Complete Explanation of the Diabetes Prediction API

Overview

This FastAPI project exposes a machine learning diabetes prediction model as an API endpoint. A client script sends input values to the server where the ML model processes the input and returns a prediction.

Server Code Explanation

1 Importing libraries

FastAPI is used to build the API. Pydantic BaseModel validates input. Pickle loads the machine learning model. JSON is used to convert data formats.

2 Creating the FastAPI app

app = FastAPI() initializes the server.

3 Creating the model input class

The class model_input(BaseModel) defines all required input fields. Each field has a type such as int or float. BaseModel ensures the client sends correct and valid data.

4 Loading the saved ML model

diabetes_model = pickle.load(...) loads your pre trained diabetes classifier.

5 API endpoint definition

@app.post('/diabetes_prediction') exposes a POST endpoint.

FastAPI flow

User sends JSON

FastAPI converts JSON into a Pydantic object

You convert Pydantic into a dictionary

You convert dict into a list

You pass the list to the ML model for prediction

6 Converting Pydantic object into dictionary

input_data = input_parametes.json() creates a JSON string from the Pydantic model.

input_dictionary = json.loads(input_data) converts JSON string into Python dictionary.

This allows you to extract individual input values.

7 Preparing input list

You extract each variable and store them in a list in the correct order that the ML model expects.

8 Making the prediction

prediction = diabetes_model.predict([input_list]) returns 0 or 1.

9 Returning the result

If prediction is 0 the person is not diabetic.

If prediction is 1 the person is diabetic.

Client Script Explanation

1 Importing requests and json

Requests sends HTTP POST requests to the API. JSON converts Python dict into JSON string.

2 Specifying the API URL

url = "http://127.0.0.1:8000/diabetes_prediction"

3 Creating input data

A Python dictionary is created with the correct input fields.

4 Converting dict to JSON

input_json = json.dumps(input_data_for_model)

5 Sending POST request

response = requests.post(url, data=input_json)

6 Printing response

response.text shows whether the person is diabetic.

Final Summary

This project demonstrates how to deploy a machine learning model using FastAPI. The system uses structured validation through Pydantic and ensures that user input flows correctly into the model for prediction.

Author

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