Natural Language Processing in the Post Covid-19 World

First Annual Transform4Europe PhD conference

Sofia, 9 December 2021

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Universitat d'Alacant
Universidad de Alicante

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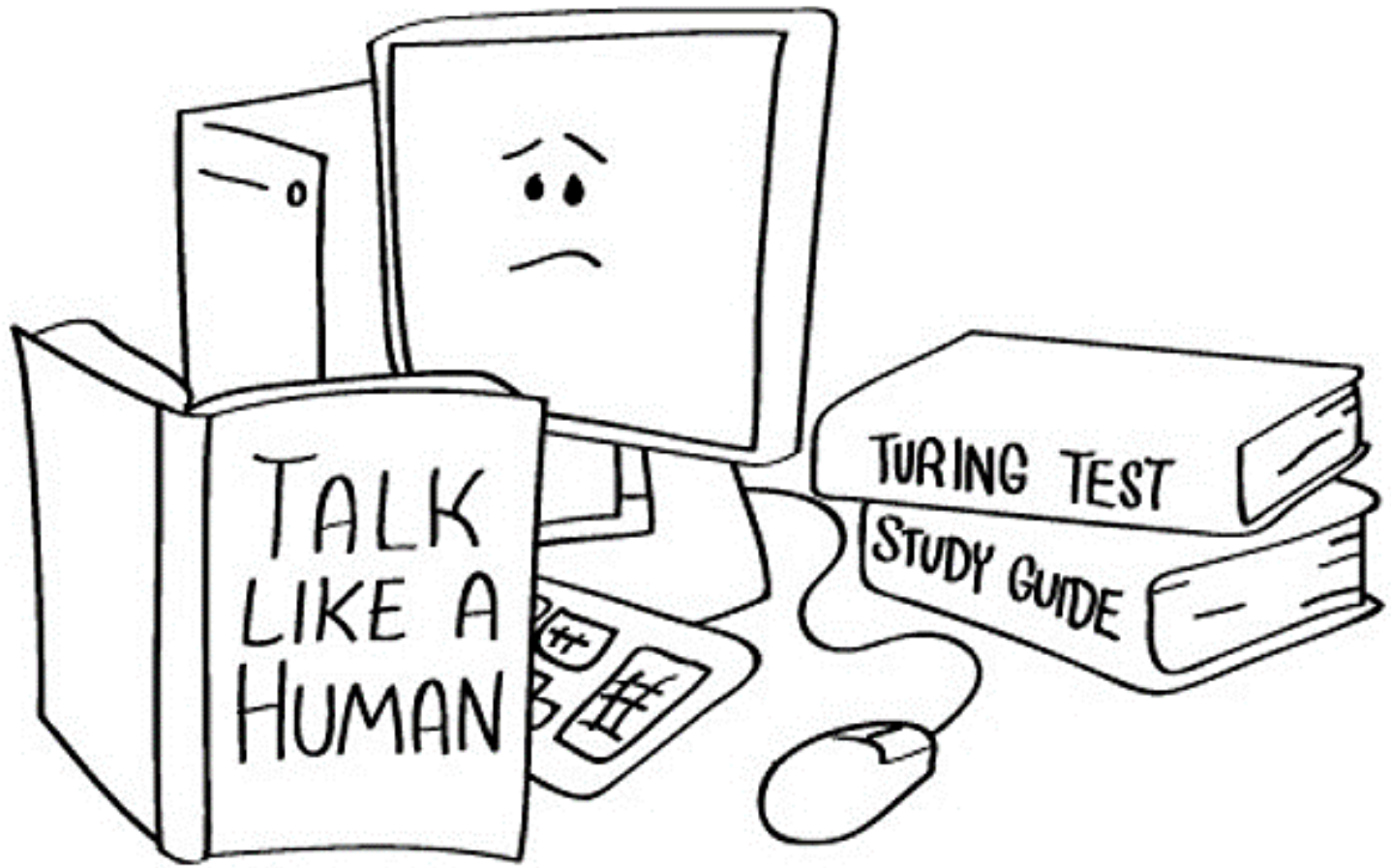
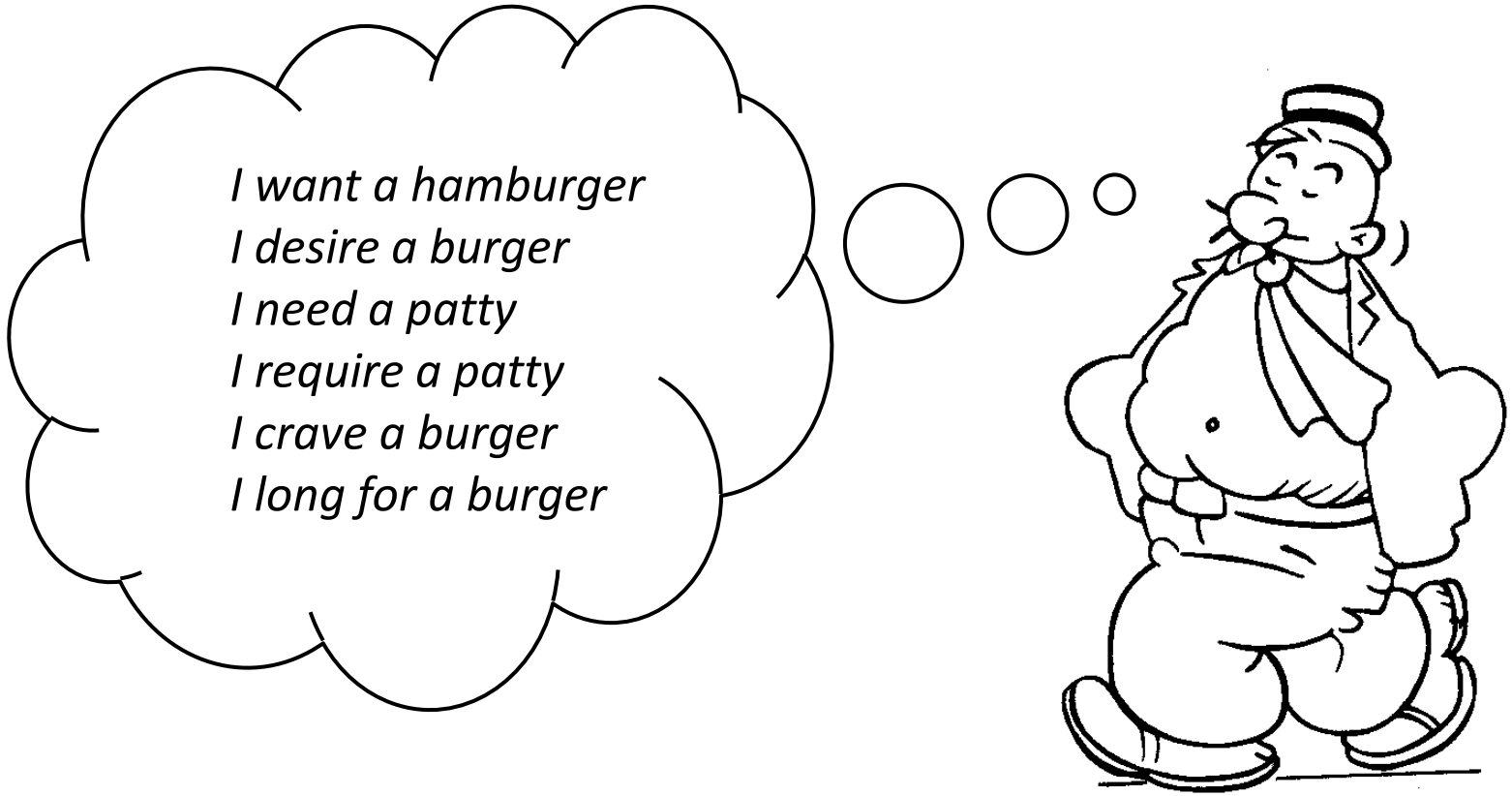
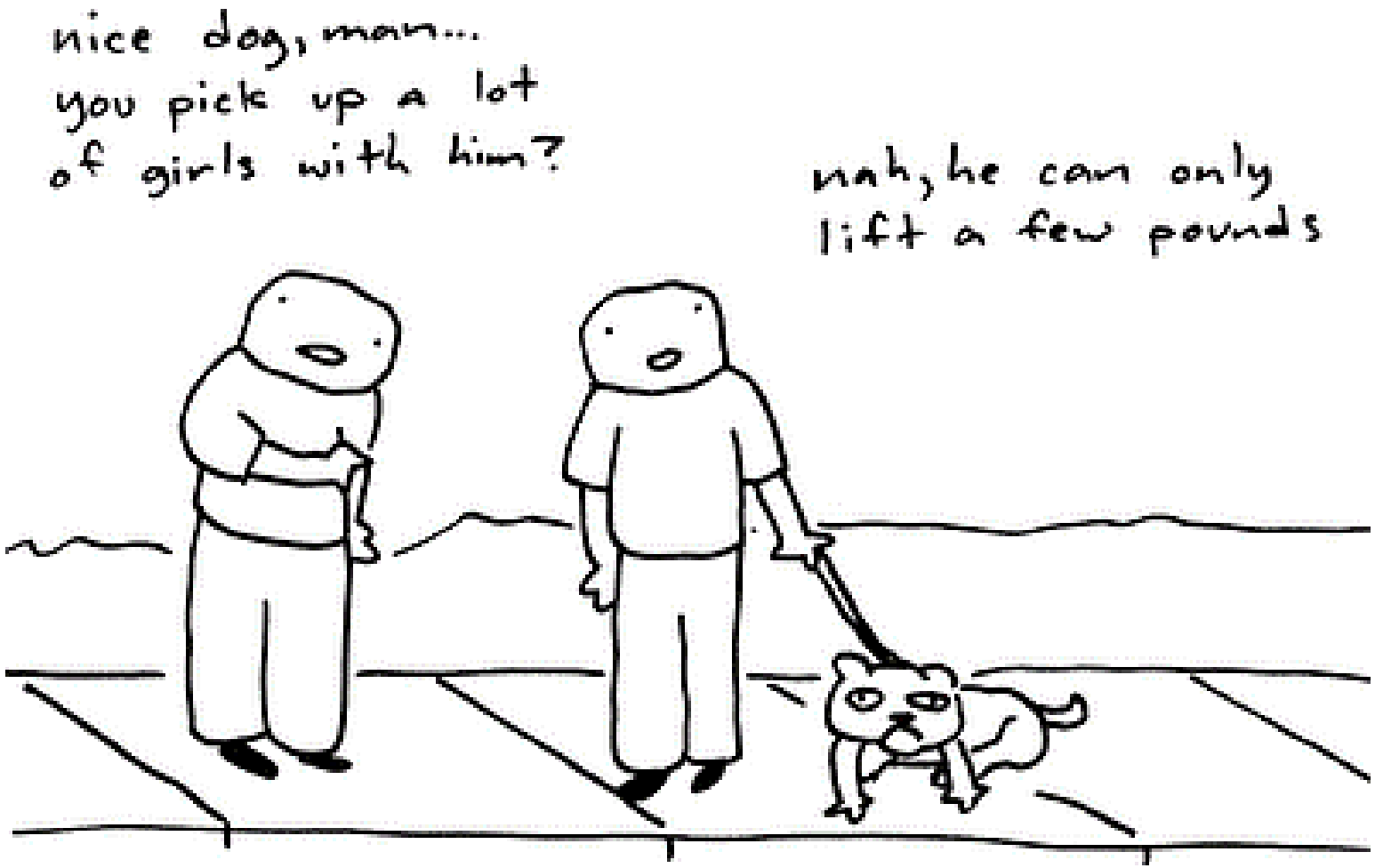
TRANSFORM 4EUROPE


TALK
LIKE A
HUMAN
TURING TEST
STUDY GUIDE

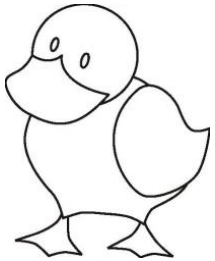
The problem of **synonymy**



The problem of **polysemy**

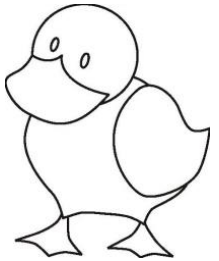


Find at least 5 meanings of the sentence *I made her duck*



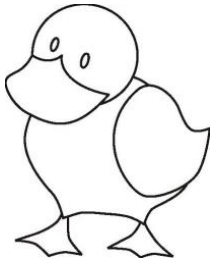
Find at least 5 meanings of the sentence *I made her duck*

- *I cooked duck for her benefit (to eat)*



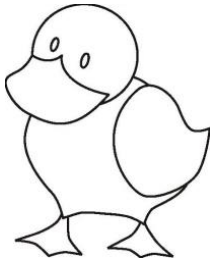
Find at least 5 meanings of the sentence *I made her duck*

- *I cooked duck for her benefit (to eat)*
- *I cooked duck belonging to her*



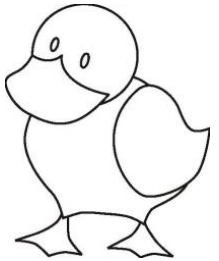
Find at least 5 meanings of the sentence *I made her duck*

- *I cooked duck for her benefit (to eat)*
- *I cooked duck belonging to her*
- *I created the (plaster?) duck she owns*



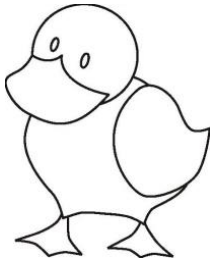
Find at least 5 meanings of the sentence *I made her duck*

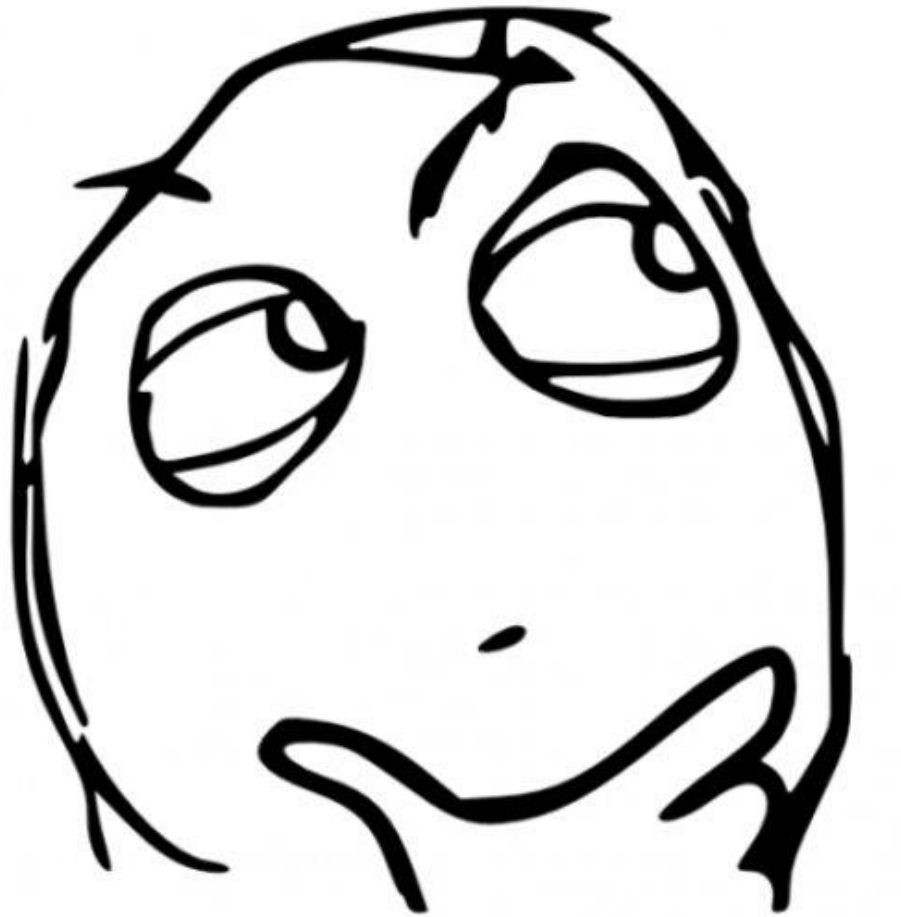
- *I cooked duck for her benefit (to eat)*
- *I cooked duck belonging to her*
- *I created the (plaster?) duck she owns*
- *I caused her to quickly lower her head or body*



Find at least 5 meanings of the sentence *I made her duck*

- *I cooked duck for her benefit (to eat)*
- *I cooked duck belonging to her*
- *I created the (plaster?) duck she owns*
- *I caused her to quickly lower her head or body*
- *I waved my magic wand and turned her into duck*





Natural Language Processing to the rescue!

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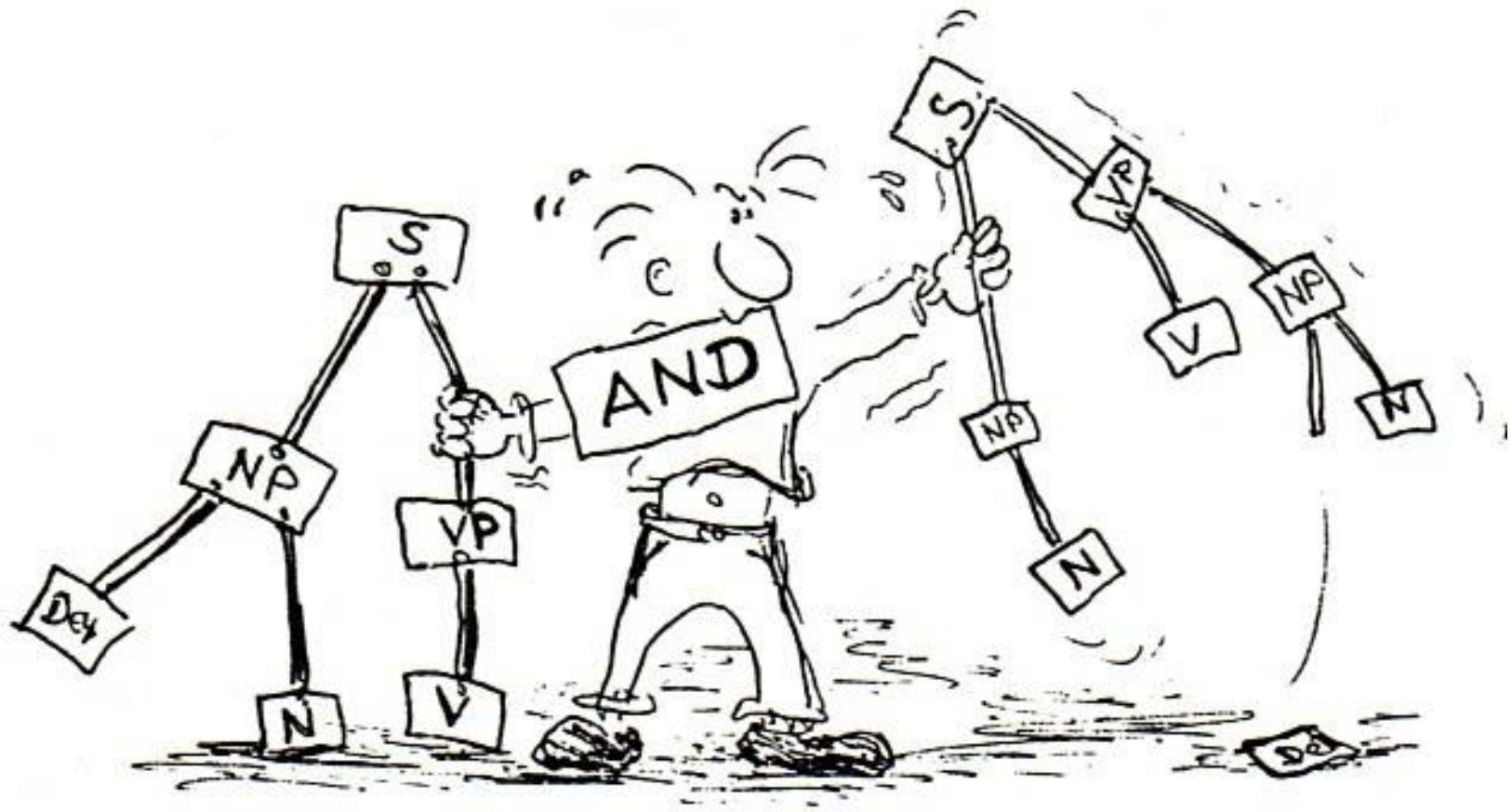
Linguistic approach

Statistical approach

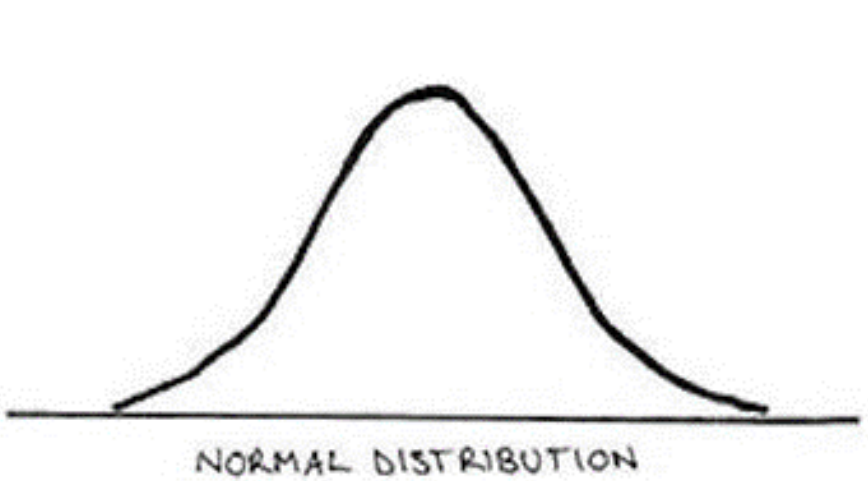
The **linguistic** approach

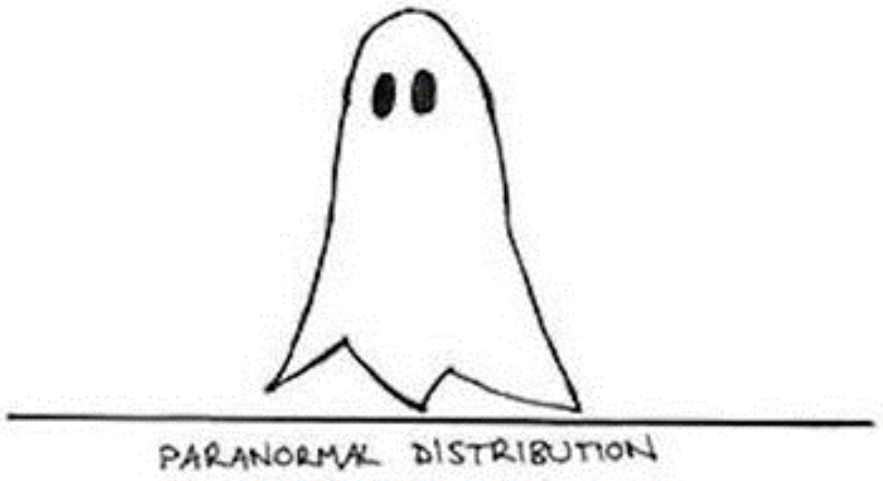


The grand jury commented on a number of other topics.

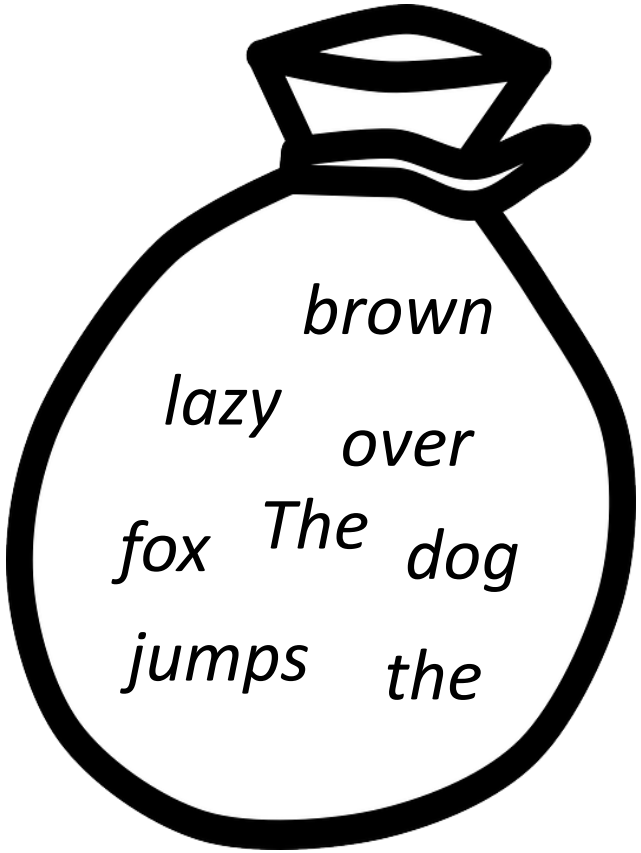

```
The the DT 1
grand grand JJ 0.832524
jury jury NN 1
commented comment VBD 0.954545
on on IN 0.971769
a 1 Z 0.99998
number number NN 0.998704
of of IN 0.999898
other other JJ 0.632399
topics topic NNS 1
. . Fp 1
```

The **statistical** approach





The brown fox jumps over the lazy dog



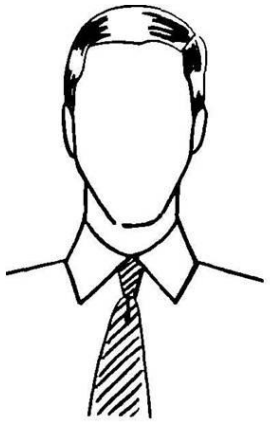
zurpojo

zurpojo

*A bottle of **zurpojo** is on the table.*
*Everyone likes **zurpojo**.*
***Zurpojo** makes you drunk.*
*We make **zurpojo** out of corn.*

The **distributional hypothesis**

Words that occur in the same contexts tend to have similar meanings



Zellig Harris (1954)

So… **statistics** or **linguistics**?

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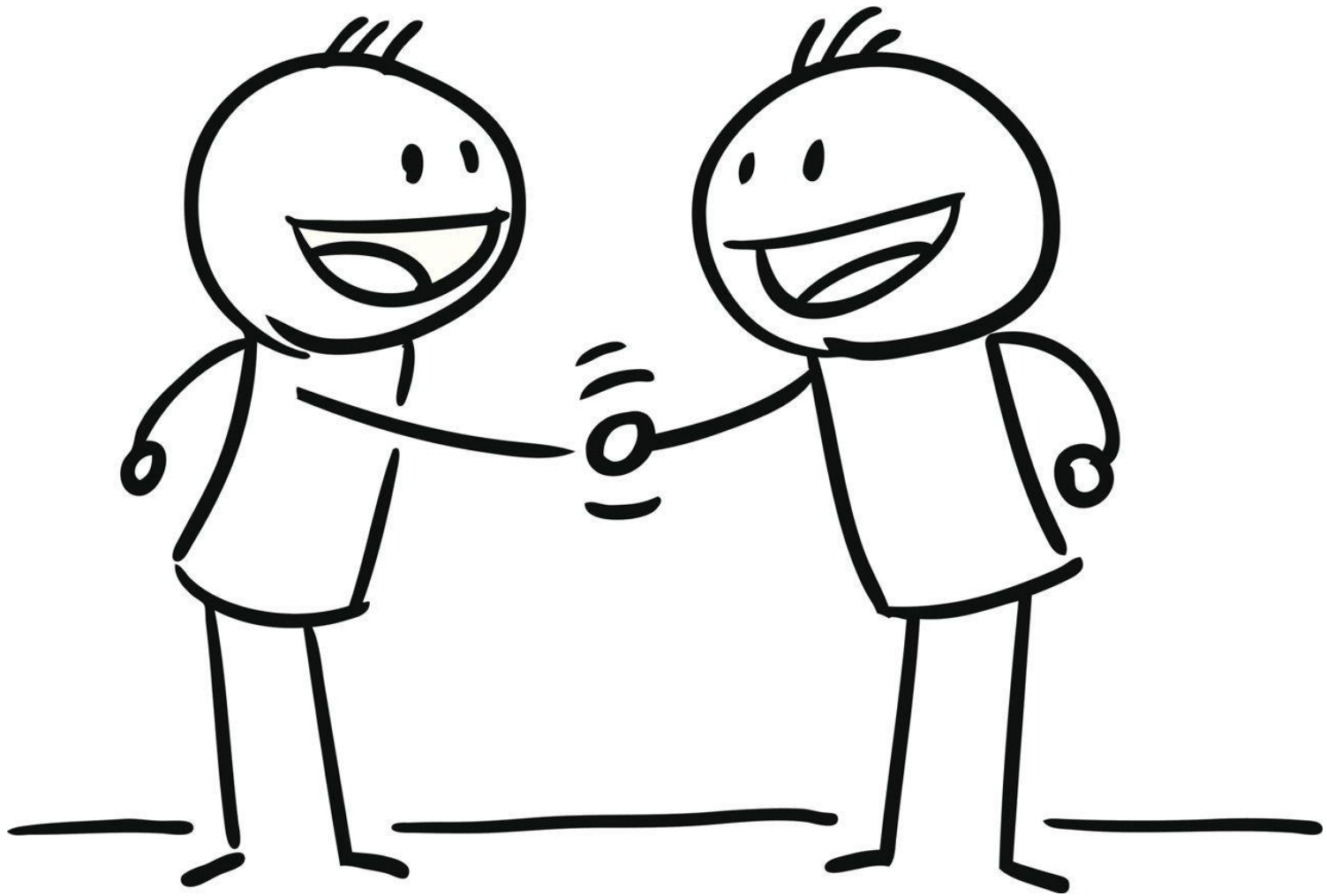
Whenever I fire a linguist our system performance improves

Frederick Jelinek (1988)

So… **statistics** or **linguistics**?

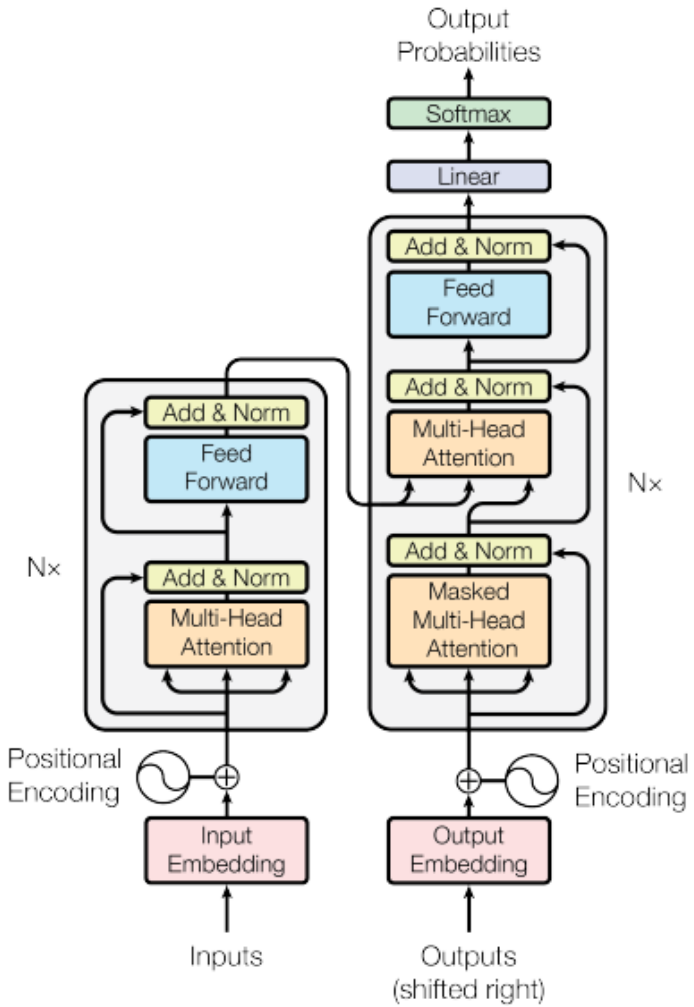
Some of my best friends are linguists

Frederick Jelinek (2004)

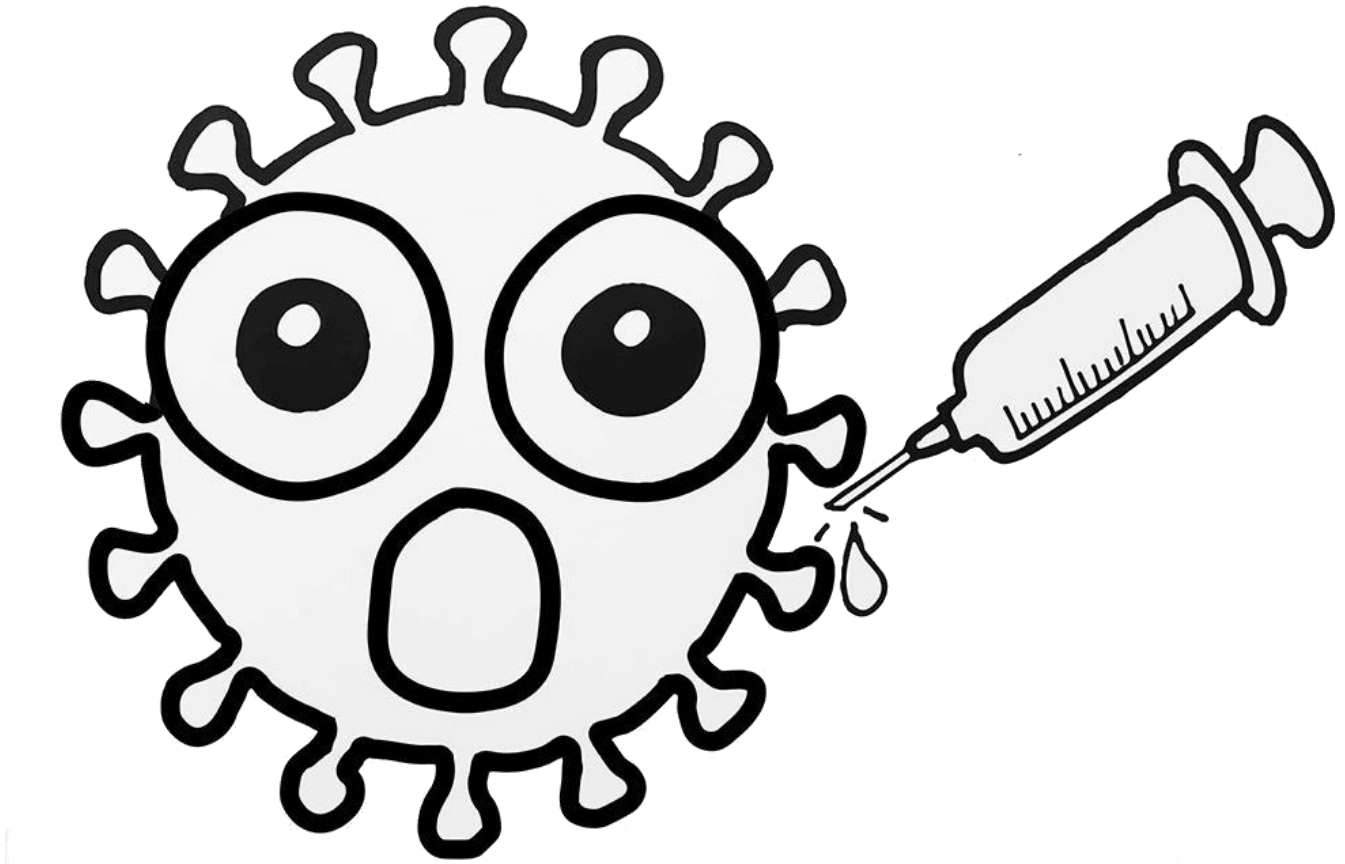


And then they arrived… **Transformers**!

And then they arrived… **Transformers**!



Applications of NLP for COVID-19



Assist with **healthcare** and **rehabilitation**

Monitoring **social media**

Scientific papers mining

Let’s practice!

https://bit.ly/transform4europe

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