# Chat-GPT : Generative Pre-trained Transformer

# WTF is Chat-GPT

On the bench one of the things I’ve been doing is working towards a Spark NLP certification, and there’s been a lot of hype around Chat-GPT lately, so I wanted to give some insight into what NLP is in general so that if clients are asking about how to use similar kinds of technology we have an idea of what kind of solutions are possible in this space.

# Example

For those who don’t know, Chat-GPT is a chat bot, but not like one of those annoying chat bots that are just in the way of you talking with a real person customer service representative. It can answer questions about a wide range of topics, and even write/debug code! I recommend playing around with it some.

Here is an example, where I asked it to create a resume for a data scientist. It gave me this resume for a very qualified data scientist, with placeholders for company names and dates and everything.

There’s a lot going on here:

* Must understand what I’m asking
* Must know information about what skills and experience a data scientist needs
* Much know the structure of a good resume

Must know how to put all of that information together in a way that makes sense in the English language

# NLP Breakdown

What is actually happening in the background here?

Chat-GPT is built using NLP, which is short for Natural Language Processing, which is a subset of AI. To understand this better we’re going to further break down NLP into two of its own subset, Natural language Understanding and Natural Language Generation and see some of what is involved in each of these subsets and how it all comes together to make Chat-GPT possible.

# NLU

One of those subsets is Natural Language Understanding, abbreviated NLU. This area of NLP focuses on determining what a body of text means. So its taking unstructured human language, systematically turning it into structured data, and then interpreting the meaning. There are a lot of steps that go into it, but here are some examples.

First we have to even figure out what parts of the string are words and sentences. It would need to know that there are lot’s of different usages for a period other than ending a sentence, and that contractions are actually two words, things like that.

Once we have words and sentences it then needs to figure out what parts of grammar each word is and the relationships between the words, like what is the subject that is doing this verb, that kind of thing.

Finally it needs to start assigning some meaning to those words. It needs to know that in context Apple is an organization not a fruit, or that we meant resume in our original question instead of resume.

And each of these steps is actually its own ML model doing the work.

# NLU Common Applications

# NLG

The other subset of NLP is Natural language Generation or NGU. This is like the opposite of NLU, it take structured data and turns it back into human-readable text.

For instance this could be a ML bot that generates tweets for a weather company. It looks at the structured weather data in the database, charts that data and automatically pulls out some trends, relates those trends to phrases about the weather, and then organizes those phrases in a way that flows like human language.

So this includes figuring out the information itself, then the grammar it wants to assign to that data, and then finally the structure of the output. Just like for our original example it needed to not just know about what makes a good data scientist but also how to structure it as a resume and have it make grammatical sense.

# NLG Common Applications

# NLP Equation

# Thanks!