

Interacting with Generative AI Models

Hands-on: **Introducing ChatGPT**

How does the Model understand text?

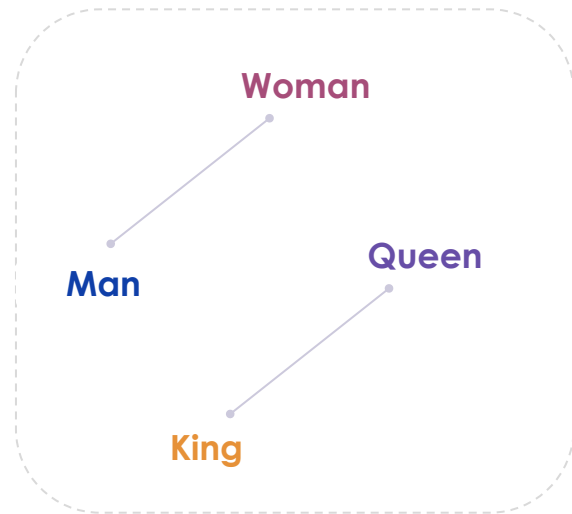
Is there a numeric way to represent association between text or words?

Word embeddings = semantic + syntactic relations in a vector space

similarity+ rules = meaning

Let's try to understand vector space

	Living Being	Human	Gender	Royalty
Man	0.8	0.8	0.8	- 0.7
Woman	0.9	0.9	- 0.9	- 0.8
King	0.8	0.7	0.7	0.7
Queen	0.7	0.8	- 0.8	0.8



King - Man = Woman ? This is not meant for personal use by michael.neumann@secondfront.com only.

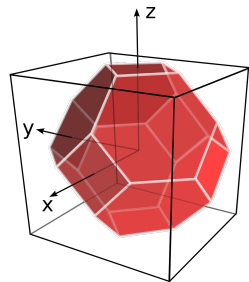
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How does it complete text?

The robot must obey instructions given to _____



Learning from the large set of documents, the model has understood that when the word **robot** is referred to again in a sentence, words like “**it**” / “**its**” are most likely to be the completion word.



It memorized this association by knowing they are close to each other in some vector dimension that associates pronouns with words.

The robot must obey instructions given to it

The robot must obey instructions given to its control system or programming

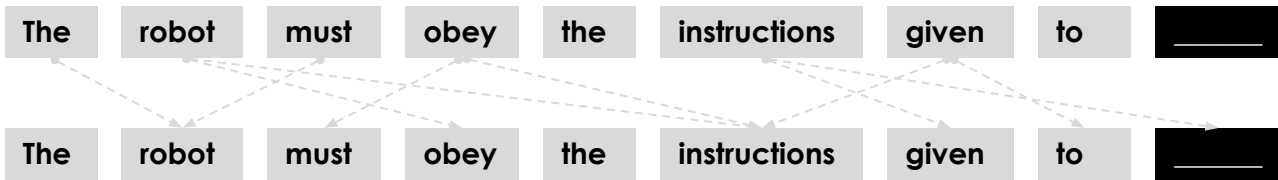
The robot must obey instructions given to its designated operator or user

How does it predict the next word?

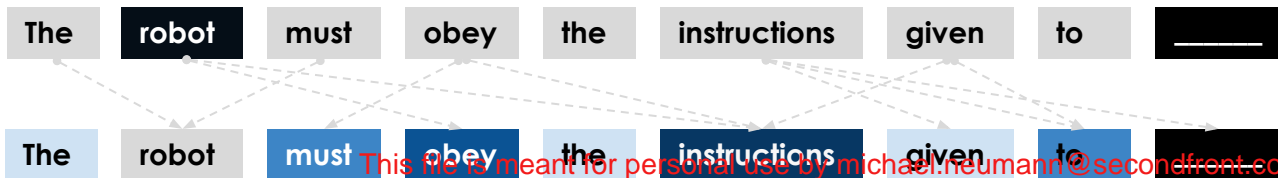
- **Step-1: Word Embeddings** - Break the sentence into words and convert them to embeddings

The robot must obey the instructions given to _____

- **Step-2: Find connections** - Understand which word is related to which word more



- **Step-3: Giving importance/attention**: Each word is assigned a score based on how important it is to other words in the sentence



How does it predict the next word?

- **Step-4: Assigning Weights** - This is for "robot" - but step-3 and 4 will be repeated for all words

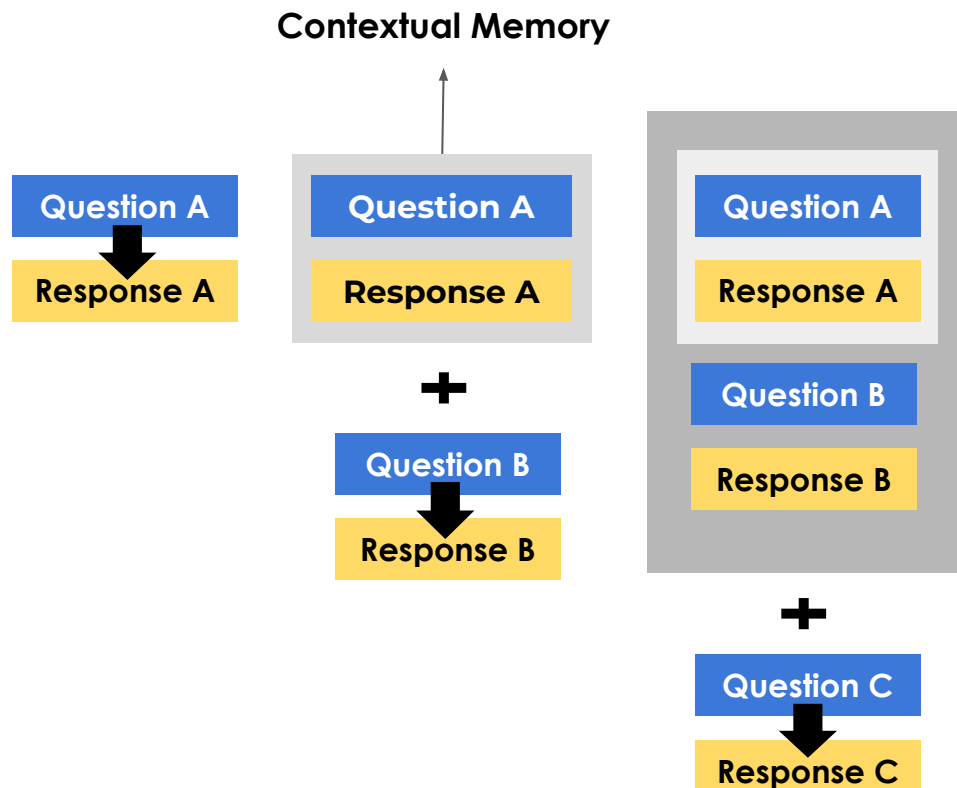
The	robot	must	obey	the	instructions	given	to	_____
0.2	-	0.6	0.7	0.2	0.8	0.3	0.7	-----> Weights

- **Step-5: Find Relevance** - To complete the sentence, which are the words to consider

The	robot	must	obey	the	instructions	given	to	it	it	0.9
0.2	0.9	0.2	0.7	0.2	0.8	0.3	0.2		its	0.8
									itself	0.85
									robot	0.5

- **Step-6: Predict** - Get the next possible words with their probabilities and fill in or do the "chat completion" with the one that has the highest probability

How is it able to remember conversations?



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