

ITU GEOAI

CROPLAND MAPPING

CHALLENGE

MDMJ Team Solution

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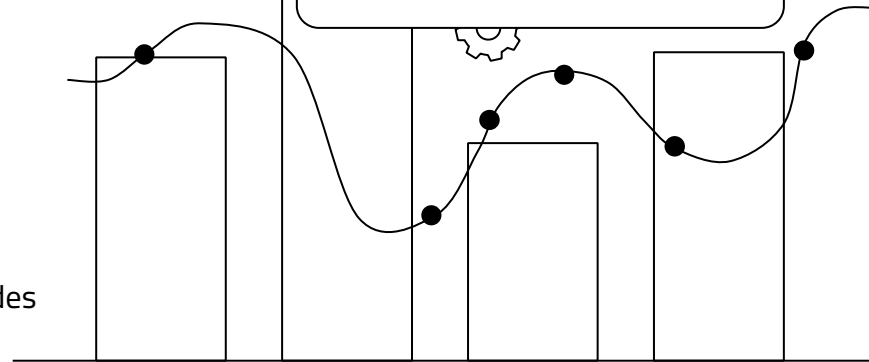
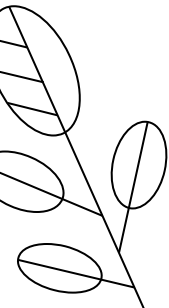
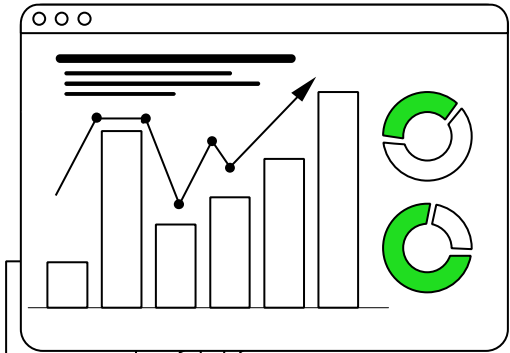
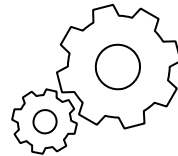
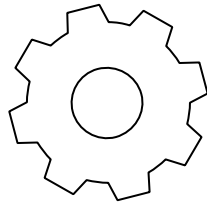




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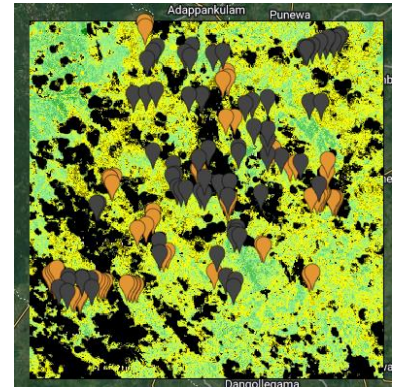
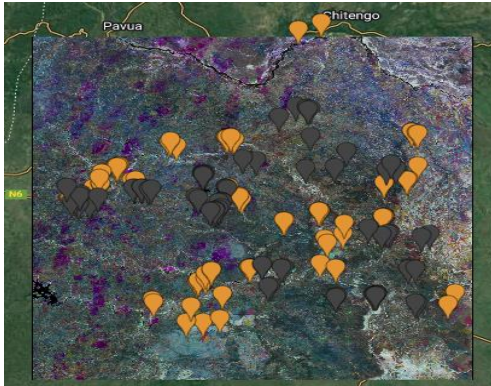
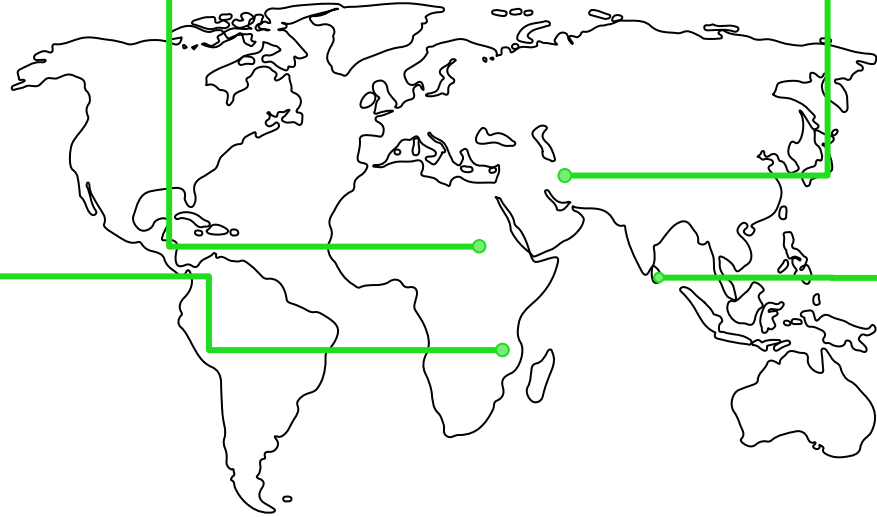
DATA COLLECTION: CROPLAND EXTENT

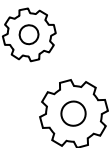
SUDAN

IRAN

MUZAMBIQUE

SRI LANKA





PREPROCESSING

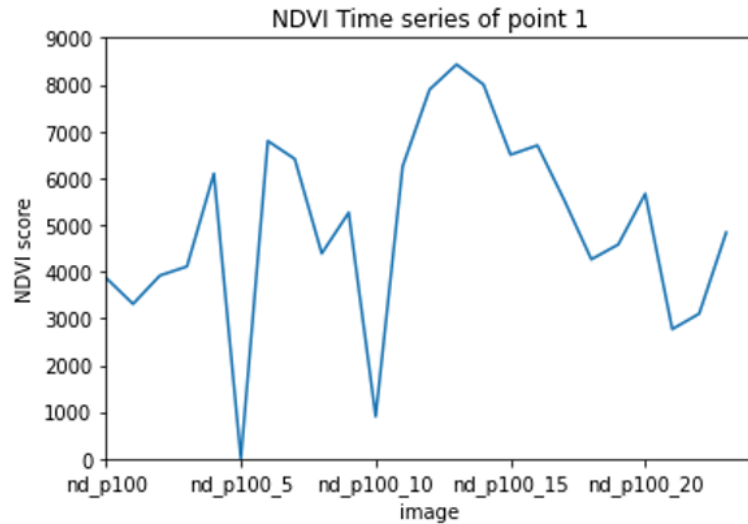


Fig. 10 NDVI Series before reconstruction

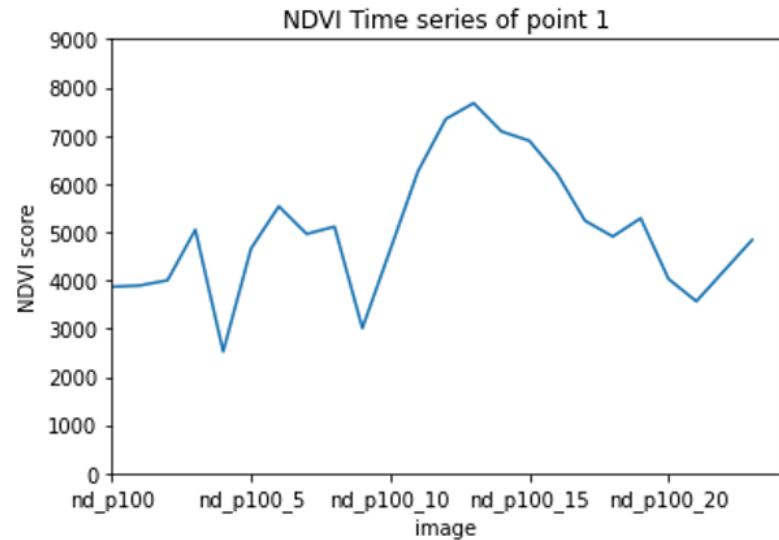


Fig. 11 NDVI Series after reconstruction



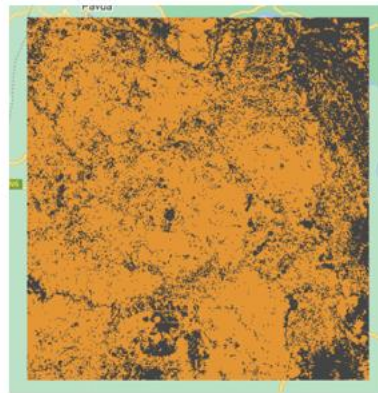
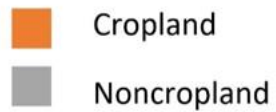


Fig. 15 Mozambique Cropland Extent

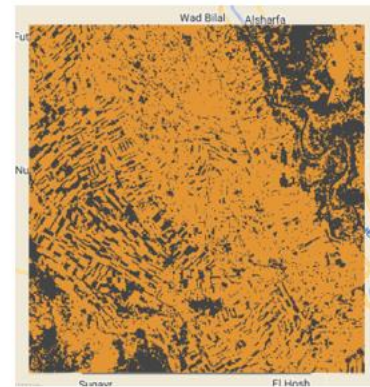


Fig. 16 Sudan Cropland Extent

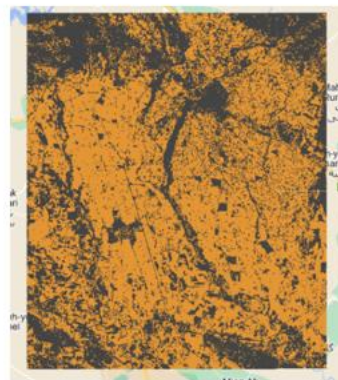


Fig. 17 Iran Cropland Extent

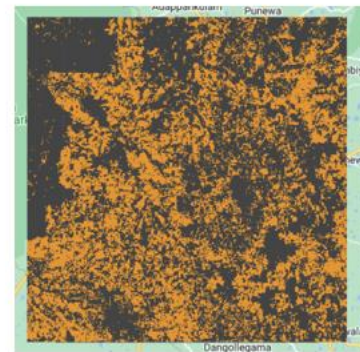
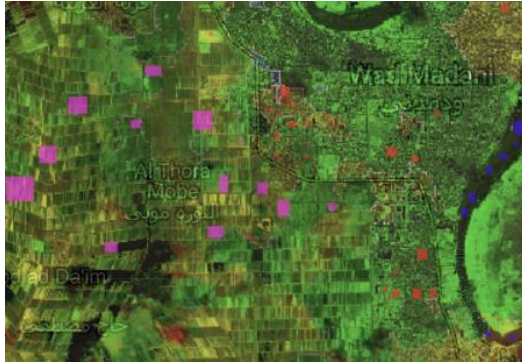


Fig. 18 Sri Lanka Cropland Extent

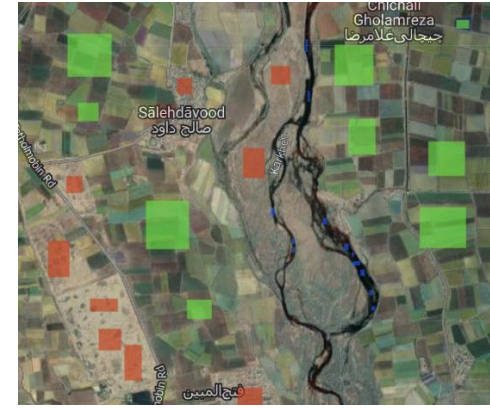
DATA COLLECTION: CROP INTENSITY



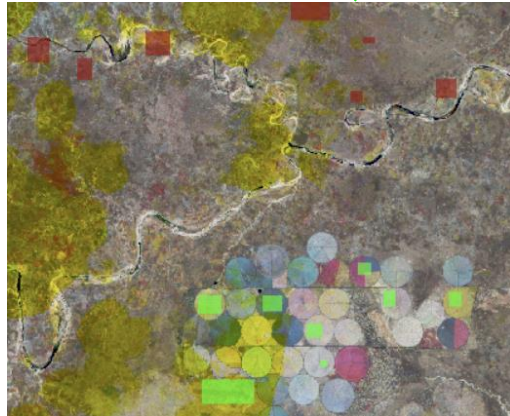
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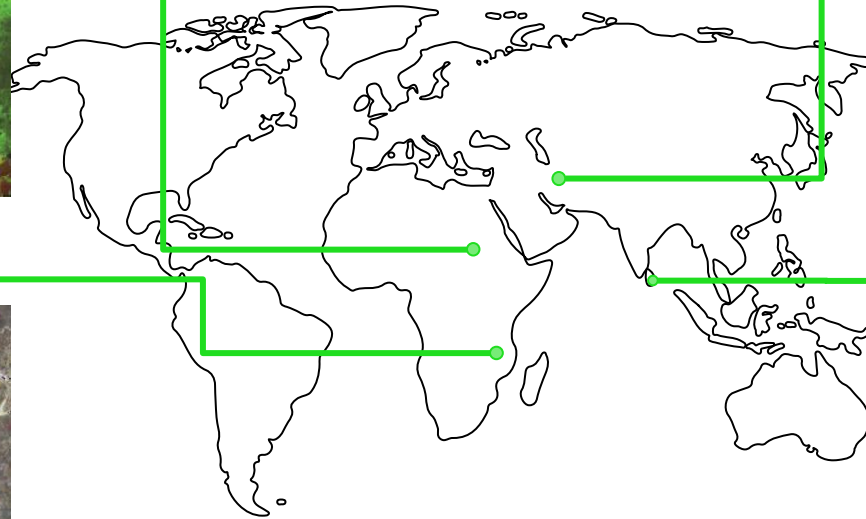
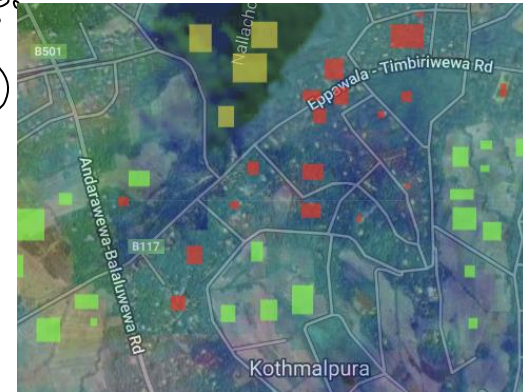
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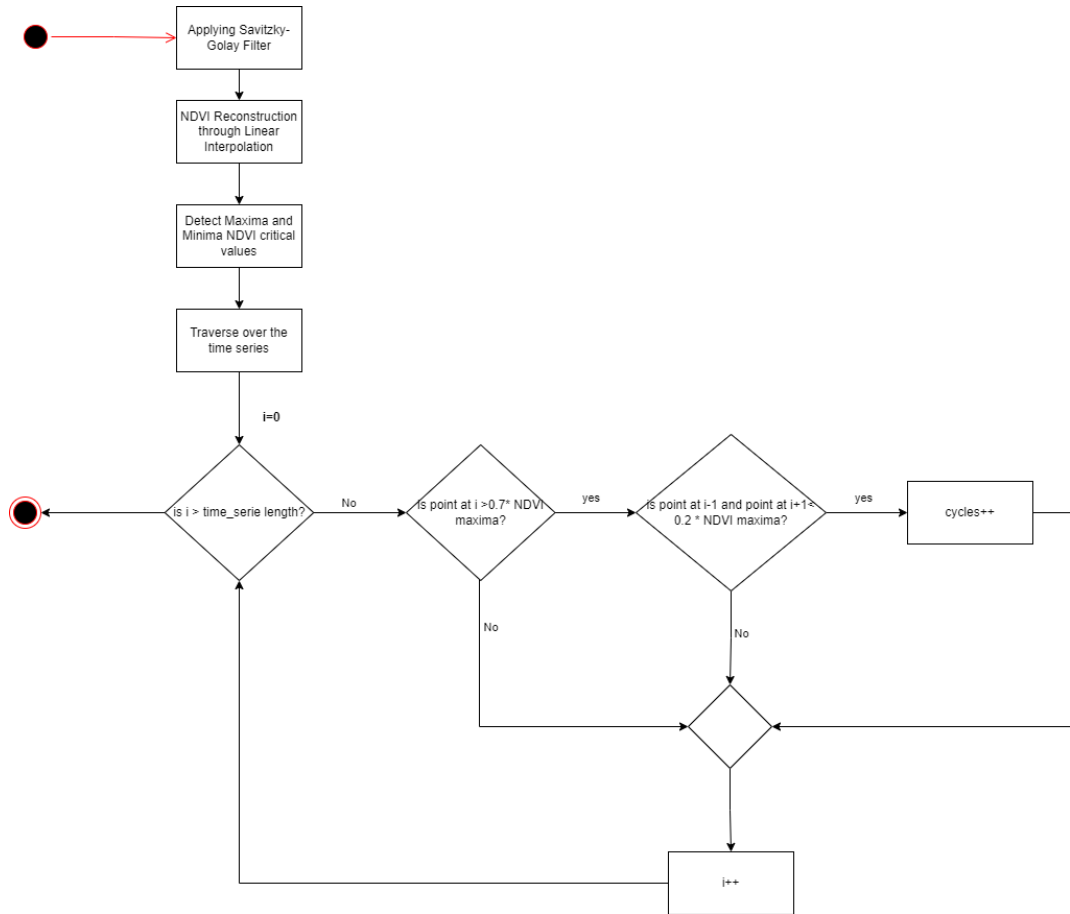
MUZAMBIQUE



SRI LANKA



Adaptive threshold approach for intensity cycles detection



- Non-Crop
- Single
- Double
- Triple

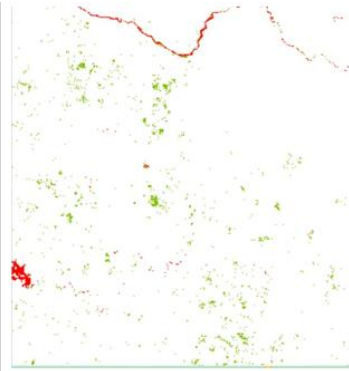


Fig. 19 Mozambique Cropland Intensity



Fig. 20 Sudan Cropland Intensity



Fig. 21 Iran Cropland Intensity

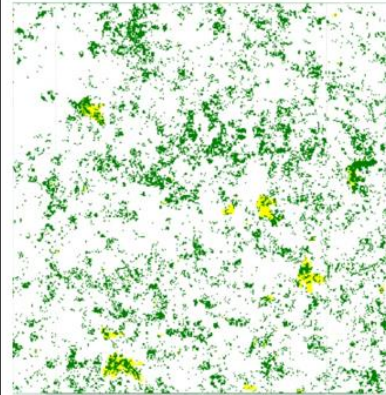
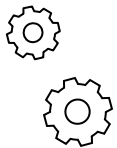


Fig. 22 Sri Lanka Cropland Intensity



Results



Cropland extent				
	Mozambique	Sudan	Iran	Sri Lanka
Models	Accuracy			
Random Forest	0.74	0.84	0.92	0.86
XGBoost	0.82	0.92	0.92	0.88
LSTM	0.82	0.84	0.96	0.90
Bidirectional LSTM	0.80	0.90	0.98	0.80
Crop Intensity				
	Mozambique	Sudan	Iran	Sri Lanka
Models	Accuracy			
Random Forest	0.87	0.86	0.803	0.95
XGBoost	0.92	0.83	0.803	0.94
KNN DTW	0.75	0.92	0.80	0.92

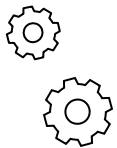




Image: Cropland_extent_Iran

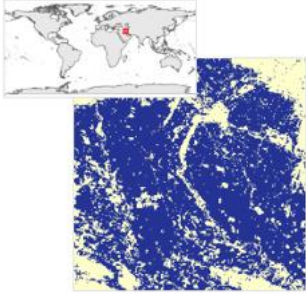


Fig. 23 Iran Cropland Extent

Image: Cropland_extent_MZB

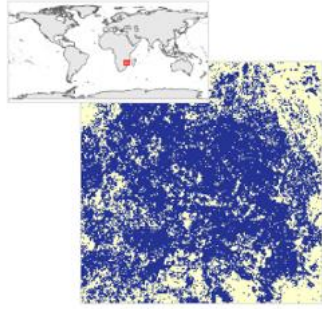


Fig. 24 MZB Cropland Extent

Image: Cropland_intensity_Iran

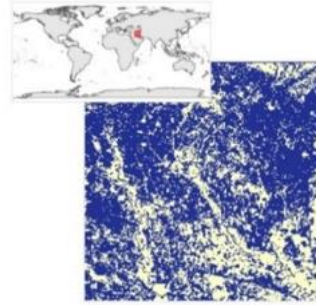


Fig. 25 Iran Cropland Intensity

Image: Cropland_MZ_intensity_smooth

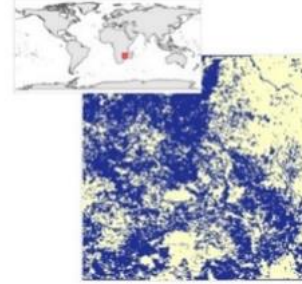


Fig. 26 Mozambique Cropland Intensity

Image: Cropland_extent_SriLanka

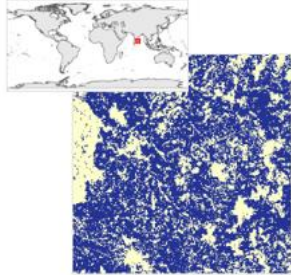


Fig. 27 Sri Lanka Cropland Extent

Image: Cropland_extent_Sudan

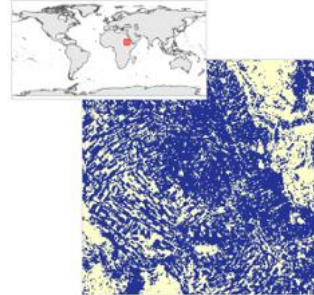


Fig. 28 Sudan Cropland Extent

Image: Crop_intensity_SR_Final

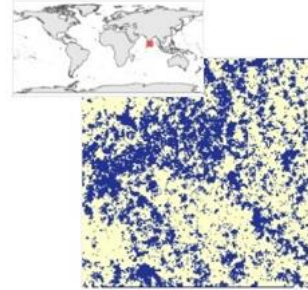


Fig. 29 Sri Lanka Cropland Intensity

Image: Cropland_Sudan_intensity_smooth

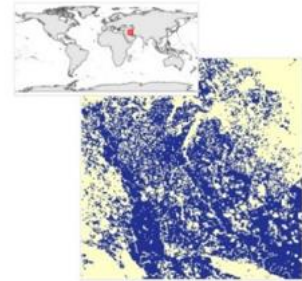
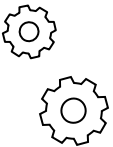


Fig. 30 Sudan Cropland Intensity





THANK YOU!

