Python词云 wordcloud 十五分钟入门与进阶

FontTian · 1 个月前

*这篇文章是我上个月发表在CSDN的博客,虽然被推到了首页,然而访问量依旧惨不忍睹=- =,不过好在质量还不错,所以再发到知乎来凑凑热闹我的博客中有完整的系列内容(附带代码),文章最后有传送门:*CSDN原文

整体简介

基于Python 的词云生成类库,很好用,而且功能强大.博主个人比较推荐
github:amueller/word_cloud
官方地址:word clouds in Python
写这篇文章花费一个半小时,阅读需要十五分钟,读完本篇文章后您将能上手wordcloud

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快速生成词云

```
rom wordcloud import WordCloud

f = open(u'txt/AliceEN.txt','r').read()
wordcloud = WordCloud(background_color="white",width=1000, height=860, margin=2).generate(f)

# width,height,margin可以设置图片属性

# generate 可以对全部文本进行自动分词,但是他对中文支持不好,对中文的分词处理请看我的下一篇文章
#wordcloud = WordCloud(font_path = r'D:\Fonts\simkai.ttf').generate(f)
# 你可以通过font_path参数来设置字体集

#background_color参数为设置背景颜色,默认颜色为黑色

import matplotlib.pyplot as plt
plt.imshow(wordcloud)
plt.axis("off")
plt.show()

wordcloud.to_file('test.png')
# 保存图片,但是在第三模块的例子中 图片大小将会按照 mask 保存
```

自定义字体颜色

这段代码主要来自wordcloud的github,你可以在github下载该例子

```
#!/usr/bin/env python
"""
Colored by Group Example
========================

Generating a word cloud that assigns colors to words based on
a predefined mapping from colors to words
"""

from wordcloud import (WordCloud, get_single_color_func)
import matplotlib.pyplot as plt


class SimpleGroupedColorFunc(object):
    """Create a color function object which assigns EXACT colors
       to certain words based on the color to words mapping

       Parameters
       ----------
       color_to_words : dict(str -> list(str))
         A dictionary that maps a color to the list of words.

       default_color : str
         Color that will be assigned to a word that's not a member
         of any value from color_to_words.
    """

    def __init__(self, color_to_words, default_color):
        self.word_to_color = {word: color
                              for (color, words) in color_to_words.items()
                              for word in words}

        self.default_color = default_color

    def __call__(self, word, **kwargs):
        return self.word_to_color.get(word, self.default_color)
        specified colors to certain words based on the color to words mapping.

        Uses wordcloud.get_single_color_func

        Parameters
        ----------
        color_to_words : dict(str -> list(str))
          A dictionary that maps a color to the list of words.

        default_color : str
          Color that will be assigned to a word that's not a member
          of any value from color_to_words.
    """

    def __init__(self, color_to_words, default_color):
        self.color_func_to_words = [
            (get_single_color_func(color), set(words))
            for (color, words) in color_to_words.items()]

        self.default_color_func = get_single_color_func(default_color)

    def get_color_func(self, word):
        """Returns a single_color_func associated with the word"""
        try:
            color_func = next(
                color_func for (color_func, words) in self.color_func_to_words
                if word in words)
        except StopIteration:
            color_func = self.default_color_func

        return color_func

    def __call__(self, word, **kwargs):
        return self.get_color_func(word)(word, **kwargs)


text = """The Zen of Python, by Tim Peters
Beautiful is better than ugly.
Explicit is better than implicit.
Simple is better than complex.
Complex is better than complicated.
Flat is better than nested.
Sparse is better than dense.
```

```
Although practicality beats purity.
Errors should never pass silently.
Unless explicitly silenced.
In the face of ambiguity, refuse the temptation to guess.
There should be one-- and preferably only one --obvious way to do it.
Although that way may not be obvious at first unless you're Dutch.
Now is better than never.
Although never is often better than *right* now.
If the implementation is hard to explain, it's a bad idea.
If the implementation is easy to explain, it may be a good idea.
Namespaces are one honking great idea -- let's do more of those!"""

# Since the text is small collocations are turned off and text is lower-cased
wc = WordCloud(collocations=False).generate(text.lower())



# 自定义所有单词的颜色
color_to_words = {
    # words below will be colored with a green single color function
    '#00ff00': ['beautiful', 'explicit', 'simple', 'sparse',
                'readability', 'rules', 'practicality',
                'explicitly', 'one', 'now', 'easy', 'obvious', 'better'],
    # will be colored with a red single color function
    'red': ['ugly', 'implicit', 'complex', 'complicated', 'nested',
            'dense', 'special', 'errors', 'silently', 'ambiguity',
            'guess', 'hard']
}

# Words that are not in any of the color_to_words values
# will be colored with a grey single color function
default_color = 'grey'

# Create a color function with single tone
# grouped_color_func = SimpleGroupedColorFunc(color_to_words, default_color)

# Create a color function with multiple tones
grouped_color_func = GroupedColorFunc(color_to_words, default_color)

# Apply our color function
# 如果你也可以将color_func的参数设置为图片,详细的说明请看 下一部分
wc.recolor(color_func=grouped_color_func)

# Plot
```

```
plt.axis("off")
plt.show()
```

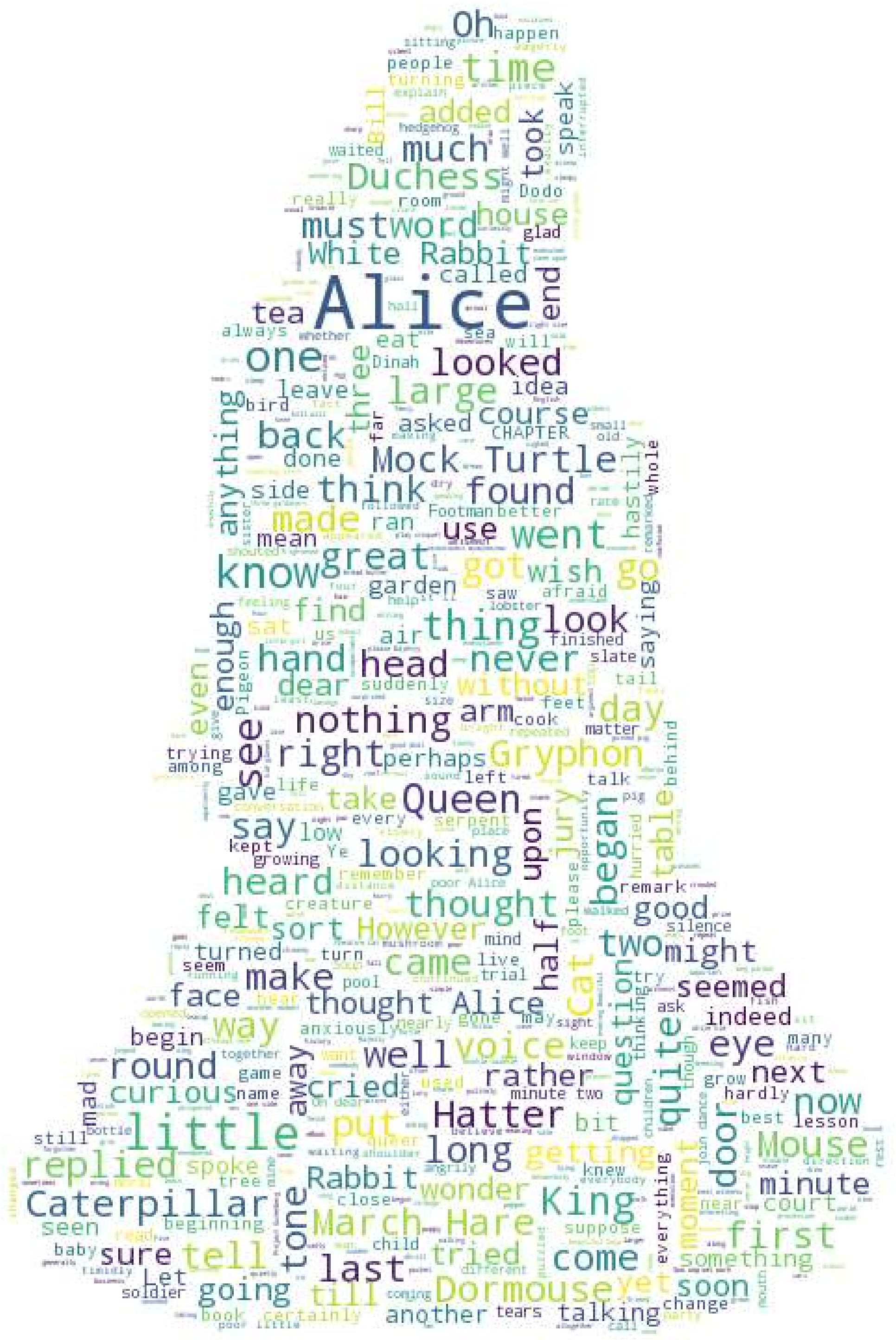
better
although
idea
never
implementation
explain
complex
simple
may
one
special
obvious
way
counts
right
beautiful
unless
beats
now
often
face
hard
nested
zen
dense
preferably
enough
dutch
refuse
explicitly
rules
purity
temptation
silenced
errors
namespaces
guess

利用背景图片生成词云,设置停用词词集

该段代码主要来自于wordcloud的github,你同样可以在github下载该例子以及原图片与效果图

```
#!/usr/bin/env python
"""
Image-colored wordcloud
=======================

You can color a word-cloud by using an image-based coloring strategy
implemented in ImageColorGenerator. It uses the average color of the region
occupied by the word in a source image. You can combine this with masking -
pure-white will be interpreted as 'don't occupy' by the WordCloud object when
passed as mask.
If you want white as a legal color, you can just pass a different image to
"mask", but make sure the image shapes line up.
"""


from os import path
from PIL import Image
import numpy as np
import matplotlib.pyplot as plt

from wordcloud import WordCloud, STOPWORDS, ImageColorGenerator

d = path.dirname(__file__)

# Read the whole text.
# read the mask / color image taken from
# http://jirkavinse.deviantart.com/art/quot-Real-Life-quot-Alice-282261010
alice_coloring = np.array(Image.open(path.join(d, "alice_color.png")))

# 设置停用词
stopwords = set(STOPWORDS)
stopwords.add("said")

# 你可以通过 mask 参数 来设置词云形状
wc = WordCloud(background_color="white", max_words=2000, mask=alice_coloring,
               stopwords=stopwords, max_font_size=40, random_state=42)
# generate word cloud
wc.generate(text)

# create coloring from image
image_colors = ImageColorGenerator(alice_coloring)

# show
# 在只设置mask的情况下,你将会得到一个拥有图片形状的词云
plt.imshow(wc, interpolation="bilinear")
plt.axis("off")
plt.figure()
# recolor wordcloud and show
# we could also give color_func=image_colors directly in the constructor
# 我们还可以直接在构造函数中直接给颜色
# 通过这种方式词云将会按照给定的图片颜色布局生成字体颜色策略
plt.imshow(wc.recolor(color_func=image_colors), interpolation="bilinear")
plt.axis("off")
plt.figure()
plt.imshow(alice_coloring, cmap=plt.cm.gray, interpolation="bilinear")
plt.axis("off")
plt.show()
```

展示效果如下:


Alice
Oh
time
happen
people
added
much
took
speak
Duchess
Bill
house
must
word
White Rabbit
called
end
tea
one
looked
large
idea
three
back
course
Mock Turtle
anything
think
found
made
went
know
great
got
wish
go
thing
look
hand
head
never
enough
dear
without
day
nothing
arm
see
right
perhaps
Gryphon
take
Queen
say
looking
upon
jury
began
table
heard
thought
good
felt
sort
However
half
two
might
came
make
seemed
face
thought Alice
way
indeed
well
voice
quite
eye
round
cried
rather
next
curious
away
question
Hatter
now
little
put
long
getting
Mouse
replied
Rabbit
minute
Caterpillar
wonder
King
March Hare
first
tone
sure
tell
last
tried
come
going
till
Dormouse
yet
soon
another
talking

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Alice
Duchess
mustword
White Rabbit
Mock Turtle
Gryphon
Queen
thought Alice
little
Caterpillar
March Hare
Dormouse
King
Hatter
Mouse
Rabbit

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