

Natural Language Processing

Kurius Learnathon 22

By: Nicolas Palmar



About Me

- 2nd year systems design engineering student at UWaterloo.
- Currently working as a robotics software developer intern at Trexo Robotics.
- Previously worked as a machine learning engineering intern at Perkin Elmer.
- Previously worked with a professor at UWaterloo on sea ice identification using deep learning .
- Learned machine learning and deep learning through Kaggle and Fast.ai (more on this at the end).
- I was in your place once too! If you are passionate, you will learn.
- Random stuff: Love to run and rock climb, Colombian (yes I like coffee and soccer).

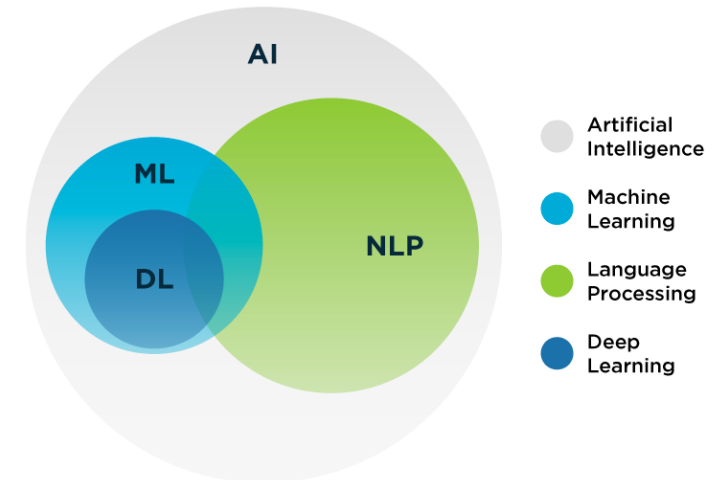
Big Question: What is NLP?



What is NLP?

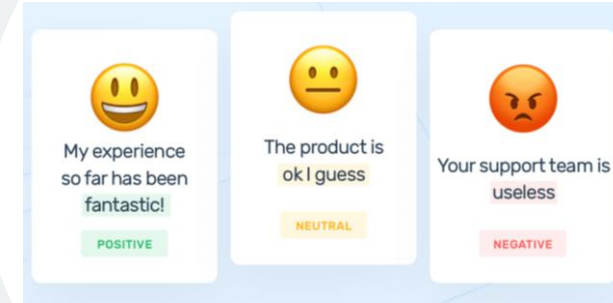
- AI is the science and engineering of making intelligent machines, often times combining computer science and data [1].
- NLP is the branch of AI that gives the computers the capacity to understand, interpret and manipulate human language [2].
- Main idea: Human language is complicated – there are many ways of saying things with the same meaning in a different manner. This is where data based systems excel over rule based systems.

- Pictures are [3] and [4].



Common NLP Tasks

- Speech recognition: Converting human voice to text [5].
- Named entity recognition: Identifying particular words in text (finding chemical names in text) [5].
- Sentiment analysis: Extracting subjective qualities from text (positive vs negative reviews) [5].
- Document summarization: Condensing large amounts of text into a small summary [2].
- Machine translation: Translate from one language to another [2].
- Natural language generation: Creating structured text (more on this later).
- Picture are sources [6] and [7].



"There was nothing about this storm that was as expected," said **Jeff Masters**, a meteorologist and founder of **Weather Underground**. "**Irma** could have been so much worse. If it had traveled 20 miles north of the coast of **Cuba**, you'd have been looking at a (Category) 5 instead of a (Category) 3."

Person

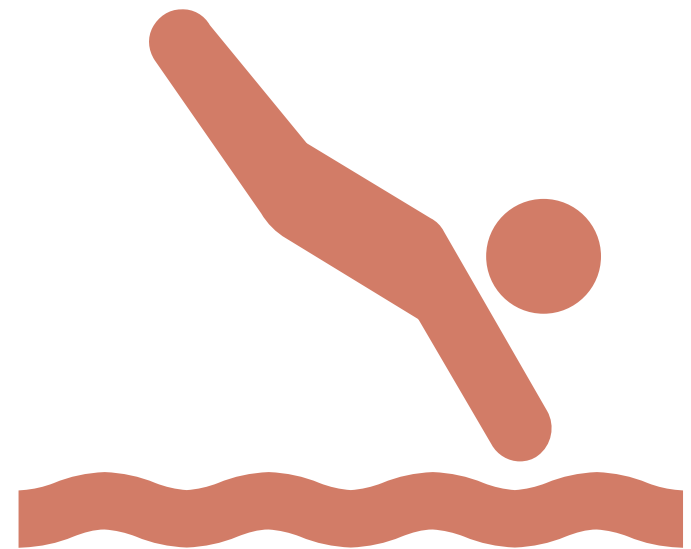
Organization

Location

What will you learn today?

- Create lyrics for a specific artist. What type of NLP task is this an example of?
- Setup:
 - 1. Running a Jupyter notebook with a GPU (Google Colab).
 - 2. Loading csv data into Google Colab.
- Clean data, train model, make some music!

Let's dive in!



References

- [1] <https://www.ibm.com/cloud/learn/what-is-artificial-intelligence>
- [2] https://www.sas.com/en_ca/insights/analytics/what-is-natural-language-processing-nlp.html
- [3] <https://7wdata.be/article-general/natural-language-processing-taking-your-business-to-the-next-level/>
- [4] <https://www.englishlessonviaskype.com/12-other-ways-to-say-its-hot-in-english/>
- [5] <https://www.ibm.com/cloud/learn/natural-language-processing>
- [6] <https://monkeylearn.com/sentiment-analysis/>
- [7] <https://opendatascience.com/named-entity-recognition-milestone-models-papers-and-technologies/>