

# NimbleBot

Terone & Thumb

Growth Session #27 - August 22-23 2019

### Intro - NimbleBot

- Gives accessibility to newcomers and veterans alike to our knowledge base.
- Allows us to improve our understanding with machine learning.
- We're trying out a new approach on application of machine learning.
- Commonly used in images and raw number data, however, we're testing same principles with text.

#### Goals

- Analyze methods of preprocessing text to vectors suitable for machine learning.
  - Mapping Questions to Answers.
  - Converting text to multi-dimensional arrays.
- Building the chatbot and integrating to Slack.

# **Achievement and Progress**

- Tokenized our corpus and stemmed the data.
- Encoded our labels with indexing to the topic.
- Associated our encoded labels with our multidimensional array.

# The equation of ...

$$egin{align} (fst g_N)[n] &= \sum_{m=0}^{N-1} f[m]g_N[n-m] \ &= \sum_{m=0}^n f[m]g[n-m] + \sum_{m=n+1}^{N-1} f[m]g[N+n-m] \ &= \sum_{m=0}^{N-1} f[m]g[(n-m)_{mod}] riangleq (fst_N g)[n] \ \end{aligned}$$

## **Tokenization**

'Don't see the play because I haven't seen the play'



['do', 'n't', 'see', 'the', 'play', 'because', 'i', 'have', 'n't', 'seen', 'the', 'play']



[10, 3, 29, 8, 51, 16, 7, 5, 3, 23, 8, 51]

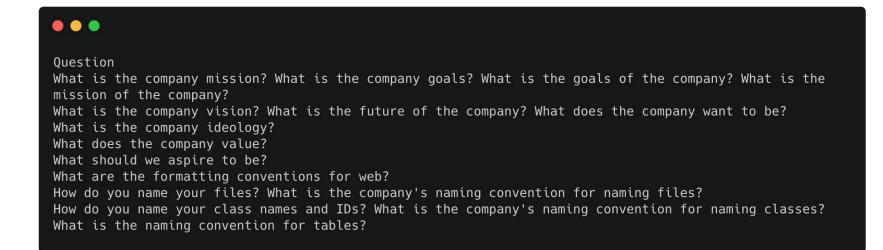
### **Tokenization**

```
V<sub>th</sub> value
V = Vocabulary size
      = [1,0,0,0,0,...,0]
 the
 a = [0, 1, 0, 0, 0, ..., 0]
 he = [0,0,1,0,0,...,0]
she = [0,0,0,1,0,...,0]
      = [0,0,0,0,1,...,0]
 go
word V = [0, 0, 0, 0, 0, ..., 1]
```

## **Array Mapping**

```
Numo::Int32#shape=[10]
[6, 4, 5, 3, 8, 7, 9, 0, 1, 2]
["Topic", "Company Ideology Mission", "Company Ideology Vision", "Company Ideology", "Values Core-Values", "Values Aspirational-Values", "Zode Conventions Formatting", "Code Conventions Naming-Files", "Code Conventions Naming-ID-Class-Names", "Code Conventions Tables"]
```

## **Array Mapping**



## **Array Mapping**

```
{\text{"goal"}=>0, "mission"}=>1, "vision?"=>2, "goals?"=>3, "company?"=>4, "futur"=>5, "want"=>6, "be?"=>7,
"ideology?"=>8, "value?"=>9, "aspir"=>10, "format"=>11, "convent"=>12, "web?"=>13, "files?"=>14,
"company"=>15, "class=>16, "ids?"=>17, "classes?"=>18, "guestion"=>19, "tables?"=>20, "compani"=>21,
"mission?"=>22}
Numo::Int32#shape=[10,23]
[0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0],
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0],
[0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0],
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0],
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 2, 1, 0, 0, 0, 0, 0, 0, 0],
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 1, 1, 1, 1, 0, 0, 0, 0],
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0]
```

Stay tuned!

# Thanks!

#### **Contact Nimble**

nimblehq.co hello@nimblehq.co

#### Bangkok

399 Interchange 21 Sukhumvit Road, Unit #2402-03, Klong Toei, Wattana, Bangkok 10110, Thailand

#### Singapore

28C Stanley St, Singapore 068737

#### **Hong Kong**

20th Floor, Central Tower28 Queen's Road, Central, Hong Kong

