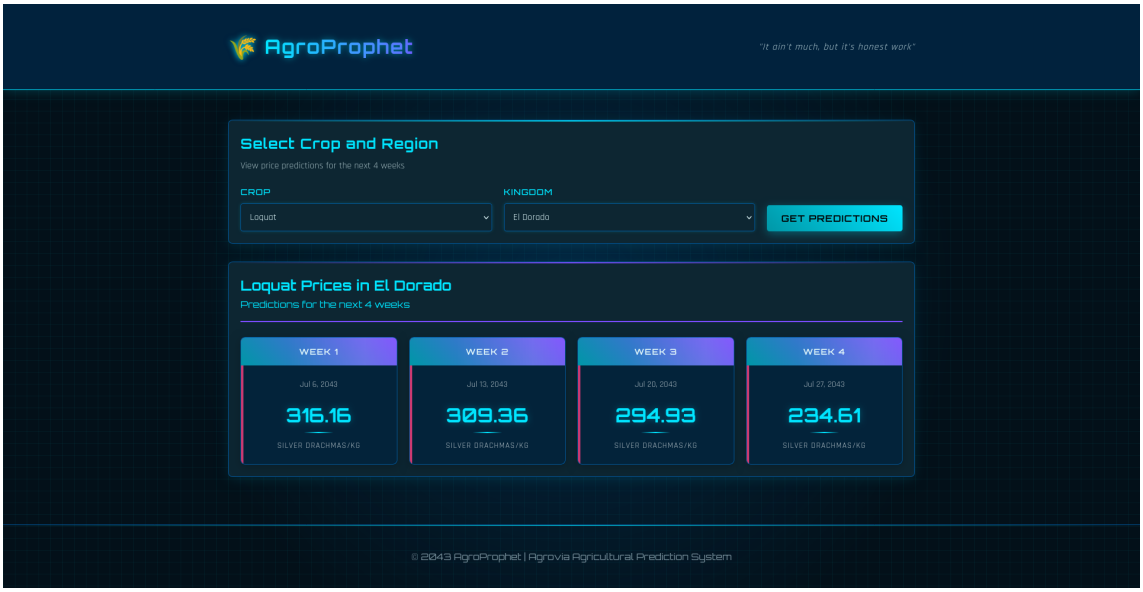
AgroProphet

Predict the future of your harvest!



Project Structure

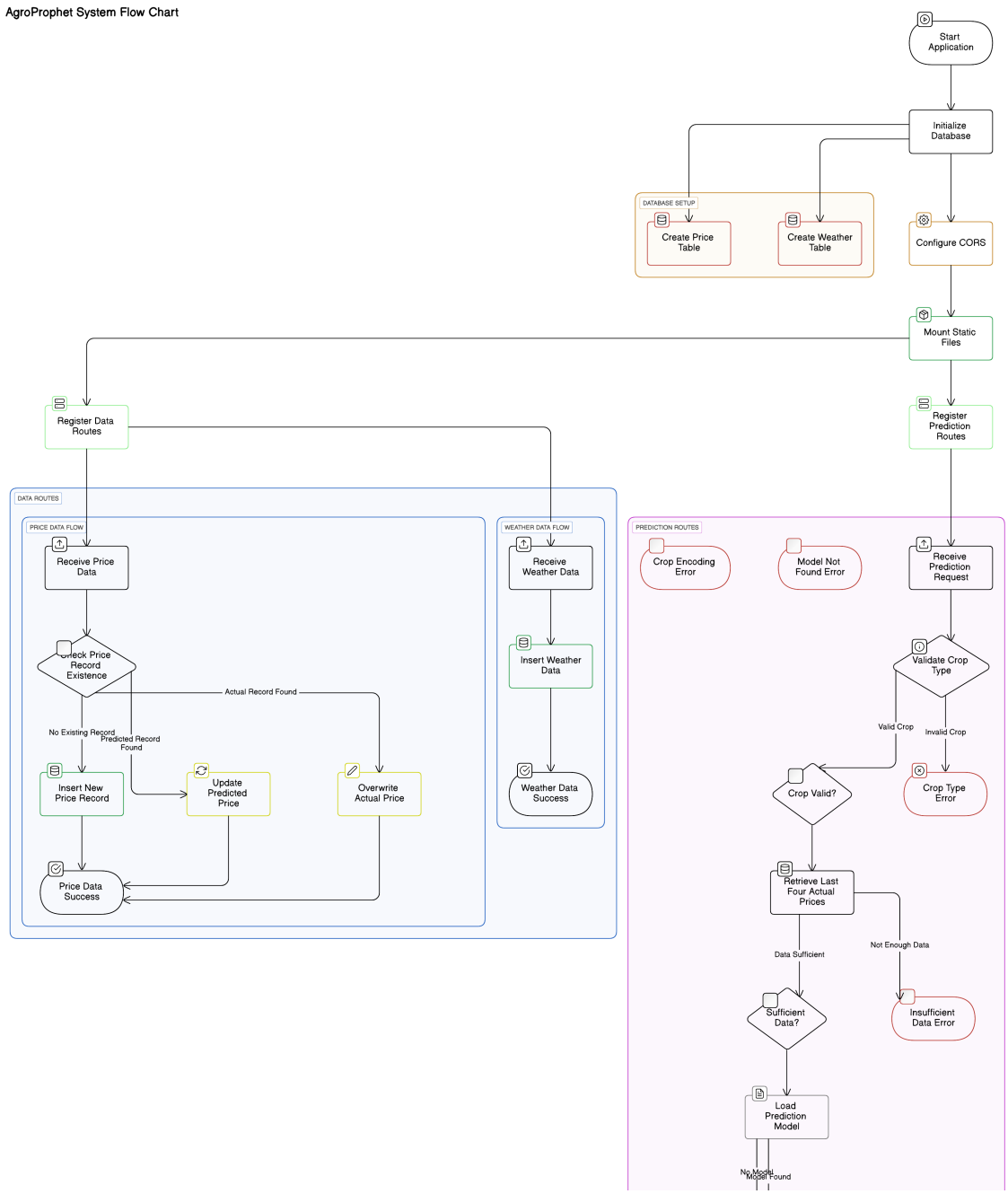
AgroProphet's codebase is portrayed in the following structure:

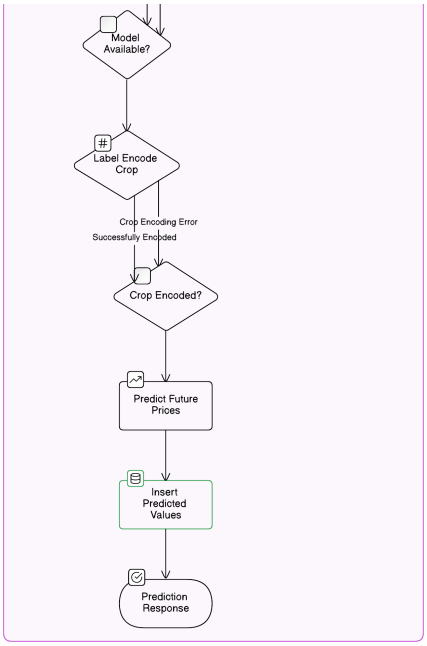
```
.
├── deployment                      # Deployment folder containing the system
│   ├── models                      # Serialized XGBoost models
│   │   ├── Arcadia__Fruit.joblib     # Example: Arcadia region - Fruit prices
│   │   ├── Arcadia__Vegetable.joblib
│   │   ├── ...                       # (Other similar region/crop models)
│   │   └── Zion__Vegetable.joblib
│   ├── payloads                    # Pydantic schemas for request validation
│   │   ├── __init__.py               # Init file for payloads module
│   │   ├── prediction.py             # Schema for price prediction requests
│   │   ├── price.py                  # Schema for incoming price data
│   │   └── weather.py                # Schema for incoming weather data
│   ├── routes                      # FastAPI route definitions
│   │   ├── __init__.py               # Init file for routes module
│   │   ├── data.py                   # Handles new data submission
│   │   └── prediction.py             # Handles prediction requests
│   ├── static                      # Static files served with the API
│   │   └── index.html                # Basic HTML UI or landing page
│   ├── agroprophet.db              # SQLite database of the system
│   ├── Dockerfile                  # Docker image build configuration
│   ├── main.py                     # FastAPI app entry point
│   ├── requirements.txt            # List of Python dependencies
│   └── settings.py                 # Configuration file
├── img                              # Images used in documentation
```

```
│   └── ...                          # Flowchart, screenshot, swagger, etc.
├── notebooks                        # Jupyter notebooks
│   └── AgroProphet.ipynb            # Final training and serialization notebook
├── Documentation.pdf                # Project documentation
├── image_name.txt                   # Docker image tag/version info
├── LICENSE                          # Project license file
├── Presentation.pptx                # Project presentation slides
└── README.md                        # Project overview and setup guide
```

System Architecture

AgroProphet's architecture is depicted below:





Setup (Manual)

AgroProphet has very few prerequisites, which are probably already installed on your system:

1. Git version control system (needed to clone the project)
2. Python (recommended to have a version greater than 3.9.0)

To run AgroProphet locally on your machine, follow these steps:

1. Clone Project

```
git clone https://github.com/Caramel-Labs/agroprophet.git
cd agroprophet/deployment
```

2. Activate Virtual Environment

```
pip install virtualenv
```

To create and activate a virtual environment, enter the following commands after moving into the `agroprophet` folder as done previously:

```
# Create a virtual environment named 'env':
python -m venv env

# Activate the virtual environment (Windows):
env\Scripts\activate.bat

# Activate the virtual environment (MacOS / Linux):
source env/bin/activate
```

To deactivate the virtual environment (and remove the `(env)` prefix):

```
deactivate
```

3. Install Dependencies

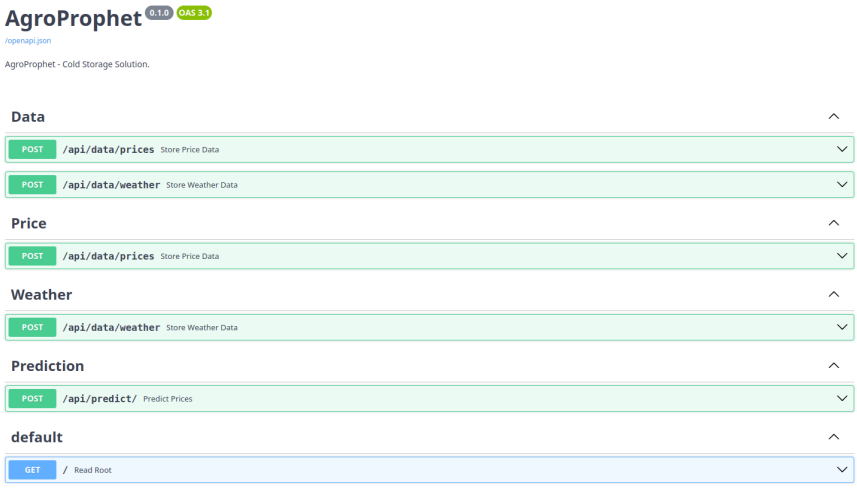
After activating the virtual environment, you can install the necessary dependencies:

```
pip install -r requirements.txt
```

4. Start FastAPI App

```
fastapi dev main.py
```

FastAPI will then serve AgroProphet on http://localhost:8000. Navigate to http://localhost:8000/docs to view the SwaggerUI for AgroProphet:



Setup (via DockerHub)

AgroProphet is available as a Docker image on DockerHub, so you can skip installing Python or dependencies manually. You'll only need to have Docker installed.

Prerequisites

- Docker (Ensure it's running)

1. Pull the Docker Image

```
docker pull caramelabs/agroprophet:latest
```

2. Run the Docker Container

```
docker run -d -p 8000:8000 caramelabs/agroprophet:latest
```

This runs the app in detached mode (`-d`). You'll then be able to access the app via:

- http://localhost:8000

- http://localhost:8000/docs

To stop the container, find the container ID:

```
docker ps
```

Then stop it:

```
docker stop <container_id>
```

Setup (Build Locally with Dockerfile)

If you prefer to build the image yourself from source, use the included Dockerfile.

1. Clone the Repo

```
git clone https://github.com/Caramel-Labs/agroprophet.git
cd agroprophet/deployment
```

2. Build the Docker Image

```
docker build -t agroprophet .
```

This builds a local image named `agroprophet` using the `Dockerfile` in the project root.

3. Run the Container

```
docker run -d -p 8000:8000 agroprophet
```

You'll then be able to access the app via:

- http://localhost:8000
- http://localhost:8000/docs

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