Ceres: AI-Powered Famine Prediction Platform

Using Geospatial Embeddings to Combat Global Hunger

Team Ceres

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Who We Are and Our Passion

In 2023, nearly 700 million people faced hunger worldwide.

We are Team Ceres, passionate about leveraging AI to predict and prevent famines,
ensuring no one goes hungry in our lifetime.

The Global Hunger Crisis

- 1 in 11 people faced hunger in 2023 (713-757 million)
- Sub-Saharan Africa: 23.2% hunger rate
- Southern Asia: 281 million affected
- UN SDG 2 (Zero Hunger) is off-track for 2030 goals
- Current IPC analysis is slow, resource-intensive, and biased

Problem: Analysts need faster, data-driven tools to predict famines and allocate aid effectively.

Our Innovation: Ceres Platform

Ceres uses Google DeepMind's Alpha Earth geospatial embeddings combined with LightGBM ML models to predict IPC phases.

- Predicts population in IPC phases 1-5 for 2025-2026
- Interactive web interface for easy analysis
- Meets UN brief by addressing SDG 2 with AI

How It Works: Technical Overview

Backend (FastAPI + LightGBM):

- Loads 64-band satellite embeddings
- Predicts phase percentages
- Aggregates historical IPC data

Frontend (React):

- Country/Region selection
- Interactive charts with Recharts
- Visualizes predictions vs historical data

Model Accuracy: 81.1% phase classification

Prototype Demonstration

path/to/screenshot.png

Future Impact and Next Steps

- **Change:** Faster aid allocation, potentially saving millions of lives
- **Why Care:** Helps achieve UN SDG 2 by 2030
- **Needs:** Backtesting on full dataset, expand to all subregions
- **Future:** Scale to 100m resolution predictions globally

Thank You

Team Ceres: Innovating for a Hunger-Free World

Questions?