DEEP LEARNING INDABA X ZIMBABWE HACKATHON

Title: AI for Crop Health - Diagnosing Maize Plan Diseases in Zimbabwe Using Deep Learning

**INFOR PAGE**

**About the Challenge**

Maize is the staple crop that sustains millions of Zimbabweans, underpinning both food security and livelihoods across rural and urban communities. Yet, Zimbabwe’s maize production is persistently threatened by several devastating leaf diseases—primarily **Common Rust**, **Gray Leaf Spot**, and **Blight**—which cause significant yield reductions and economic losses.

These diseases are widespread across Zimbabwe’s diverse agro-ecological zones, including high-rainfall areas like Mashonaland East and Manicaland, the drier regions of Masvingo, and the central Midlands. Their impact is exacerbated by limited access to timely and accurate disease diagnostics, especially for smallholder farmers who form the backbone of Zimbabwe’s agriculture.

Your task in this hackathon is to develop deep learning models that can accurately detect and classify these maize diseases from leaf images. Leveraging AI for early and precise disease identification can transform farming practices by:

* Providing farmers with real-time, accessible tools to identify diseases before they spread widely.
* Reducing reliance on manual inspection, which is often subjective and slow.
* Enabling targeted interventions that minimize crop loss and reduce the overuse of pesticides.
* Contributing to improved food security and agricultural sustainability in Zimbabwe.

The dataset includes images of maize leaves categorized as **Common Rust**, **Gray Leaf Spot**, **Blight**, and **Healthy**. Your challenge is to design and train models that are robust to diverse field conditions typical in Zimbabwe, such as varying lighting, leaf angles, and disease severity.

By addressing this challenge, you will contribute to a high-impact solution with direct applications in Zimbabwe’s farming communities and beyond, driving the adoption of AI-powered precision agriculture in sub-Saharan Africa.

**Evaluation**

**Prizes**

**Timeline**

**Rules**

This challenge is only open to Deep Learning Indaba X Zimbabwe Community

**DATA PAGE**

**About the Data**

This dataset contains labelled images of crop leaves, each categorized into one of four classes representing crop health status:

* **0: Common Rust** — 1,306 images
* **1: Gray Leaf Spot** — 574 images
* **2: Blight** — 1,146 images
* **3: Healthy** — 1,162 images

**Dataset Breakdown**

* **images/**  
  Contains all labelled training images provided to participants for model development.
* **labels.csv**  
  CSV file mapping each image filename to its corresponding label (0–3).
* **eval/**  
  Contains unlabelled images used for final evaluation. Participants must generate predictions on this data for submission.
* **sample\_submission.csv**  
  Example submission file that demonstrates the expected format for predictions:
* image\_id,label
* image\_3001.jpg,2
* image\_3002.jpg,0
* **ground\_truth.csv** *(private)*  
  The true labels corresponding to the images in the eval/ folder. This file is used internally by the competition platform to evaluate submissions and determine leaderboard rankings. It is **not** shared with participants.