

From Fish to Fowl: How AI is Saving a Commercial Broiler Farm

Predicting Broiler Chicken Livability: An AI-Powered Approach
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SECTION 1: THE CHALLENGE

? The Livability Prediction Challenge

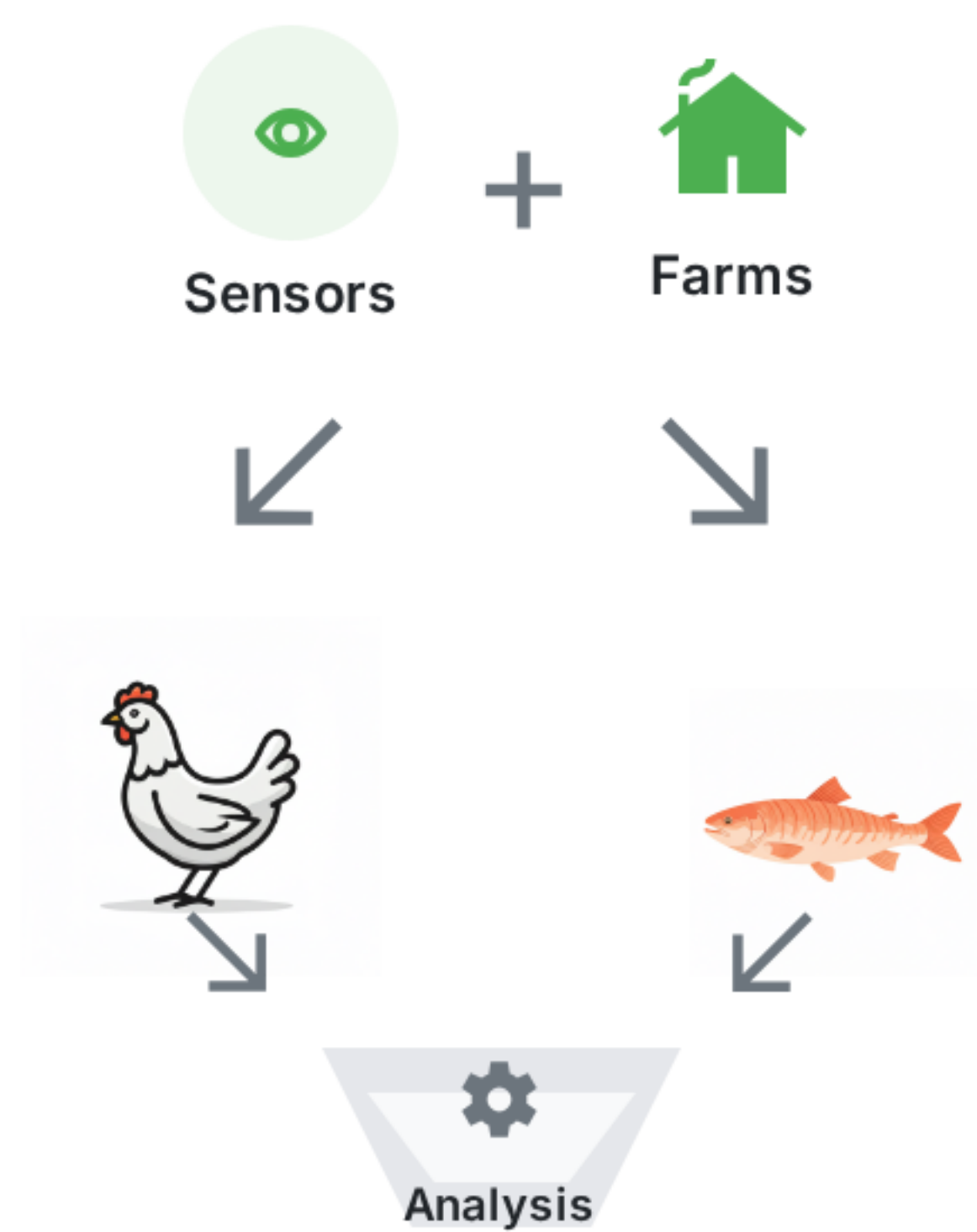


Chicken livability refers to the **percentage of birds** that survive through an entire production cycle. Predicting this metric is challenging, particularly during the first 10 days of production. Early warnings about factors that may reduce chicken livability are crucial for farmers to prevent flock losses.

SECTION 2: DATA & COLLECTION

👁️ Sensors Data for Smart Farms

Data Collection: Temperature, food conversion rate, and density data are collected using sensors in smart farms.

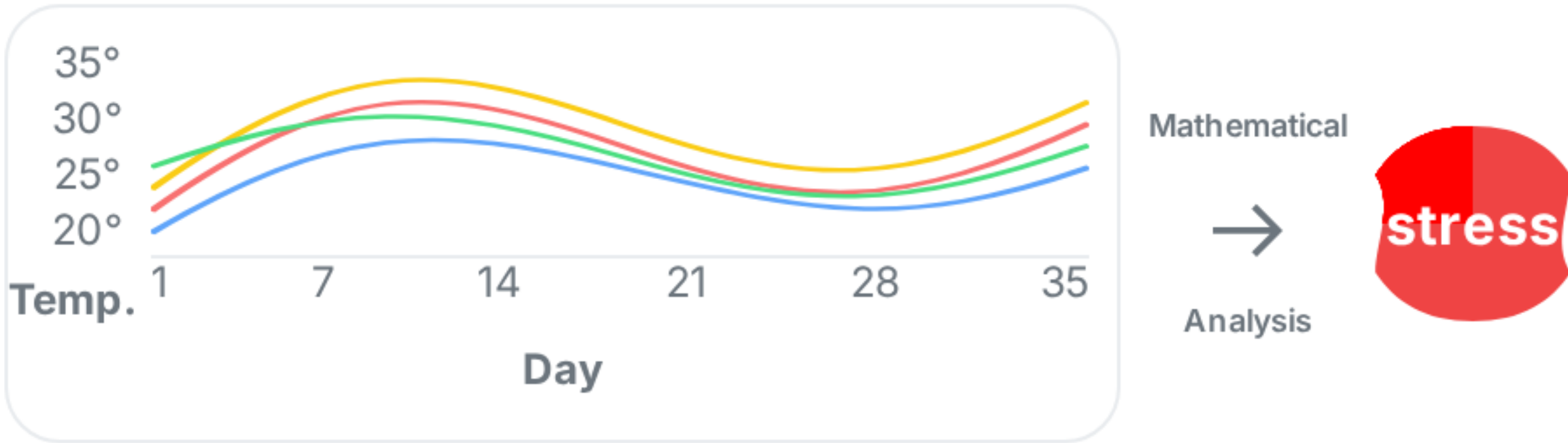


Data Sources: 97 broilers production cycles from Quebec (primary data) and 800 salmon and trout production cycles from Chile (secondary data).

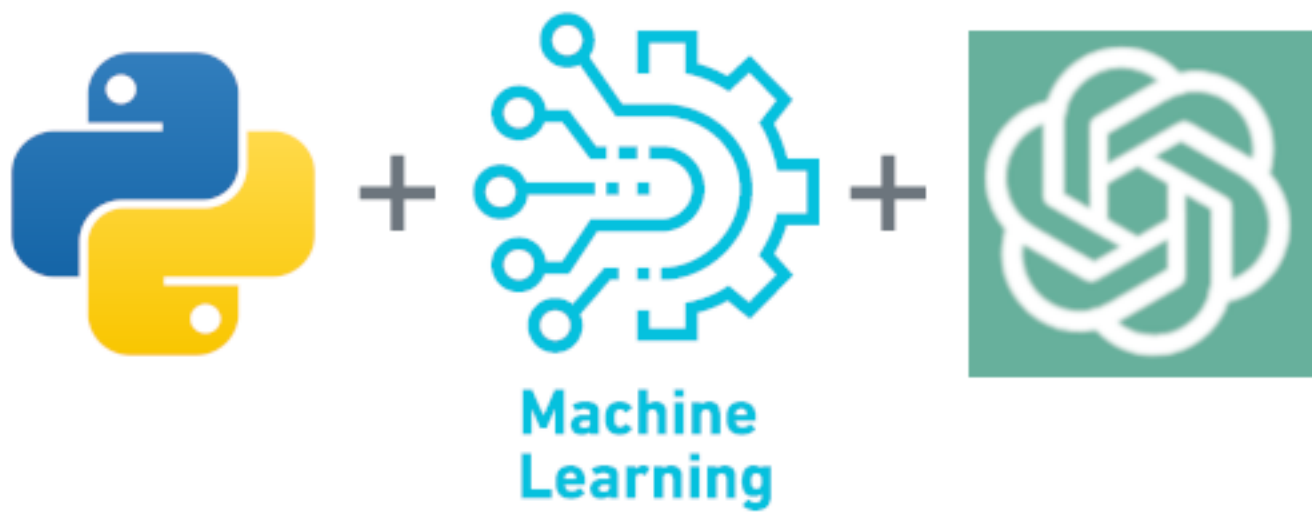
SECTION 3: METHODOLOGY

🔧 AI-Driven Analysis

Stress Assessment: Using a mathematical formula that accounts for temperature changes over time, we reached to stress metric in each cycle.

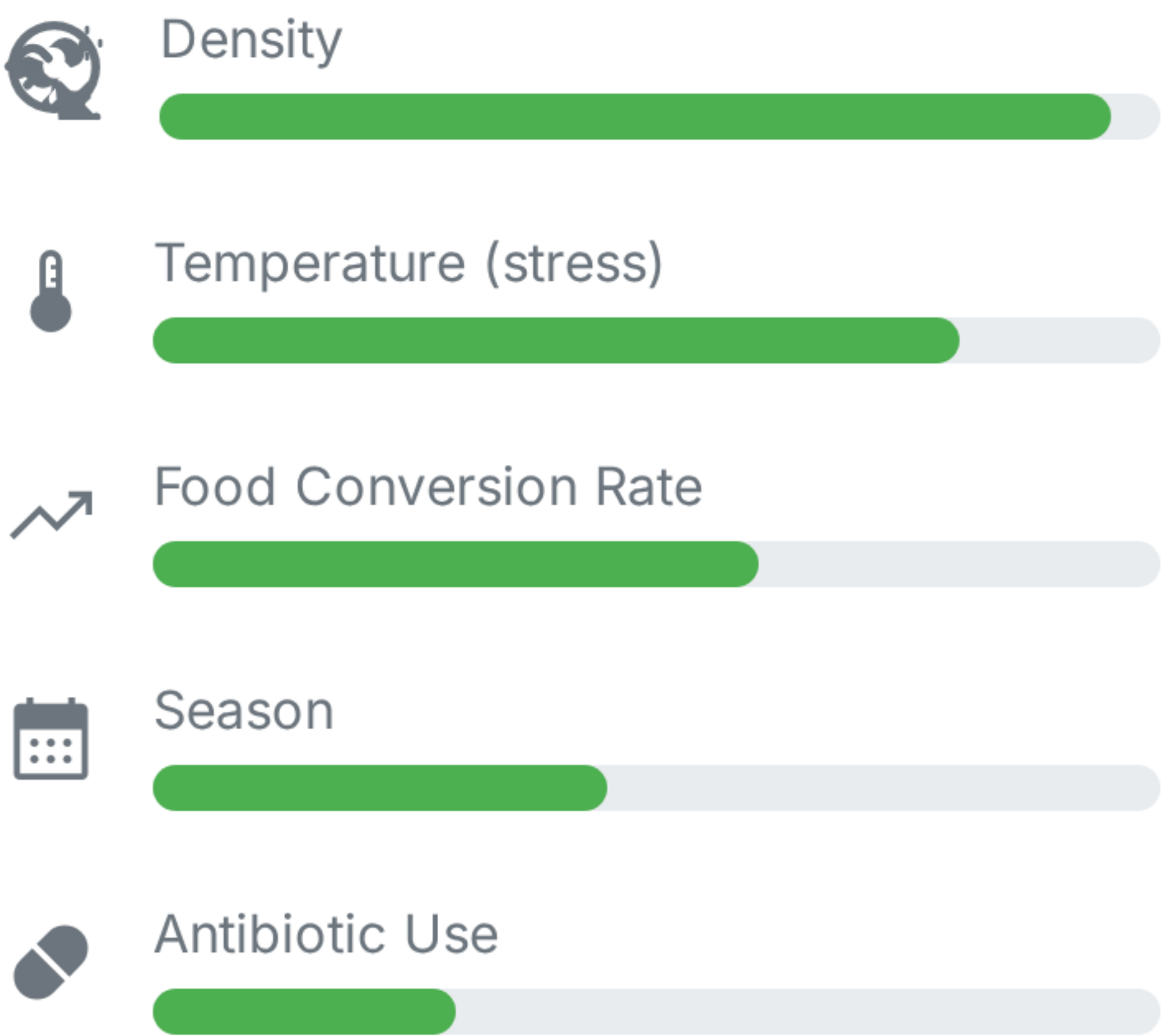


The data is processed using **Python** to apply **Machine Learning** techniques. We used **Transfer Learning (TL)** and **In-Context Learning (ICL)** (using Open AI **ChatGPT** platform) based on salmon data to predict broiler livability and calculate the importance of each factor.



SECTION 4: KEY PREDICTIVE FACTORS

📈 Top Indicators of Livability



SECTION 5: RESULTS AND IMPACT

✅ Highly Reliable Predictions & Actionable Advice



Error < 2%
Highly Reliable

Accuracy: The model predicts broiler livability using ICL (1.51% error) and TL (1.56% error), maintaining a **tiny error margin (less than 2%)**.

Impacts: This approach provides farmers advice on factors (e.g., **temperature management**, strategies to improve **FCR**), that may be linked with broiler livability as well as a clear guidance on the effects of **season and antibiotic use**.