Review: Large Language Models

The *Language Modeling* task is to extend a sequence of words with the likely *next* word.

$$p(\mathbf{y}_{(t)} \mid \mathbf{y}_{(1:t-1)})$$

This process can be repeated, resulting in the generation of complete stories from a short "seed" of a few words.

Language Models are the basis for a great deal of the current revolution in Generative AI.

Language Models: the future (present ?) of NLP ?

The Language Model objective is a simple NLP training objective.

However, it seems to result in models that have the ability to easily adapt to solve *other* objectives.

This leads to a new paradigm called *Pre-training + Fine-Tuning*

- train a large model, on lots of data, using the Language Model objective
- Fine-tune this model on a small number of examples from a new Target Task

Let's learn about this objective and some of the models that have been trained using it.

- Language Models (NLP_Language_Models.ipynb)
- Large Language Models (NLP_Large_Language_Models.ipynb)

Universal API/In-context Learning

Rather than having one model for every task:

- Is it possible to create a *single model* to solve every task ?

Text to text is a "Universal API" Universal API (LLM_Universal_API.ipynb)

In addition to a Large Language Model easily adapting to a new task via Fine-Tuning

- LLM's seem to have the ability to solve new Target tasks
- *without* further training (Fine-Tuning)
- just by being show instances of examples for the new task *at inference time*

This is called *In-Context Learning*.

- In-Context Learning (In_Context_Learning.ipynb)

Beyond the LLM

- PreTrain_Prompt_Predict (NLP_Beyond_LLM.ipynb)
- From LLM to Bing Search (From_GPT_to_BingSearch.ipynb)

In [2]:
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print("Done")
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Done
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