AgroNomics

A Crop Price Predictor Model

Empowering Farmers with Data-Driven Insights

Team Celebi| Triwizardathon **1.0**

PROBLEM ?

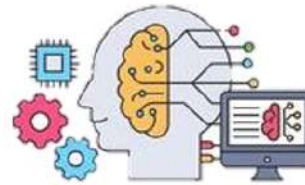Farmers suffer losses due to unpredictable crop prices.

Lack of forecasting tools tailored to local agriculture.

Decisions based on guesswork instead of data.

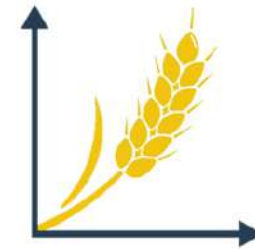# SOLUTION ?

A web-based ML tool to forecast crop prices.

Uses historical datasets and regression models.

Simple interface for easy access by farmers.
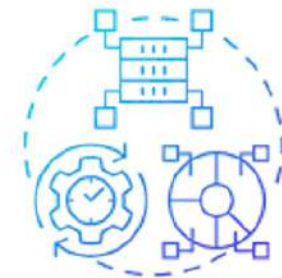
KEY FEATURES

Predicts crop prices for upcoming weeks.

User selects crop type for prediction.

Visual price trend chart.

Works with real world datasets.

TECH STACK

Python

- Logic & modelling.
- Entire application logic and scripting.

Pandas

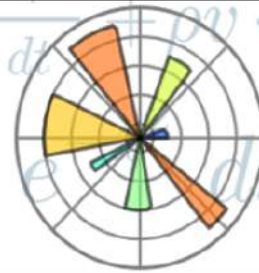- Data handling.
- Reading historical crop price datasets (.csv, .xlsx, etc..)
- Aggregation, filtering and transformation.

scikit-learn

- Machine learning.
- Model training (eg Linear Regression, decision trees)
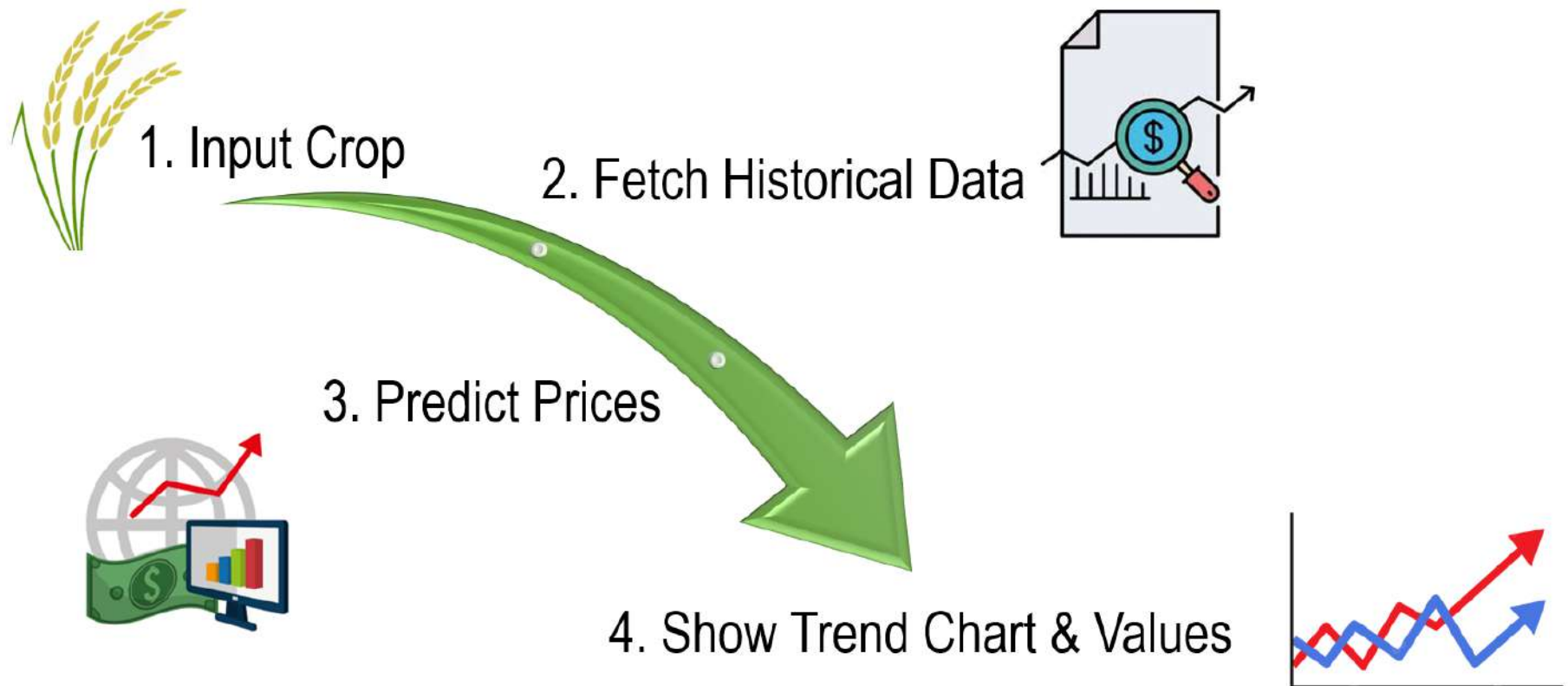
Matplotlib

- Data visualization.
- Model diagnostics (residuals, error distributions)

Flask

- Backend API to serve predictions.
- Web Development (basic UI for user input).

WORKFLOW DIAGRAM

1. Input Crop

2. Fetch Historical Data

3. Predict Prices

4. Show Trend Chart & Values

MODEL DETAILS

Linear Regression 📊 – Simple, effective, and interpretable for time series trend prediction.

- 🌱 Crop Type *(categorical)*
- 📅 Time *(week number)*
- 💹 Historical Crop Prices *(weekly averages)*

- 🔍 Cleaned inconsistent data
- 📅 Converted dates to numerical week indices
- 📉 Normalized price values

- ⚙️ Built with **scikit-learn** (Python)
- 📏 Evaluated using **Mean Squared Error (MSE)**
- 📈 Learned general trends to forecast future prices

- 🌐 Exposed via **Flask REST API**
- 📲 Integrated into **mobile app** (Android & iOS)
- 📕 API returns price predictions based on crop input

MARKET SIZE

📊 Precision Agriculture / Data Analytics Segment

2023 : ~$9 billion

by 2030: $18–20 billion

Growth Drivers:

- ○ Rising demand for AI/ML in farming
- ○ Increasing smartphone and internet penetration in rural areas
- ○ Government support for digital agriculture

📈 India's AgriTech Market

2023 : $2 billion

by 2027: $24–30 billion

Growth CAGR: ~50%

📊 Global AgriTech Market

2024: $30.6 billion

2030: $79.7 billion

CAGR (2024-2025): ~16.5%

IMPACT

Scalable across regions and crop types

Encourages data driven agriculture

Helps farmers make smarter selling decisions

Reduces dependency on middlemen

THANK YOU

📌 **OUR TEAM**

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