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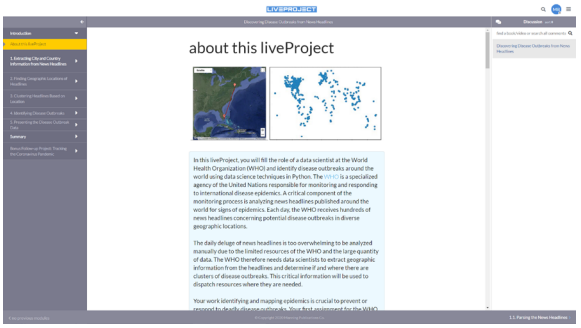
LIVEPROJECT



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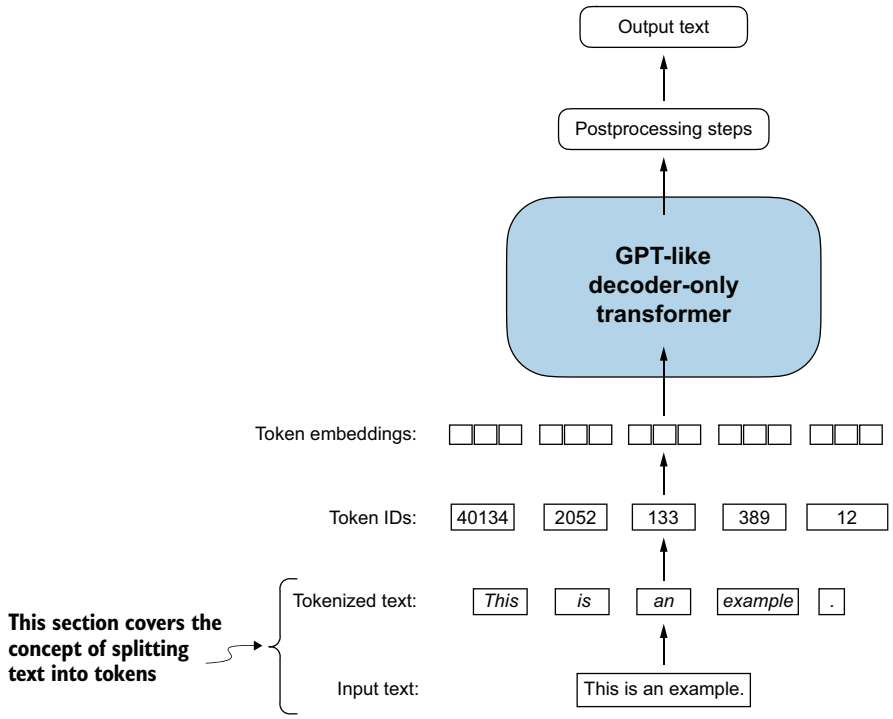

A view of the text processing steps in the context of an LLM. The process starts with input text, which is broken down into tokens and then converted into numerical token IDs. These IDs are linked to token embeddings that serve as the input for the GPT model. The model processes these embeddings and generates output text. Finally, the output undergoes postprocessing steps to produce the final text. This flow illustrates the basic operations of tokenization, embedding, transformation, and postprocessing in a GPT model that is implemented from the ground up in this book.

AI

BUILD A Large Language Model (FROM SCRATCH)

Sebastian Raschka

Physicist Richard P. Feynman reportedly said, "I don't understand anything I can't build." Based on this same powerful principle, bestselling author Sebastian Raschka guides you step by step as you build a GPT-style LLM that you can run on your laptop. This is an engaging book that covers each stage of the process, from planning and coding to training and fine-tuning.

Build a Large Language Model (From Scratch) is a practical and eminently-satisfying hands-on journey into the foundations of generative AI. Without relying on any existing LLM libraries, you'll code a base model, evolve it into a text classifier, and ultimately create a chatbot that can follow your conversational instructions. And you'll really understand it because you built it yourself!

What's Inside

- Plan and code an LLM comparable to GPT-2
- Load pretrained weights
- Construct a complete training pipeline
- Fine-tune your LLM for text classification
- Develop LLMs that follow human instructions

Readers need intermediate Python skills and some knowledge of machine learning. The LLM you create will run on any modern laptop and can optionally utilize GPUs.

Sebastian Raschka is a Staff Research Engineer at Lightning AI, where he works on LLM research and develops open-source software.

The technical editor on this book was David Caswell.

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"Truly inspirational! It motivates you to put your new skills into action."

—Benjamin Muskalla
Senior Engineer, GitHub

"The most understandable and comprehensive explanation of language models yet! Its unique and practical teaching style achieves a level of understanding you can't get any other way."

—Cameron Wolfe
Senior Scientist, Netflix

"Sebastian combines deep knowledge with practical engineering skills and a knack for making complex ideas simple. This is the guide you need!"

—Chip Huyen, author of *Designing Machine Learning Systems* and *AI Engineering*

"Definitive, up-to-date coverage. Highly recommended!"

—Dr. Vahid Mirjalili, Senior Data Scientist, FM Global

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