**RARL Maize UAV Image Dataset (CMW)**

The Robotics and AI Research Lab (RARL) has developed a UAV-based maize image dataset named **CMW**, available at: <https://doi.org/10.5281/zenodo.16741468>. This dataset was utilized in our recent publication:

A. Jahangir Moshayedi et al., "Smart Farming Solutions: A User-Friendly GUI for Maize Tassel Estimation Using YOLO With Dynamic and Fixed Labelling, Featuring Video Support," *IEEE Access*, vol. 13, pp. 57809–57833, 2025, doi: 10.1109/ACCESS.2025.3554984

**Dataset Structure**

The CMW dataset is organized into the following main folders:

**1. Image Source (CMW\_DATASET\_Imagesource)**

* CMW\_DATASET01\_Imagesource: Images 1–160
* CMW\_DATASET02\_Imagesource: Images 1–370

**2. Labels (CMW\_DATASET\_label)**

* CMW\_DATASET\_Dynamic\_labels
* CMW\_DATASET\_fixsize\_labels
* CMW\_DATASET\_images

**3. Image Specifications (Imagedata1\_specification)**  
Each image folder contains:

1. image\_CannyEdges
2. image\_Equalized\_Grayscale\_Histogram
3. image\_Equalized\_RGB\_Channels\_Histogram
4. image\_Grayscale\_Histogram
5. image\_Hue\_Histogram
6. image\_Original\_vs\_Blurred
7. image\_Original\_Histogram
8. image\_PixelIntensity\_RowVariation
9. image\_RedChannel\_Heatmap
10. image\_report
11. image\_RGB\_Histogram
12. image\_Saturation\_Histogram
13. image\_Value\_Histogram
14. image\_Value\_Intensity\_RowVariation

**4. Numerical Image Analysis Report** (text file for each image):

* Resolution, Width (4096 px), Height (2160 px), Total Pixels (8,847,360)
* Number of Channels, Pixel Mean & Std Dev (R, G, B)
* Red, Green, Blue Channel Mean & Std Dev
* Grayscale Mean & Std Dev
* Hue, Saturation, Value Mean & Std Dev
* Blurred Image Mean & Std Dev (RGB average)

**5. Dataset Comparison (002.Compare dataset)**

* MSE plots: dataset1 vs MTDC, dataset2 vs MTDC, dataset1 vs dataset2
* PSNR plots: dataset1 vs MTDC, dataset2 vs MTDC, dataset1 vs dataset2
* SSIM plots: dataset1 vs MTDC, dataset2 vs MTDC, dataset1 vs dataset2

This structured dataset provides **high-resolution UAV imagery and detailed analysis** to support advanced research in precision agriculture, machine vision, and maize tassel estimation.

