

# DigitalKhatt Lua $\text{\LaTeX}$ Package

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This Lua $\text{\LaTeX}$  package enables to use the DigitalKhatt variable font in the  $\text{\TeX}$  system. In the previous version, I have to patch Lua $\text{\TeX}$  and `luaotfload` to use the font. In the current version, a new `luaotfload` plugin mode, named `digitalkhatt`, has been defined, which uses its own files as follows.

- **digitalkhatt.sty**: The  $\text{\LaTeX}$  package style file
- **digitalkhatt.lua**: Main file
- **digitalkhatt-define.lua**: copied from `luaotfload-harf-define.lua` and adapted to DigitalKhatt
- **digitalkhatt-plug.lua**: copied from `luaotfload-harf-plug.lua` and adapted to DigitalKhatt
- **mushaffeatures.lua**: Implements Sajda bar and tajweed colors found in some Quran Mushafs
- **digitalkhatt-cff2.otf**: DigitalKhatt OpenType variable font extended with new lookup types (such as finite state machine lookup) and justification table
- **digitalkhatt\_glyphnames.lua** and **digitalkhatt\_lookupnames.lua**: accompaniments to **digitalkhatt-cff2.otf**. Needed for lookup callbacks. Currently they are used to extend the fatha mark above some stretched glyphs.
- **lpdf-ini-digitalkhatt.lua**: Copy of the Context file **lpdf-ini.lua** Mainly used to define PDF Type3 fonts.
- **charstrings.lua**: Parsing of charstring by glyph id.
- **fontloader-digitalkhatt-cff2.lua**: Copied from **fontloader-font-cff.lua** and patched to allow only the current extended glyph to be parsed and not the entire file. Used with **charstrings.lua**.
- **luadigitalkhatt.[dll,so]**: The native lua module : HarfBuzz + Justification Algorithm + new OpenType subtables

Before using the package, copy the above files in the working directory. To avoid loading the wrong shared library, please delete or rename the library that is not used. So if you are in Windows, delete the file `luadigitalkhatt.so` and if you are on Linux delete the file `luadigitalkhatt.dll`. Then, in the main tex file, add the command `\usepackage{digitalkhatt}` in the preamble. To enable the font, call the command `\digitalkhatt{fontsize}` giving the font size as parameter. For example,

in the following the word welcome using a font size of 12pt مرحبًا. Since the package uses a Lua native module (i.e., luadigitalkhatt.[dll,so]), you should call LuaL<sup>A</sup>T<sub>E</sub>X using the `--shell-escape` command line argument as follows.

```
lualatex --shell-escape readme.tex
```

The justification is disabled by default. Here an example of a paragraph using 18pt font size without justification.

الْمَ ۙ ذَٰلِكَ ٱلْكِتَٰبُ لَا رَيْبَ ۚ فِيهِ ۖ هُدًى لِّلْمُتَّقِينَ ۝ ٱلَّذِينَ يُؤْمِنُونَ بِالْغَيْبِ  
وَيُقِيمُونَ الصَّلَاةَ وَمِمَّا رَزَقْنَاهُمْ يُنْفِقُونَ ۝ ٱلَّذِينَ يُؤْمِنُونَ بِمَا أُنزِلَ إِلَيْكَ وَمَا أُنزِلَ  
مِّن قَبْلِكَ وَبِٱلْآخِرَةِ هُمْ يُوقِنُونَ ۝ أُوْلَٰٓئِكَ عَلَىٰ هُدًى مِّن رَّبِّهِمْ ۖ وَأُوْلَٰٓئِكَ هُمُ الْمُفْلِحُونَ



You can enable and disable justification using the commands `\enableDKJust` and `\disableDKJust`. Below is the same paragraph using justification. Some alternates are now applied in the first line. Also by using justification the third line is compressed by shrinking the kashida between joining letters.

الْمَ ۙ ذَٰلِكَ ٱلْكِتَٰبُ لَا رَيْبَ ۚ فِيهِ ۖ هُدًى لِّلْمُتَّقِينَ ۝ ٱلَّذِينَ يُؤْمِنُونَ بِالْغَيْبِ  
وَيُقِيمُونَ الصَّلَاةَ وَمِمَّا رَزَقْنَاهُمْ يُنْفِقُونَ ۝ ٱلَّذِينَ يُؤْمِنُونَ بِمَا أُنزِلَ إِلَيْكَ وَمَا أُنزِلَ  
مِّن قَبْلِكَ وَبِٱلْآخِرَةِ هُمْ يُوقِنُونَ ۝ أُوْلَٰٓئِكَ عَلَىٰ هُدًى مِّن رَّبِّهِمْ ۖ وَأُوْلَٰٓئِكَ هُمُ الْمُفْلِحُونَ



For now, the justification only applies to lines or paragraphs which are only composed of the same DigitalKhatt font without changing direction.

When there is an overfull or underfull box, you can decrease or increase the font size to limit the overfull or underfull amount. The command `\setDKMinExpFactor` sets the minimum ratio (i.e. desired line width / current line width) allowed to decrease the font size and the command `\setDKMaxExpFactor` sets the maximum ratio allowed to increase the font size. By default the minimum expansion ration is set to 0.98 and the maximum expansion ratio is set to 1 (i.e. There is no font expansion when the line is loose). To use this feature you must first enable font expansion with the command `\enableDKFontExpansion`. For instance, the following example does not use justification

سَنَقَرُكَ فَلَا تَنْسَى ٦ إِلَّا مَا شَاءَ اللَّهُ إِنَّهُ يَعْلَمُ الْجَهْرَ وَمَا يَخْفَى ٧  
وَنُيْسِرُكَ لِلْيُسْرَى ٨ فَذَكِّرْ إِنْ نَفَعَتِ الذِّكْرَى ٩ سَيَذَكِّرُ مَنْ يَخْشَى ١٠  
وَيَتَجَنَّبُهَا الْأَشْقَى ١١ الَّذِي يَصْلَى النَّارَ الْكُبْرَى ١٢ ثُمَّ لَا يَمُوتُ

Below is the same example using justification.

سَنَقَرُكَ فَلَا تَنْسَى ٦ إِلَّا مَا شَاءَ اللَّهُ إِنَّهُ يَعْلَمُ الْجَهْرَ وَمَا يَخْفَى ٧  
وَنُيْسِرُكَ لِلْيُسْرَى ٨ فَذَكِّرْ إِنْ نَفَعَتِ الذِّكْرَى ٩ سَيَذَكِّرُ مَنْ يَخْشَى ١٠  
وَيَتَجَنَّبُهَا الْأَشْقَى ١١ الَّذِي يَصْلَى النَّارَ الْكُبْرَى ١٢ ثُمَّ لَا يَمُوتُ

Below is the same example using justification and enabling font expansion by calling the commands `\enableDKFontExpansion` and `\setDKMinExpFactor{0.95}`. Notice that the font size of the second line has decreased to fit the width of the line.

سَنَقَرُكَ فَلَا تَنْسَى ٦ إِلَّا مَا شَاءَ اللَّهُ إِنَّهُ يَعْلَمُ الْجَهْرَ وَمَا يَخْفَى ٧  
وَنُيْسِرُكَ لِلْيُسْرَى ٨ فَذَكِّرْ إِنْ نَفَعَتِ الذِّكْرَى ٩ سَيَذَكِّرُ مَنْ يَخْشَى ١٠  
وَيَتَجَنَّبُهَا الْأَشْقَى ١١ الَّذِي يَصْلَى النَّارَ الْكُبْرَى ١٢ ثُمَّ لَا يَمُوتُ

There are also two commands `\enableDKTajweedColor` and `\disableDKTajweedColor` to enable and disable Tajweed colors.

قُلْ هُوَ اللَّهُ أَحَدٌ ١ اللَّهُ الصَّمَدُ ٢ لَمْ يَلِدْ وَلَمْ يُولَدْ ٣  
وَلَمْ يَكُنْ لَهُ كُفُوًا أَحَدٌ ٤

The DigitalKhatt project is still work-in progress. If you encounter a problem, please file an issue on GitHub.