The emotional arcs of stories are dominated by six basic shapes

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Advances in computing power, natural language processing, and digitization of text now make it possible to study our culture's evolution through its texts using a "big data" lens. Our ability to communicate relies in part upon a shared emotional experience, with stories often following distinct emotional trajectories, forming patterns that are meaningful to us. Here, by classifying the emotional arcs for a filtered subset of 1,767 stories from Project Gutenberg's fiction collection, we find a set of six core trajectories which form the building blocks of complex narratives. We strengthen our findings by separately applying optimization, linear decomposition, supervised learning, and unsupervised learning. For each of these six core emotional arcs, we examine the closest characteristic stories in publication today and find that particular emotional arcs enjoy greater success, as measured by downloads.

I. INTRODUCTION

The power of stories to transfer information and define our own existence has been shown time and again [1-5]. We are fundamentally driven to find and tell stories, likened to Pan Narrans or Homo Narrarius. Stories are encoded in art, language, and even in the mathematics of physics. We are constantly engaged with them, and three before concluding with a final resolution. While the plot captures the mechanics of a narrative and the structure encodes their delivery, in the present work we examine the emotional arc that is invoked through the words used. The emotional arc of a story does not give us direct information about the plot or the intended meaning of the story, but rather exists as part of the whole narrative. This distinction between the emotional arc...
Two text files:
1) Paragraphs
2) Chapter/Section Titles

```python
from textblob import TextBlob
from textblob.sentiments import NaiveBayesAnalyzer

def rate_sentiment(row):
    para = row['Paragraph']
    blob = TextBlob( para, analyzer=NaiveBayesAnalyzer() )
    ## Convert (0 1) range to (-1 +1)
    return 2*(blob.sentiment.p_pos - .5)

df['Sentiment'] = df.apply(rate_sentiment, axis=1)

from scipy import signal

# Size the window (20% works well)
rolling_x = int( df.shape[0] * .2 )

# Rolling sentiment sum
df['Rolling'] = df['Sentiment'].rolling( window = rolling_x, min_periods = 15, center=True).sum()

# Apply a Savitzky-Golay filter
df['Savgol_Rolling'] = signal.savgol_filter(df['Rolling'], (rolling_x * 2)+1, 2)

# Adjust line so that the mean is zero
zero_line = df['Rolling'].mean()
df['Rolling'] = df['Rolling'] - (zero_line)
df['Savgol_Rolling'] = df['Savgol_Rolling'] - (zero_line)
```
<table>
<thead>
<tr>
<th>Section</th>
<th>Chapter</th>
<th>Paragraph</th>
<th>Sentiment</th>
<th>Rolling</th>
<th>Savgol_Rolling</th>
<th>Word_Count</th>
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</thead>
<tbody>
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<td>0</td>
<td>PART 1: WHEN IT HAPPENS</td>
<td>ONE I shouldn’t have come to this party.</td>
<td>-0.26105985541152844</td>
<td>-25.465110496610808</td>
<td>22.451981414465124</td>
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<td>ONE I’m not even sure I belong at this party. That’s not on some bc.0.5603656886679865</td>
<td>-23.4126755567995952</td>
<td>-22.35155475269672</td>
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<td>ONE I squeeze through sweaty bodies and follow Kenya, her curls.0.9811657093104336</td>
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<td>-22.35134327666779</td>
<td>22.25134327666779</td>
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<td>PART 1: WHEN IT HAPPENS</td>
<td>ONE “Stop following me and go dance, Starr,” Kenya says. “People 0.152176145204111176</td>
<td>-22.55347085336024</td>
<td>-22.051265901204726</td>
<td>22.25134327666779</td>
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<tr>
<td>5</td>
<td>PART 1: WHEN IT HAPPENS</td>
<td>ONE “I didn’t know so many mind readers lived in Garden Heights.”0.47331696393293059</td>
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<td>22.35134327666779</td>
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</tr>
<tr>
<td>6</td>
<td>PART 1: WHEN IT HAPPENS</td>
<td>ONE “Hey, I’m just saying. You act like you don’t know nobody.”0.5541491035834593</td>
<td>-29.79767153738259</td>
<td>-21.85169426015526</td>
<td>22.35134327666779</td>
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<td>ONE I’ve been hearing that for six years, ever since my parents put 0.45645658941917611</td>
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<td>22.35134327666779</td>
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<td>8</td>
<td>PART 1: WHEN IT HAPPENS</td>
<td>ONE “And it wouldn’t kill you to not dress like . . .” She turns up her.0.7735332972045913</td>
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<td>9</td>
<td>PART 1: WHEN IT HAPPENS</td>
<td>ONE Our brother’s hoodie. Kenya and I share an older brother, Sen 0.2179643867221883</td>
<td>-26.6261680723631592</td>
<td>-21.553036827534463</td>
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</tbody>
</table>

**The Hate U Give – Angie Thomas (2017)**
The Hate U Give – Angie Thomas (2017)
Wattpad, the Storytelling App, Will Launch a Publishing Division

By Concepción de León

Jan. 24, 2019

Wattpad CEO and co-founder Allen Lau. Chris Young for The New York Times
Thank You!

BOULDER BOOK CLUB FOR WRITERS
1ST WEDNESDAYS AT 6 P.M.

2019

- January 2: Exit West – Mohsin Hamid (2017) @ Main Boulder Library
- February 10: The Female Persuasion – Meg Wolitzer (2018) @ Main Boulder Library
- March 4: Kudos – Rachel Cusk (2018) @ Main Boulder Library
- April 3: There There – Tommy Orange (2018) @ Main Boulder Library

2018

- August 1: The Hate U Give – Angie Thomas (2017) @ Boulder Book Store
- September 5: Less – Andrew Sean Greer (2017) @ Boulder Book Store
- October 3: Mrs. Fletcher – Tom Perotta (2017) @ Boulder Book Store
- November 7: Origin – Dan Brown (2017) @ Boulder Book Store
- December 5: Asymmetry – Lisa Halliday (2018) @ Colorado Building

http://GaryAlanMcBride.com