



AI Crop Insurance Agent

Autonomous weather monitoring. ML disaster detection. Automatic blockchain payouts.

ETH Oxford 2026 · Built on Flare

The Problem

500M farmers have zero crop insurance



Slow Claims

Traditional insurance takes weeks to months to process payouts after a disaster



Too Expensive

Premiums are unaffordable for smallholder farmers earning < \$2/day

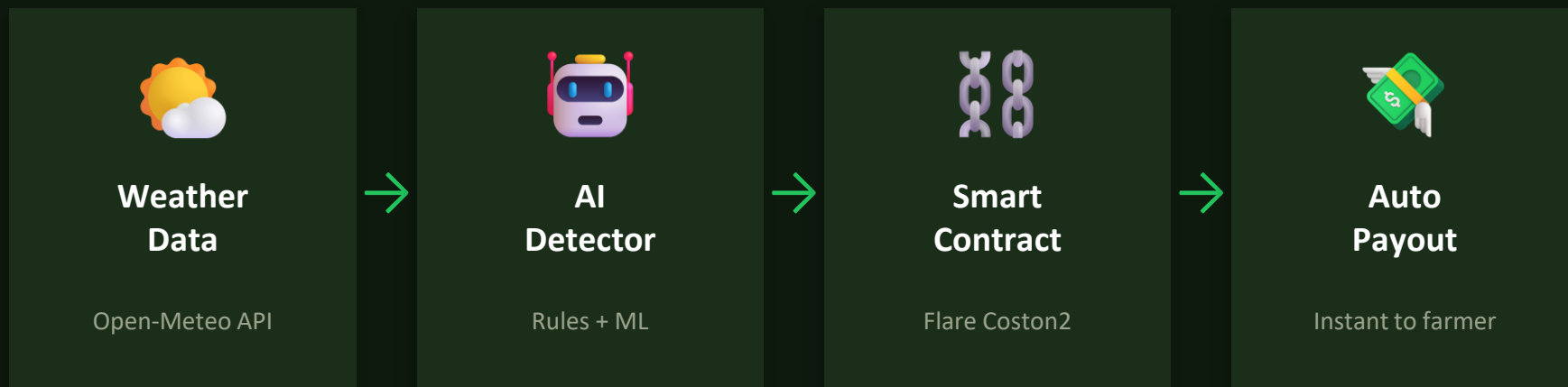


Manual Process

Requires adjusters to physically visit farms, making it impractical at scale

The Solution

An AI agent that watches weather and pays farmers automatically



Agent runs 24/7 — no human intervention needed

Ensemble: both detectors must agree



Rule-Based Detector

- Drought: $< 2\text{mm}$ rain over 10 days
- Flood: $> 50\text{mm}$ current rainfall
- Frost: Temperature $< 2^{\circ}\text{C}$
- Heat Wave: Temperature $> 45^{\circ}\text{C}$



Isolation Forest (ML)

- Trains on 14 days of history
- Features: temp, rain, wind speed
- Flags statistical anomalies
- scikit-learn, 100 estimators

Both agree \rightarrow disaster declared \rightarrow payout triggered. Reduces false positives significantly.

Live Demo

Watch the agent detect a disaster in real time

1

Dashboard shows live weather

Real-time temp, rainfall, humidity, wind for Nairobi

2

AI runs assessment

Rule-based detector + Isolation Forest both analyze conditions

3

Simulate drought

Click button → AI flags disaster → both detectors agree

4

Blockchain payout

Smart contract auto-sends C2FLR to insured farmer on Flare

[SWITCH TO STREAMLIT DASHBOARD FOR LIVE DEMO]

Why Flare?

Built for exactly this use case



FDC (Data Connector)

Brings verified external data (weather APIs) on-chain with cryptographic proofs — no trusted middleman



FTSO (Price Feeds)

Native decentralized price oracle for denominating insurance policies in USD



Fast & Cheap

Coston2 testnet deploys in seconds, transactions cost fractions of a cent



Real-World Data Focus

Flare is the blockchain designed for connecting real-world data to smart contracts

Tech Stack



Weather Data

Open-Meteo API (free, no key)



ML / AI

scikit-learn Isolation Forest + rule engine



Smart Contract

Solidity ^0.8.20 on Flare Coston2



Agent

Python + web3.py (autonomous loop)



Dashboard

Streamlit + Plotly (real-time charts)



Deployment

Hardhat + TypeScript



AI Crop Insurance Agent

Protecting farmers with AI + blockchain — no paperwork, no delays, no middlemen.

Next Steps

- FDC integration for cryptographically verified weather data on-chain
- FTSO price feeds for USD-denominated policies
- LSTM time-series forecasting for early warning predictions