Word2Vec

Tiffany Ahn
Table of contents

01 — Word Embeddings
02 — Continuous Bag of Words
03 — Skip-gram
04 — Next-word Prediction example
Word Embeddings
Openness to experience  
--- 79 out of 100

Agreeableness  
------------- 75 out of 100

Conscientiousness  
----------------- 42 out of 100

Negative emotionality  
--------------------- 50 out of 100

Extraversion  
-------------- 58 out of 100

\[
\theta = \arccos\left(\frac{x \cdot y}{|x| |y|}\right)
\]
```
[ 0.50451, 0.68607, -0.59517, -0.022801, 0.60046, -0.13498, -0.08813
, 0.47377, -0.61798, -0.31012, -0.076666, 1.493, -0.034189, -0.98173
, 0.68229, 0.81722, -0.51874, -0.31503, -0.55809, 0.66421, 0.1961
, -0.13495, -0.11476, -0.30344, 0.41177, -2.223, -1.0756, -1.0783
, -0.34354, 0.33505, 1.9927, -0.04234, -0.64319, 0.71125, 0.49159
, 0.16754, 0.34344, -0.25663, -0.8523, 0.1661, 0.40102, 1.1685
, -1.0137, -0.21585, -0.15155, 0.78321, -0.91241, -1.6106, -0.64426
, -0.51042 ]
```

**“king”**

```
```

**“Man”**

```
```

**“Woman”**

```
```
king - man + woman \sim queen
Training method 1: Continuous Bag of Words
A large language model (LLM) is a type of language model notable for its ability to achieve general-purpose language understanding and generation.

<table>
<thead>
<tr>
<th>Input 1</th>
<th>Input 2</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>large</td>
<td>language</td>
</tr>
<tr>
<td>large</td>
<td>language</td>
<td>model</td>
</tr>
<tr>
<td>language</td>
<td>model</td>
<td>(LLM)</td>
</tr>
</tbody>
</table>
Training method 2: Skip-Gram model
A large language model (LLM) is a type of language model notable for its ability to achieve general-purpose language understanding and generation.
<table>
<thead>
<tr>
<th></th>
<th>target</th>
<th></th>
<th>prediction</th>
<th></th>
<th>error</th>
</tr>
</thead>
<tbody>
<tr>
<td>am</td>
<td>0</td>
<td></td>
<td>am</td>
<td>0.5</td>
<td>-0.5</td>
</tr>
<tr>
<td>was</td>
<td>0</td>
<td></td>
<td>was</td>
<td>0.1</td>
<td>-0.1</td>
</tr>
<tr>
<td>will</td>
<td>0</td>
<td></td>
<td>will</td>
<td>0.2</td>
<td>-0.2</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td></td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>play</td>
<td>0.01</td>
<td></td>
<td>play</td>
<td>0.01</td>
<td>0</td>
</tr>
<tr>
<td>write</td>
<td>0</td>
<td></td>
<td>write</td>
<td>0.02</td>
<td>-0.02</td>
</tr>
</tbody>
</table>
04  →  Next word prediction
so, are you guys still going?
Thank you!
Any questions?