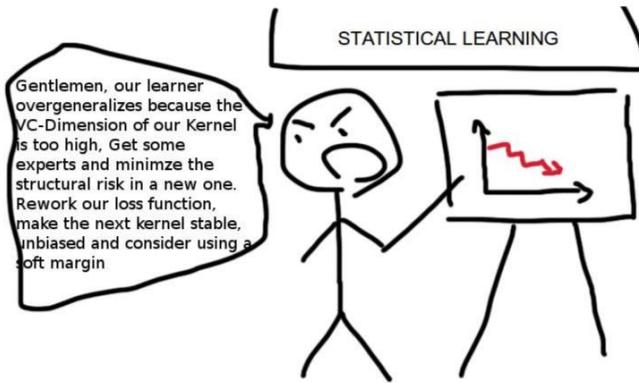
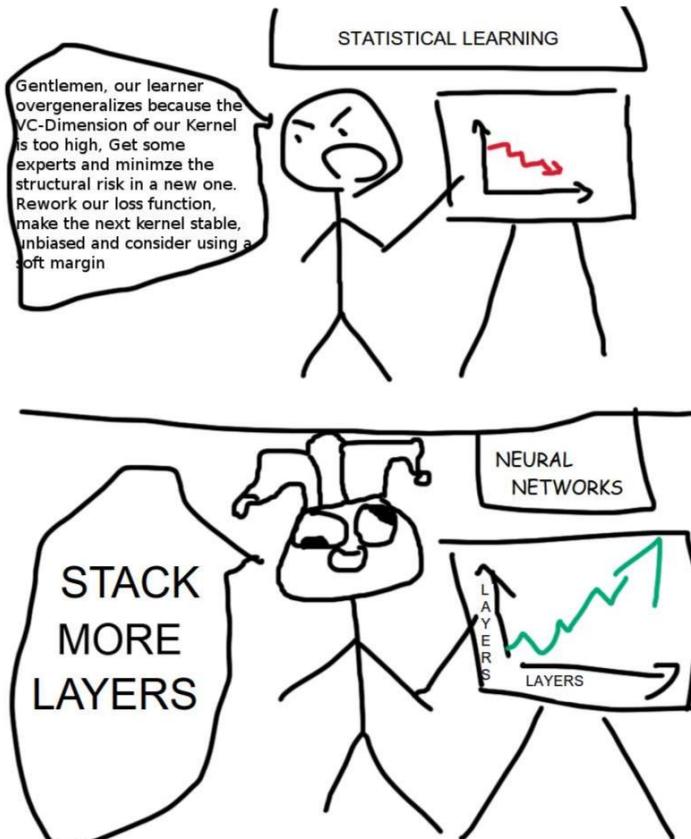


Motivation: how do we make models better?



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[Reddit; source unknown]

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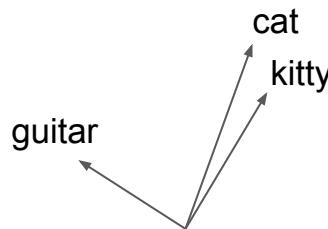
[Reddit; source unknown]



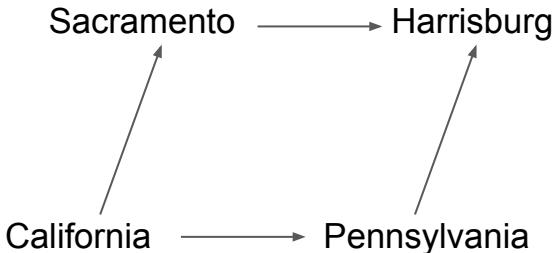
What we've seen: simple analyses of word2vec

Bold type: Math property

Italic type: interpretation



We interpret **cosine similarity**
as *semantic similarity*

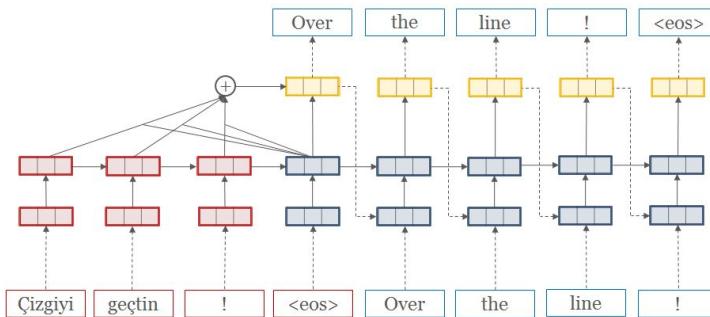


Some *relationships* are encoded
as **vector differences**

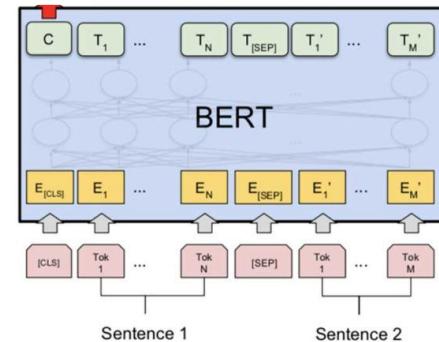
Knowing what *properties* word embeddings have: useful for practitioners!
Knowing that word embeddings encode *undesirable social biases*: useful
for everyone!

Neural networks are worthy subjects of study

Machine Translation



Language Modeling



Question Answering

The first recorded travels by Europeans to China and back date from this time. The most famous traveler of the period was the Venetian Marco Polo, whose account of his trip to "Cambaluc," the capital of the Great Khan, and of life there astounded the people of Europe. The account of his travels, *Il milone* (or, *The Million*, known in English as the *Travels of Marco Polo*), appeared about the year 1299. Some argue over the accuracy of Marco Polo's accounts due to the lack of mentioning the Great Wall of China, tea houses, which would have been a prominent sight since Europeans had yet to adopt a tea culture, as well the practice of foot binding by the women in capital of the Great Khan. Some suggest that Marco Polo acquired much of his knowledge **through contact with Persian traders** since many of the places he named were in Persian.

How did some suspect that Polo learned about China instead of by actually visiting it?

Answer: **through contact with Persian traders**

It's wild that any of our models work at all

- Their behavior is an emergent property of *data* and our *design decisions*
- Accuracy on a held out test set is not sufficient to fully characterize them