Gothic Demi Regular	d
fradmit.pfb	Franklin Gothic Demi Italic	di
fradmcn.pfb	Franklin Gothic Demi Cond Regular	dc
frahv.pfb	Franklin Gothic Heavy Regular	h
frahvit.pfb	Franklin Gothic Heavy Italic	hi

```
ttf2pt1 -a -b georgia.ttf
ttf2pt1 -a -b georgiai.ttf
...
```

It is important to use the option `-a` in the call to this program, since we need all glyphs in the resulting files!

People often ask the question whether such translation is legal provided that you own the fonts. I am not in the position to give a legal advice on this matter. Perhaps you may want to purchase a separate font license from Ascender Corporation, `http://www.ascenderfonts.com`.

Now install Georgia `PFB` files in `$TEXMF/fonts/type1/microsoft/georgia`. Install Franklin Gothic files in `$TEXMF/fonts/type1/itc/franklingothic`. Then download `http://ctan.tug.org/install/fonts/psfonts/mathgifg.tds.zip`. Unzip the file in `$TEXMF`. Add `+mathgifg.map` to the configuration files of dvips, pdftex and your dvi previewer.

Run updmap and texhash programs to update the configuration files and file names database.

To use the fonts in LaTeX add `\usepackage{mathgifg}` to your preamble.

3 Implementation

3.1 Identification

We start with the declaration who we are. Most `.dtx` files put driver code in a separate driver file `.drv`. We roll this code into the main file, and use the pseudo-guard `<gobble>` for it.

```
⟨style⟩\NeedsTeXFormat{LaTeX2e}
⟨*gobble⟩
\ProvidesFile{mathgifg.dtx}
⟨/gobble⟩
⟨style⟩\ProvidesClass{mathgifg}
⟨drv⟩\ProvidesFile{drv.tex}
⟨map⟩\ProvidesFile{map.tex}
⟨*style | drv | map⟩
[2009/07/08 v0.4 Using Georgia and Franklin Gothic in LaTeX]
⟨/style | drv | map⟩
```

And the driver code:

```
⟨*gobble⟩
\documentclass{ltxdoc}
\usepackage{booktabs}
\usepackage{url}
\usepackage[breaklinks,colorlinks,linkcolor=black,citecolor=black,
            pagecolor=black,urlcolor=black,hyperindex=false]{hyperref}
\PageIndex
\CodelineIndex
\RecordChanges
\EnableCrossrefs
\begin{document}
  \DocInput{mathgifg.dtx}
\end{document}
⟨/gobble⟩
```

3.2 Fontinst Driver

This follows [3].

First, the preamble

```
⟨*drv⟩
\input fontinst.sty
\substitutesilent{bx}{b}
\substitutesilent{b}{d}
\substitutesilent{l}{k}
```

Starting recording transforms:

```
\recordtransforms{rec.tex}
```

Text fonts are in `8r` encoding:

```
\transformfont{xjgim8r}{\reencodefont{8r}{\fromafm{georgia}}}
\transformfont{xjgimi8r}{\reencodefont{8r}{\fromafm{georgiai}}}
```

```
\transformfont{xjgib8r}{\reencodefont{8r}{\fromafm{georgiab}}}
\transformfont{xjgibi8r}{\reencodefont{8r}{\fromafm{georgiaz}}}
\transformfont{xifgk8r}{\reencodefont{8r}{\fromafm{frabk}}}
\transformfont{xifgki8r}{\reencodefont{8r}{\fromafm{frabkit}}}
\transformfont{xifgm8r}{\reencodefont{8r}{\fromafm{framd}}}
\transformfont{xifgmi8r}{\reencodefont{8r}{\fromafm{framdit}}}
\transformfont{xifgm8rc}{\reencodefont{8r}{\fromafm{framdcn}}}
\transformfont{xifgd8r}{\reencodefont{8r}{\fromafm{fradm}}}
\transformfont{xifgdi8r}{\reencodefont{8r}{\fromafm{fradmit}}}
\transformfont{xifgd8rc}{\reencodefont{8r}{\fromafm{fradmcn}}}
\transformfont{xifgh8r}{\reencodefont{8r}{\fromafm{frahv}}}
\transformfont{xifghi8r}{\reencodefont{8r}{\fromafm{frahvit}}}
```

The interesting thing about Georgia and Franklin Gothic is the rich set of Greek letters and symbols. We can actually try to use them in math.

Math fonts in `OT1` encoding. `o` means "original". To avoid conflict with `ot1.enc`, we rename these encodings.

```
\transformfont{zjgimo7t}{\reencodefont{gifgot1}{\fromafm{georgia}}}
\transformfont{zifgko7t}{\reencodefont{gifgot1}{\fromafm{frabk}}}
\transformfont{zifgdo7t}{\reencodefont{gifgot1}{\fromafm{fradm}}}
```

In `OML` encoding:

```
\transformfont{zjgimio7m}{\reencodefont{gifgoml}{\fromafm{georgiai}}}
\transformfont{zifgko7m}{\reencodefont{gifgoml}{\fromafm{frabk}}}
\transformfont{zifgdo7m}{\reencodefont{gifgoml}{\fromafm{fradm}}}
```

In `OMS` and `OMX` encoding

```
\transformfont{zjgimo7y}{\reencodefont{gifgoms}{\fromafm{georgia}}}
\transformfont{zjgimo7v}{\reencodefont{gifgomx}{\fromafm{georgia}}}
```

Now we install the fonts. First T1.

```
\installfonts
\installfamily{T1}{xjgi}{}
\installfont{xjgim8t}{xjgim8r,newlatin}{t1}{T1}{xjgi}{m}{n}{}
\installfont{xjgimi8t}{xjgimi8r,newlatin}{t1}{T1}{xjgi}{m}{it}{}
\installfont{xjgib8t}{xjgib8r,newlatin}{t1}{T1}{xjgi}{b}{n}{}
\installfont{xjgibi8t}{xjgibi8r,newlatin}{t1}{T1}{xjgi}{b}{it}{}
\endinstallfonts
\installfonts
\installfamily{T1}{xifg}{}
\installfont{xifgk8t}{xifgk8r,newlatin}{t1}{T1}{xifg}{k}{n}{}
\installfont{xifgki8t}{xifgki8r,newlatin}{t1}{T1}{xifg}{k}{it}{}
\installfont{xifgm8t}{xifgm8r,newlatin}{t1}{T1}{xifg}{m}{n}{}
\installfont{xifgmi8t}{xifgmi8r,newlatin}{t1}{T1}{xifg}{m}{it}{}
\installfont{xifgm8tc}{xifgm8rc,newlatin}{t1}{T1}{xifg}{mc}{n}{}
\installfont{xifgd8t}{xifgd8r,newlatin}{t1}{T1}{xifg}{d}{n}{}
\installfont{xifgdi8t}{xifgdi8r,newlatin}{t1}{T1}{xifg}{d}{it}{}
\installfont{xifgd8tc}{xifgd8rc,newlatin}{t1}{T1}{xifg}{dc}{n}{}
\installfont{xifgh8t}{xifgh8r,newlatin}{t1}{T1}{xifg}{h}{n}{}
\installfont{xifghi8t}{xifghi8r,newlatin}{t1}{T1}{xifg}{h}{it}{}
\endinstallfonts
```

And then TS1

```
\installfonts
\installfamily{TS1}{xjgi}{}
\installfont{xjgim8c}{xjgim8r,textcomp}{ts1}{TS1}{xjgi}{m}{n}{}
\installfont{xjgimi8c}{xjgimi8r,textcomp}{ts1}{TS1}{xjgi}{m}{it}{}
\installfont{xjgib8c}{xjgib8r,textcomp}{ts1}{TS1}{xjgi}{b}{n}{}
\installfont{xjgibi8c}{xjgibi8r,textcomp}{ts1}{TS1}{xjgi}{b}{it}{}
\endinstallfonts
\installfonts
\installfamily{TS1}{xifg}{}
\installfont{xifgk8c}{xifgk8r,textcomp}{ts1}{TS1}{xifg}{k}{n}{}
\installfont{xifgki8c}{xifgki8r,textcomp}{ts1}{TS1}{xifg}{k}{it}{}
\installfont{xifgm8c}{xifgm8r,textcomp}{ts1}{TS1}{xifg}{m}{n}{}
\installfont{xifgmi8c}{xifgmi8r,textcomp}{ts1}{TS1}{xifg}{m}{it}{}
\installfont{xifgm8cc}{xifgm8rc,textcomp}{ts1}{TS1}{xifg}{mc}{n}{}
\installfont{xifgd8c}{xifgd8r,textcomp}{ts1}{TS1}{xifg}{d}{n}{}
\installfont{xifgdi8c}{xifgdi8r,textcomp}{ts1}{TS1}{xifg}{d}{it}{}
\installfont{xifgd8cc}{xifgd8rc,textcomp}{ts1}{TS1}{xifg}{dc}{n}{}
\installfont{xifgh8c}{xifgh8r,textcomp}{ts1}{TS1}{xifg}{h}{n}{}
\installfont{xifghi8c}{xifghi8r,textcomp}{ts1}{TS1}{xifg}{h}{it}{}
\endinstallfonts
```

Math fonts are different. Here we basically follow the recommendations of [4] and [5].

First, we need text fonts for “operators” and “letters”:

```
\installfonts
\installfamily{OT1}{zjgi}{}
\installfont{zjgim7t}{zjgimo7t,resetdigits,calcmetrics,xifgk8r,%
  latin}{ot1}{OT1}{zjgi}{m}{n}{}
\endinstallfonts
```

Now “letters”

```
\installfonts
\installfamily{OML}{zjgi}{\skewchar\font=127}
\installfont{zjgimi7m}{zjgimio7m,calcmetrics,xjgimi8r,%
  kernoff,cmmi10,kernon,mathit}{oml}{OML}{zjgi}{m}{it}{}
\endinstallfonts
\installfonts
\installfamily{OML}{zifg}{\skewchar\font=127}
\installfont{zifgk7m}{zifgko7m,calcmetrics,zifgko7t,kernoff,cmmi10,kernon,%
  mathit}{oml}{OML}{zifg}{k}{n}{}
\installfont{zifgd7m}{zifgdo7m,calcmetrics,zifgdo7t,kernoff,cmmib10,kernon,%
  mathit}{oml}{OML}{zifg}{d}{n}{}
\endinstallfonts
```

Symbols. We take everything we do not have from CM:

```
\installfonts
\installfamily{OMS}{zjgi}{\skewchar\font=48}
\installfont{zjgim7y}{zjgimo7y,zjgimo7t,calcmetrics,%
  kernoff,cmsy10,kernon,mathsy}{oms}{OMS}{zjgi}{m}{n}{}
\endinstallfonts
```

Same for big symbols Symbols. We take everything we do not have from CM:

```
\installfonts
\installfamily{OMX}{zjgi}{}
\installfont{zjgim7v}{zjgimo7v,zjgimo7t,calcmetrics,%
  kernoff,cmex10,kernon}{omx}{OMX}{zjgi}{m}{n}{}
\endinstallfonts
```

And the end:

```
\endrecordtransforms
\bye
⟨/drv⟩
```

3.3 Fontmap Generation

This is a standard procedure [3]

```
⟨*map⟩
\input finstmsc.sty
\resetstr{PSfontsuffix}{.pfb}
\adddriver{dvips}{mathgifg.map}
\input rec.tex
\donedrivers
\bye
⟨/map⟩
```

3.4 Style File

We again use the ideas from [5].

```
⟨*style⟩
\RequirePackage[T1]{fontenc}
\RequirePackage{textcomp}
\RequirePackage{keyval}
\renewcommand{\sfdefault}{xifg}
\renewcommand{\rmdefault}{xjgi}
\DeclareSymbolFont{operators}{OT1}{zjgi}{m}{n}
\DeclareSymbolFont{letters}{OML}{zjgi}{m}{it}
\DeclareSymbolFont{symbols}{OMS}{zjgi}{m}{n}
\DeclareSymbolFont{largesymbols}{OMX}{zjgi}{m}{n}
\DeclareSymbolFont{sfletters}{OML}{zifg}{k}{n}
\DeclareSymbolFont{bfletters}{OML}{zifg}{d}{n}
\SetSymbolFont{letters}{bold}{OML}{zifg}{d}{n}
\DeclareSymbolFontAlphabet{\mathsf}{sfletters}
\DeclareSymbolFontAlphabet{\mathbf}{bfletters}
\DeclareRobustCommand\hbar{{%
 \dimen@.03em%
 \dimen@ii0.001em%
 \def\@tempa##1##2{{%
   \lower##1\dimen@\rlap{\kern##1\dimen@ii\the##2 0\char22}}}%
 \mathchoice\@tempa\@ne\textfont
             \@tempa\@ne\textfont
```

```
            \@tempa\defaultscriptratio\scriptfont
            \@tempa\defaultscriptscriptratio\scriptscriptfont
  h}}
\let\s@vedhbar\hbar
\AtBeginDocument{%
  \@ifpackageloaded{amsfonts}{\let\hbar\s@vedhbar}{}}
⟨/style⟩
```

3.5 Metrics Files

A simple `mtx` file resets digits. We need it to substitute Franklin Gothic numbers for Georgia numbers in math:

```
⟨*resetdigits⟩
\relax
Reset all digits
\metrics
\unsetglyph{zero}
\unsetglyph{one}
\unsetglyph{two}
\unsetglyph{three}
\unsetglyph{four}
\unsetglyph{five}
\unsetglyph{six}
\unsetglyph{seven}
\unsetglyph{eight}
\unsetglyph{nine}
\endmetrics
⟨/resetdigits⟩
```

Another `mtx` file to calculate metrics for badly defined fonts. See [4].

```
⟨*calcmetrics⟩
\relax
Calculate missing metrics
\metrics
\resetint{xheight}{\height{x}}
\endmetrics
⟨/calcmetrics⟩
```

3.6 Encoding Files

This is a copy of `ot1.etx` from [5]. We rename it to avoid conflict with other `ot1.enc` in the result.

```
⟨*gifgot1⟩
\input ot1.etx
⟨/gifgot1⟩
```

Same with `OML`:

```
⟨*gifgoml⟩
\input oml.etx
⟨/gifgoml⟩
```

And OMS:

189 ⟨*gifgoms⟩
190 \input oms.etx
191 ⟨/gifgoms⟩

And, finally, OMX

192 ⟨*gifgomx⟩
193 \input omx.etx
194 ⟨/gifgomx⟩

References

[1] Paul Pichaureau. *Winfonts & Windingbats. Two Packages to Use Windows Core Fonts*, January 2006. http://www.ctan.org/tex-archive/fonts/winfonts/.

[2] Karl Berry. *Fontname. Filenames For TEX Fonts*, September 2005. http://www.ctan.tug.org/tex-archive/info/fontname.

[3] Philipp Lehman. *The Font Installation Guide*, December 2004. http://www.ctan.org/tex-archive/info/Type1fonts/fontinstallationguide.

[4] Alan Hoenig. *TEX Unbound: LATEX and TEX Strategies for Fonts, Graphics, and More*. Oxford University Press, USA, 1998.

[5] Walter Schmidt. *Using Common PostScript Fonts With LATEX. PSNFSS Version 9.2*, September 2004. http://ctan.tug.org/tex-archive/macros/latex/required/psnfss.

Change History

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Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.