Latent Semantic Indexing

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Context

You want to read through all the feedback to know their topics

Question

How can you do so quickly?

Answer

You can apply Latent Semantic Indexing on all the feedback

Latent Semantic Indexing (LSI)

It is an unsupervised machine learning method to identify topics in the feedback based on the co-occurrence of words in them

Topic

If “data” and “science” appear together frequently, the topic is on “data science”

If “data”, “science”, “complicated”, “statistics”, and “mathematics” appear together frequently, the topic is most likely on “the difficulty of learning data science”

Words and Numbers

Machine learning model accepts only numbers, not words, as input

Hence words must be converted to vectors of numbers (ID, count)
This conversion is known as embedding

Embedding

Embedding is also used in Transformer (Google) and Generative Pre-Trained Transformer (GPT) (OpenAI)

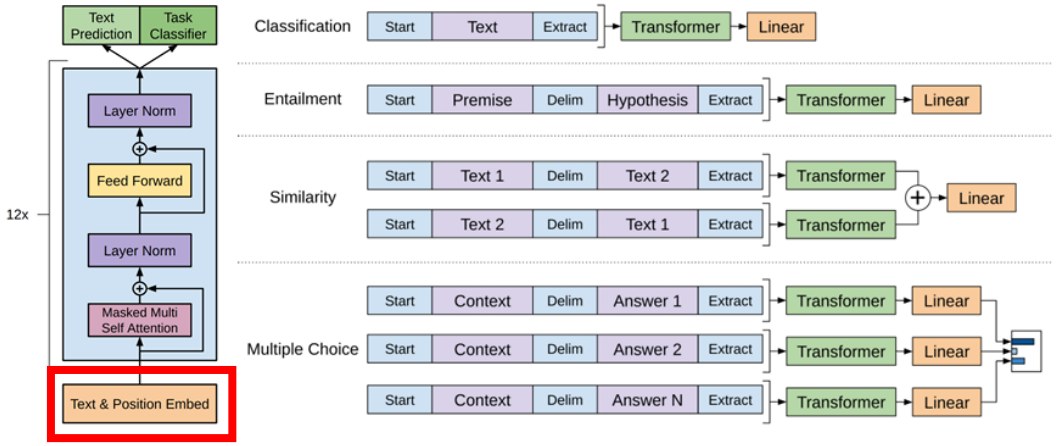


Figure 1: **(left)** Transformer architecture and training objectives used in this work. **(right)** Input transformations for fine-tuning on different tasks. We convert all structured inputs into token sequences to be processed by our pre-trained model, followed by a linear+softmax layer.

Source: https://cdn.openai.com/research-covers/language-unsupervised/language_understanding_paper.pdf

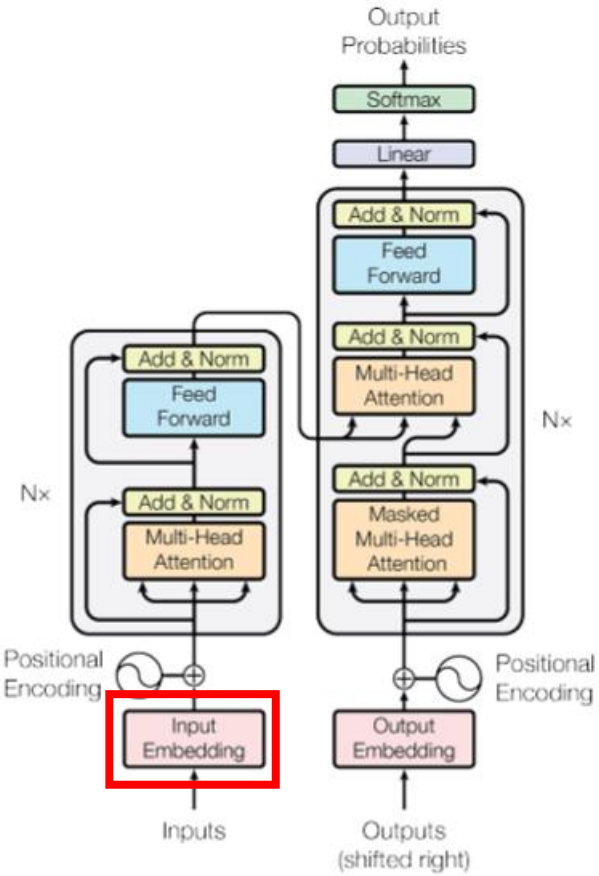
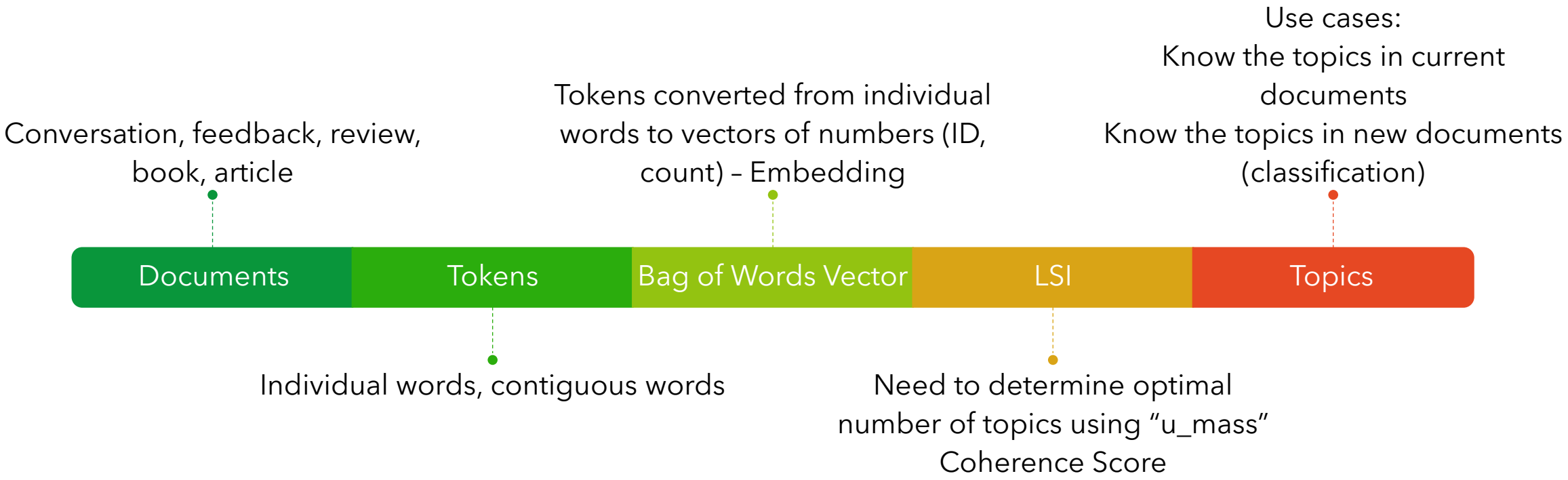


Figure 1: The Transformer - model architecture.

Source: https://www.turing.com/kb/guide-on-word-embeddings-in-nlp

Data Science Workflow



The End

Hope you find this useful

Visit my GitHub for the codes

https://github.com/johnwck/my_da_ds_work/tree/master/my_projects_github_pages/latent_semantic_indexing