Labs 1 & 2

End-to-end machine learning pipeline

Introduction

One usage model for ChatGPT is to use it as a collaborator. You will work with ChatGPT in this lab experiment to develop an end-to-end machine-learning pipeline. A server will host a machine-learning model. A client will then send requests to the server that uses the model. Iteratively ask for ChatGPT's assistance in creating and explaining the code.

ChatGPT Prompt

Please create a Python lab experiment that constructs an end-to-end ML pipeline. The lab should contain steps to design, build, and evaluate an end-to-end ML pipeline to solve a real-world problem. It should include steps to preprocess data, train and evaluate a machine learning model, deploy it via an API, and simulate monitoring in production. Please randomly select a typical classification dataset. I would also like client code that measures the time it takes to process a request and graphs the response time versus iteration.

Note

You should obtain Python code that you can copy into your development environment. Run the code on your computer. Then, using ChatGPT, study and understand how the code works.

ChatGPT Prompt

How might this experiment be extended?

Note

Implement one or more of the suggested extensions. ChatGPT asks if you would like detailed implementation instructions, which you can request as necessary.

Lab Deliverables

Please create a lab notebook document that describes your experience building and extending your end-to-end pipeline. The figures you discuss in the body of your document may include code. You may also include questions you asked ChatGPT. There are no specific length requirements or limitations. I expect a few pages, perhaps 2-5 pages.

At the end of the first week of the assignment, please be prepared to provide a read-out in class about your progress. If you are asynchronous and online, please give a 1/2-page summary of your progress.