Instructor Dr. Gennadii Iakovlev

Low-entry barrier LLM research tools

List of useful resources, real-world examples, tutorials, and “vibe coding” tools

Architecture of LLMs

Generative AI: All you need to know

An interactive guide by the Financial Times that provides a clear, visually engaging introduction to generative AI—covering how Large Language Models (LLMs) work.

Why It’s Useful: the easiest-to-digest overview of generative AI. The guide uses interactive visual examples and plain language.

But What Is a Neural Network?

Math educator 3Blue1Brown explains the core concepts of neural networks—how they learn patterns, make predictions, and classify data—using visual and intuitive examples.

Why It’s Useful: This explanation helps understand how AI “thinks.” It can demystify jargon and build confidence in using or evaluating AI tools.

The Elements of AI (University of Helsinki)

What It Offers: A free online course co-created by the University of Helsinki, covering AI basics. It introduces core concepts, societal implications, and real examples. A completely free introduction to AI’s capabilities and limitations, with quizzes and interactive lessons.

More advance guides: https://cloud.google.com/learn/training/machinelearning-ai; https://web.stanford.edu/~jurafsky/slp3/

Text & Sentiment Analysis

Text Summarization – [See, I generated this description with the o3 and did not edit!] This tutorial presents an enhanced summarization workflow for GPT-4o, featuring a structured prompt that assigns a role (e.g., “secretary”), specifies the target audience, and integrates four modular components—tone, goal, length, and direct quotes—culminating in an advanced “chain

of density" technique that iteratively refines and compresses information, demonstrated through the summarization of a Wikipedia article on Brazil.
Why It's Useful: By formalizing prompt design and employing chain-of-density prompting, this method enables researchers and academics to produce highly concise yet information-dense summaries, with precise control over style, scope, and length—streamlining literature reviews and data synthesis in scholarly work.

What Is Sentiment Analysis? An in-depth exploration of sentiment analysis as the intersection of natural language processing and machine learning for extracting subjective information from unstructured text. It covers:

- Text Preprocessing (tokenization, stop-word removal, stemming/lemmatization)
- Feature Representation (bag-of-words, TF-IDF, word embeddings)
- Classification Models (traditional algorithms like Naïve Bayes and SVM, as well as neural networks and transformer-based approaches)
- API Demonstration of IBM Watson Natural Language Understanding, illustrating how to invoke the service and interpret its sentiment scores in JSON responses

  Why It's Useful: by uniting theoretical concepts with a hands-on demo, this video gives a framework for designing, evaluating, and deploying sentiment analysis.

Vibe Coding on Parsing

How to Automate Web Scraping with ChatGPT Code Interpreter

The same workflow:

Medium

LinkedIn
This tutorial demonstrates a three-phase workflow for harvesting structured data from static web pages entirely within ChatGPT's Code Interpreter environment. First, the user saves the target page as an HTML file via the browser's "Save As" function, enabling offline parsing without additional tooling. Second, they upload the HTML into the AI environment and execute a Python

script—using BeautifulSoup for DOM traversal and pandas for table construction—to produce an initial DataFrame of extracted elements. Third, the instructor revisits the live site to inspect specific HTML elements, copying the relevant CSS selectors into the prompt to handle nested structures and null values before exporting the refined dataset to CSV or JSON. Why It's Useful: This approach eliminates the need for separate scripting environments, accelerates prototyping of data-collection pipelines.