gensty

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GenSty is a LaTex style package generator for OpenType fonts (otf/ttf) which supports W3C SMuFL notation. With gensty you can generate your LaTeX package based on any OpenType font; the generator parses ttf/otf files and creates LaTeX commands for all Unicode Symbols. In the case of SMuFL fonts, you can also include the glyphnames.json file, so it will create friendlier names and include "Private Use" symbols.

SMuFL specifications

CHAPTER

ONE

GENSTY

GenSty is a LaTex style package generator for OpenType fonts (otf/ttf) which supports W3C SMuFL notation. With gensty you can generate your LaTeX package based on any OpenType font; the generator parses ttf/otf files and creates LaTeX commands for all Unicode Symbols. In the case of SMuFL fonts, you can also include the glyphnames.json file, so it will create friendlier names and include "Private Use" symbols.

1.1 Installation

Use the package manager pip to install foobar.

```
pip install gensty
```

1.2 Installation (manual)

Clone the repository

```
git clone git@github.com:tsotsos/genSty.git
```

and then use from the top folder. Eg.

```
python3 -m gensty -h
```

1.3 Usage

As referred above, the package can be used directly, installed from pip, and as a module. In case of command line the script can be used :

```
gensty -h

usage: genSty [-h] [--version] [--all] [--smufl SMUFL]
              [--one-package ONE_PACKAGE] [--author AUTHOR] [--ver VER]
              path

LaTeX Style file generator for fonts

positional arguments:
  path                  Font(s) path. It can be either a directory in case of
                        multiple fonts or file path.

optional arguments:
  -h, --help            show this help message and exit
  --version, -v         show program's version number and exit
  --all, -a             If choosed genSty will generate LaTeX Styles for all
                        fonts in directory
  --smufl SMUFL, -s SMUFL
                        If choosed genSty will generate LaTeX Styles for all
                        fonts in directory based on glyphnames provided.
  --one-package ONE_PACKAGE
                        Creates one package with name provided by this
                        argument.
  --author AUTHOR       Author's name.
  --ver VER             LaTeX package version.
```

1.3.1 Use as a module

Use the module to create LaTeXstyle instances and handle generated latex code yourself.

```
import gensty

# Generate LaTeXstyle instance from font file:

latexObj = font.LaTeXstyle(author,version, "path/to/font.otf",smufl)

# then you can get for latexObj,Header(), DefCommands(), Commands() or File()
```

Use them module to create the LaTeX package in filesystem.

```
import gensty

# Use the same functions as gensty CLI and handle both folder or font file
# input (path can be either font file or folder including fonts).
# Then using savePackage you can save the generated output to disk
# accorndingly.
# smufl is the path to glyphnames.json which is defined according to W3C
# Specifications https://www.w3.org/2019/03/smufl13/specification/glyphnames.html

# prepare fonts. author, version and smuf, can be None.
```

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```
fonts = prepareFonts(path, version, author, smufl)

# packageName and forcedCommand can be None. They are used to force LaTeX
# pacakage name and commands respectively.
fontnames, fontfiles, files = makePackage(fonts, packageName, forcedCommand)

# creates font package in file system.
savePackage(fontnames, fontfiles, files, packageName)
```

1.4 Contributing

Pull requests are welcome. For major changes, please open an issue first to discuss what you would like to change.

CHAPTER

TWO

FONT

2.1 Info Class

class `genesty.font.`**`Info`**(*fontfile*, *smufl=None*)

Bases: `object`

Info. Handles opentype fonts (otf, ttf) and creates codepoint/symbol (unicode) List of Tuples based either on sMuFL glyphnames.json file or the font itself as parsed by fontTools. Additionally the Class retrieves the font name.

`fontfile`

The font file (otf,ttf).

Type str

`name`

The font name as retrieved from font file.

Type str

`codepoints`

Codepoints and Symbol.

Type List[Tuple[str,str]]

`errors`

List of error messages.

Type List[str]

`Codepoints`()

Codepoints.Retrieves the codepoints and symbols for the desired font, handles differently if its smufl font.

Returns The final list of codepoints/description.

Return type `List[Tuple[int, str]]`

`Identifier`(*prefix=True*)

Identifier. Removes spaces and forces lowercase for font name, by default adds prefix 'fnt' so we can avoid issues with identical names.

Parameters **`prefix`** (*bool*) – Font prefix.

Returns Font name identifier.

Return type `str`

`__fontCharList`(*charcodes*, *private=False*, *excluded=[]*)

__fontCharList. Accepts list of tuples with charcodes and codepoints and returns names and charcodes.

Parameters

- **charcodes** (*list*) – Codepoints/Symbols created by
- **func** – *~gensty.font.LaTeXstyle.__fontCodepoints*
- **private** (*bool*) – Allow private symbols.
- **excluded** (*list*) – List of excluded symbols.

Returns List of codepoints and description.

Return type `List[Tuple[str, str]]`

__fontCodepoints()

__fontCodepoints. Creates a list of codepoints and names for every character/symbol in the given font.

Returns A list of Tuples with condpoints and UTF-8 description.

Return type `List[Tuple[int, str]]`

__getName()

__getName. Get the name from the font's names table. Customized function based on original retrieved from: https://bit.ly/3lS4nMO

Returns Font name.

Return type `str`

__glyphnameParse()

__glyphnameParse. Parses glyphname file according w3c/smufl reference.

Returns A list of codepoint and their description.

Return type `List[Tuple[str, str]]`

2.2 LatexStyle Class

class gensty.font.**LaTeXstyle**(*version=None*, *author=None*, ***kwargs*)

Bases: *gensty.font.Info*

LaTeXstyle. Creates LaTeX Style package in three parts:

- Header. Includes Package name and requirements.
- DefCommands: The definitions of commands.
- Commands: LaTeX commands based on provided codepoints.
- File: The full LaTeX Style package including all above.

Commands()

Commands. Generates LaTeX commands for each char code.

Returns Commands based on symbols from font.

Return type `str`

DefCommands()

DefCommands. Fills Commands definition style partial.

Returns LaTeX Package commands definition.

Return type `str`

File()

File. Creates a full LaTeX Style package.

Returns LaTeX Style package.

Return type `str`

Header()

Header. Fills header style partial template

Returns LaTeX Style package header partial.

Return type `str`

__defcommands()

__defcommands. Creates command name, definition and command.

Returns Definition of commands.

Return type `Tuple[str, str]`

__description()

Creates default description text based on name and version.

Returns Description text for header.

Return type `str`

__makeTemplate(*template*, *tokens*)

__makeTemplate. Parses and replace tokens in template string.

Parameters

- **template** (*str*) – Template file
- **tokens** (*dict*) – Tokens dict.

Returns String based on provided template.

Return type `str`

__requirements(*requirements=[]*)

__requirements. Creates LaTeX package requirements. By default fontspec is nessessary.

Parameters **requirements** (*list*) – List of requirements.

Returns LaTeX package requirements.

Return type `str`

setCommand(*commandName*)

setCommand. Forces a command name different from default (font name)

Parameters **commandName** (*str*) – Command Name

Return type `str`

setPackage(*packageName*)

setPackage. Sets the package Name, overides default (font name).

Parameters **packageName** (*str*) – The package name

CHAPTER

THREE

HELPERS

Gensty helpers. A collection of functions to manipulate strings, search for files and create folders.

`gensty.helpers.`**`ReplaceToken`**(*dict_replace*, *target*)

ReplaceToken. Based on dict, replaces key with the value on the target.

Parameters

- **`dict_replace`** (*`dict`*) – Dictionary includes tokens to replace.
- **`target`** (*`str`*) – String to be replced.

Returns String with provided parameters from tokens.

Return type `str`

`gensty.helpers.`**`checkExtension`**(*path*, *ext*)

checkExtension. Defines if a file exists and having the given *extension*.

Parameters

- **`path`** (*`str`*) – File path to check.
- **`ext`** (*`str`*) – File extension.

Returns True in case extension is correct.

Return type `bool`

`gensty.helpers.`**`checkFont`**(*path*, *supported_fonts=[]*)

checkFont. Checks the provided file has one fo the supported extensions.

Parameters

- **`path`** (*`str`*) – File path to check.
- **`supported_fonts`** (*`list`*) – Supported fonts *extensions*

Returns True in case font exists.

Return type `bool`

`gensty.helpers.`**`createDir`**(*dir*)

createDir. Forces directory creation by removing any pre-existing folder with same name.

Parameters **`dir`** (*`str`*) – Directory to create.

`gensty.helpers.`**`findByExt`**(*path*, *ext*)

findByExt.Finds file by extension. Returns list.

Parameters

- **`path`** (*`str`*) – File path to check.

- **ext** (*str*) – File extension.

Returns A list of files having the given *ext* or False.

Return type `Union[List[str], bool]`

`gensty.helpers.`**`fixString`**(*s*)

fixString. Changes a string usually package or font name, so it can be use in LaTeX and parsed without issue.

Parameters **s** (*str*) – String to be fixed.

Return type `str`

`gensty.helpers.`**`getFontsByType`**(*path*, *supported_fonts=[]*)

getFontsByType. Gets supported fonts by file extesion in a given folder.

Parameters

- **path** (*str*) – Directory includes fonts.
- **supported_fonts** (*list*) – A list of supported fonts (extensions)

Returns File paths of supported fonts.

Return type `List[str]`

`gensty.helpers.`**`isFontPath`**(*path*)

Checks if the path is file or folder. In case of folder returns all included fonts.

`gensty.helpers.`**`writePackage`**(*filename*, *content*)

writePackage. Writes Style file.

Parameters

- **filename** (*str*) – Filename for newely created file.
- **content** (*str*) – Content of the LaTeX package.

CHAPTER

FOUR

CLI

Gensty main file for CLI manipulation. Latex package generator ttf/otf and SMuFL.

`gensty.cli.`**`cli`**`()`

cli. Handles console arguments.

`gensty.cli.`**`makePackage`**(*fonts*, *packageName=None*, *forcedCommand=None*)

makePackage.

Parameters

- **fonts** (*str*) – Font(s) path, either a file path or directory.
- **packageName** (*str, optional*) – Forced package name which overrides the
- **name in folders and paths.** (*font*) –
- **forcedCommand** (*str, optional*) – Overrides the name of generated
- **command.** (*LaTeX*) –

Returns Three lists (triplet) of string containing Fontnames, Filenames and actual LaTeX style files.

Return type `Tuple[List[str], List[str], List[str]]`

`gensty.cli.`**`prepareFonts`**(*path*, *ver=None*, *author=None*, *smufl=None*)

prepareFonts. Creates font.latexStyle instances in a list.

Parameters

- **path** (*str*) – Either font(s) path directory or path to font file.
- **ver** (*str, optional*) – LaTeX package version.
- **author** (*str, optional*) – Latex package author.
- **smufl** (*str, optional*) – SMuFL glyphnames.json definition.

Returns A list of *`LaTeXstyle()`* instances containing all data needed final package generation.

Return type `List[`*`LaTeXstyle`*`]`

`gensty.cli.`**`savePackage`**(*names*, *fontfiles*, *files*, *packageName=None*)

savePackage. Saves packages to disk, creating the appropriate folder structure. There are four cases:

- Single font. Simplest form creates one package.
- Multiple font. Creates one package per font (incl. font file)
- Single font, named package. Overrides the default font name on folders.
- Multiple font, named package. Saves all fonts in same dir.

Parameters

- **names** (*list*) – A list of *str*
- **fontfiles** (*list*) – fontfiles
- **files** (*list*) – files
- **packageName** (*str*) – packageName

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FIVE

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