

Basics of Natural Language Processing

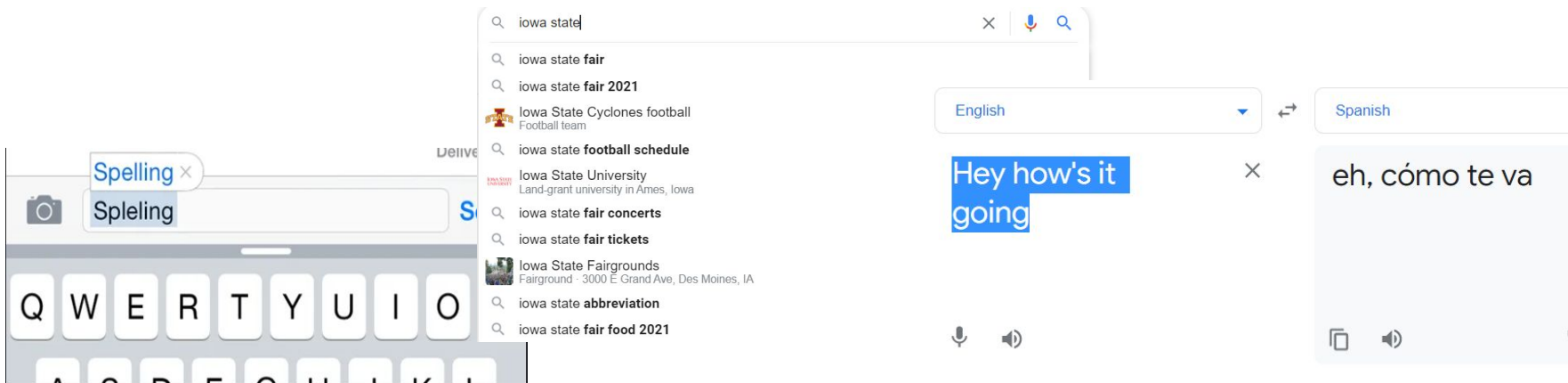
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What is Natural Language Processing (NLP)

- NLP is a subfield of Artificial Intelligence that focuses on programming computers to interpret natural human language
- Examples of NLP include things like auto-correct, predictive google search results, language translation and more





Why Use NLP?

- Natural Language Processing provides much more than just an autofill on a Google search or a spell check in a text message, both of which are very convenient and helpful.
- NLP enables companies to use chatbots as a first line of customer support which, according to a VentureBeat research study, will save companies an average of 8 billion dollars per year by 2022
- Money is not the only reason heavy research is being done around this topic, there has been healthcare research that suggests that NLP can predict septic shock before it happens, airlines are using it to predict maintenance needs, etc.



Python Natural Language ToolKit (NLTK)

- This toolkit is used to build Python-based programs that work with human language data
- NLTK comes with libraries consisting of some of the most common algorithms such as **tokenization**, **part-of-speech tagging**, stemming, sentiment analysis, topic segmentation and named entity recognition.





Part of Speech (POS) Tagging and Tokenization

- POS tagging is the process where words in a text are categorized in correspondence with a particular part of speech

Why	not	tell	someone	?
adverb	adverb	verb	noun	punctuation mark, sentence closer

- Tokenization is the process a way of separating a piece of text into smaller units called tokens and those are used for deep learning models
- Word Tokenization: I-go-to-Iowa-State
- Character Tokenization: I-o-w-a
- Subword Tokenization: Studi-ous



Example

I saw a man on a hill with a telescope.

- There is a man on the hill, and I watched him with my telescope
- There is a man on the hill, and he has a telescope
- I am on a hill, and I saw a man using my telescope
- I am on a hill, and I saw a man who has a telescope