



SMART INDIA HACKATHON 2020
NITK Internal Hackathon
(January 21-22, 2020)



NM372 - Extraction of crop cycle parameters from multi-temporal data

Team No. : T9

Team Name: beach_waale

Team Leader: Kumar Saharsh

Team Members: Rishi Sharma,Saurabh Singhal,Adarsh Kumar,Rahul Kumar,Niwedita

Organisers



MHRD



MIC



AICTE



Persistent



AWS

Platinum Partner





Table of contents

- Understanding of Problem statement
- Assumptions
- Dataset Analysis
- Approaches
 - Method
 - Preprocessing
 - Result
- Final Result

Organisers



MHRD



MIC



ANTRI



Persistent



ISRO

Platinum Partner





Understanding Problem statement

Datatype - Multispectral and Multi-temporal images of crop data of 2 years.

Task - Extract Crop cycle Parameters.

Output - Date of Sow and Harvest , Number of Harvest for each pixel.

Organisers



MHRD



MIC



ANTRI



Persistent



ISRO

Platinum Partner





Assumptions

1. Month of the image will be given with input image.
2. Each pixel represent a crop field.
3. Low pixel density means high dense crop and high pixel density means low crop. That is lower the value of pixel more will be the density of the crop.

Organisers



MHRD



MIC



AICTE
The Accreditor



Persistent



ISRO

Platinum Partner





Dataset analysis

We calculated mean value of all the pixels for each image and plotted it against months.

The trend for the harvesting & sowing for year 2017 & 2018 are as below :-

Organisers



MHRD



MIC



DST

Persistent



ISRO

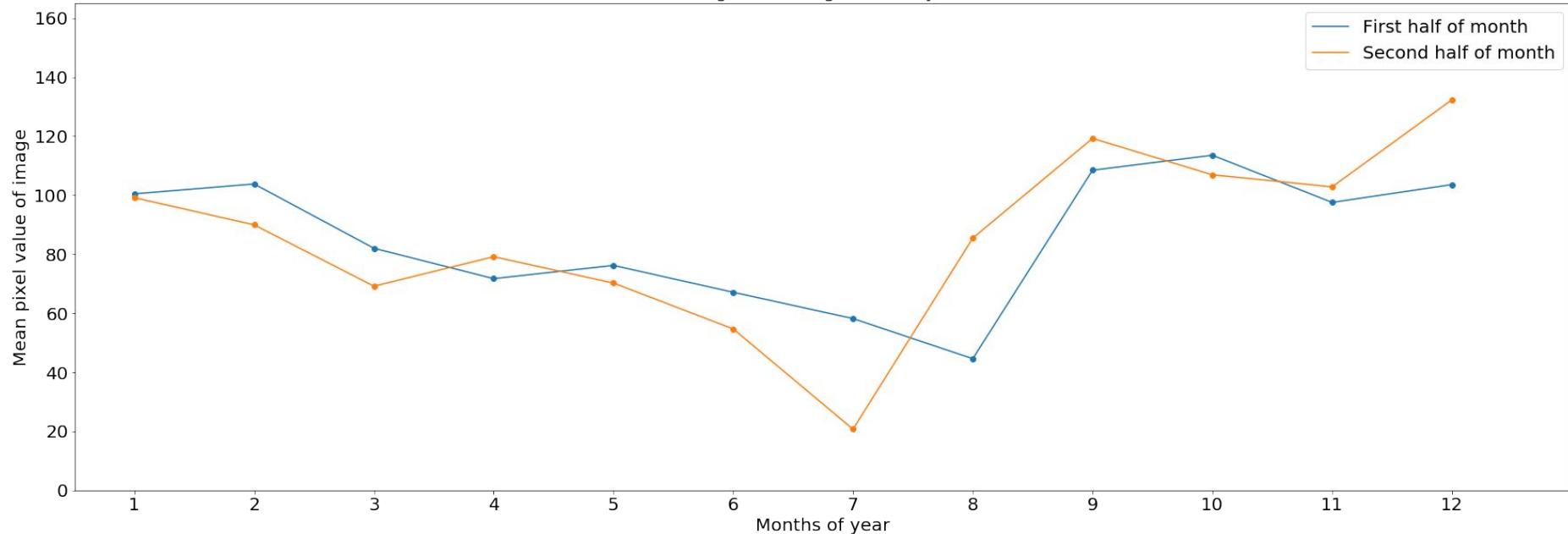
Platinum Partner





Image Analysis

Harvesting and sowing trend for year 2017



Organisers



MHRD



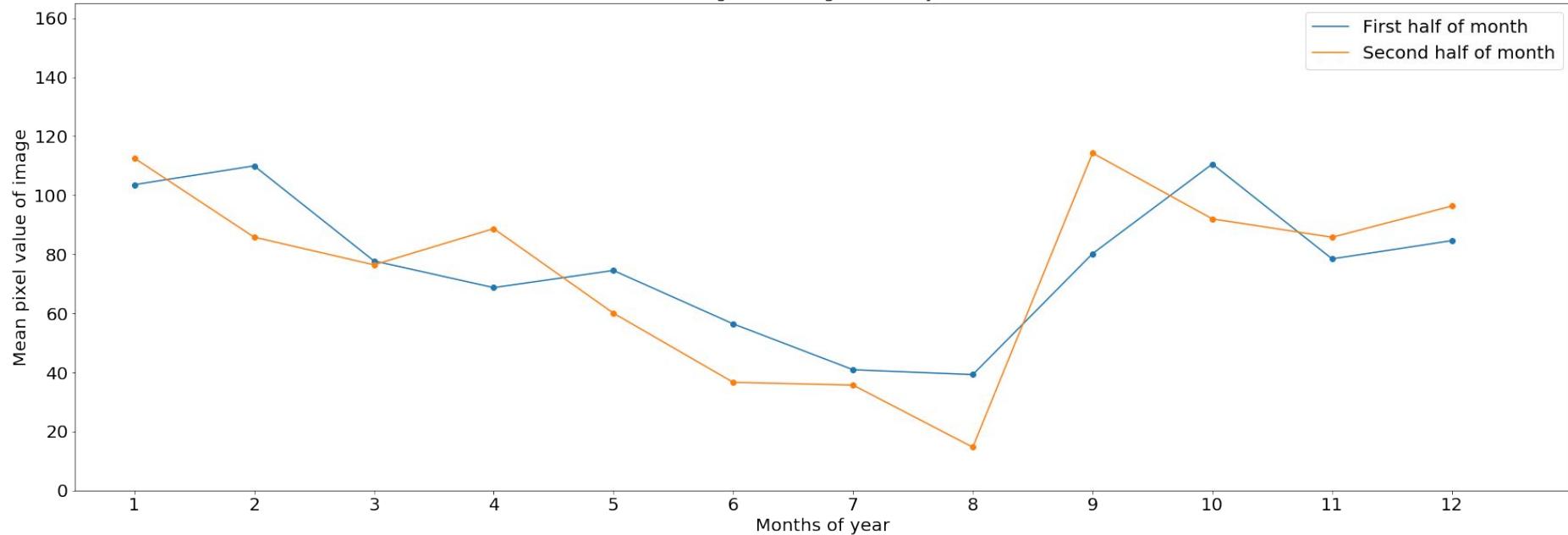
Platinum Partner





Image Analysis

Harvesting and sowing trend for year 2018



Organisers



MHRD



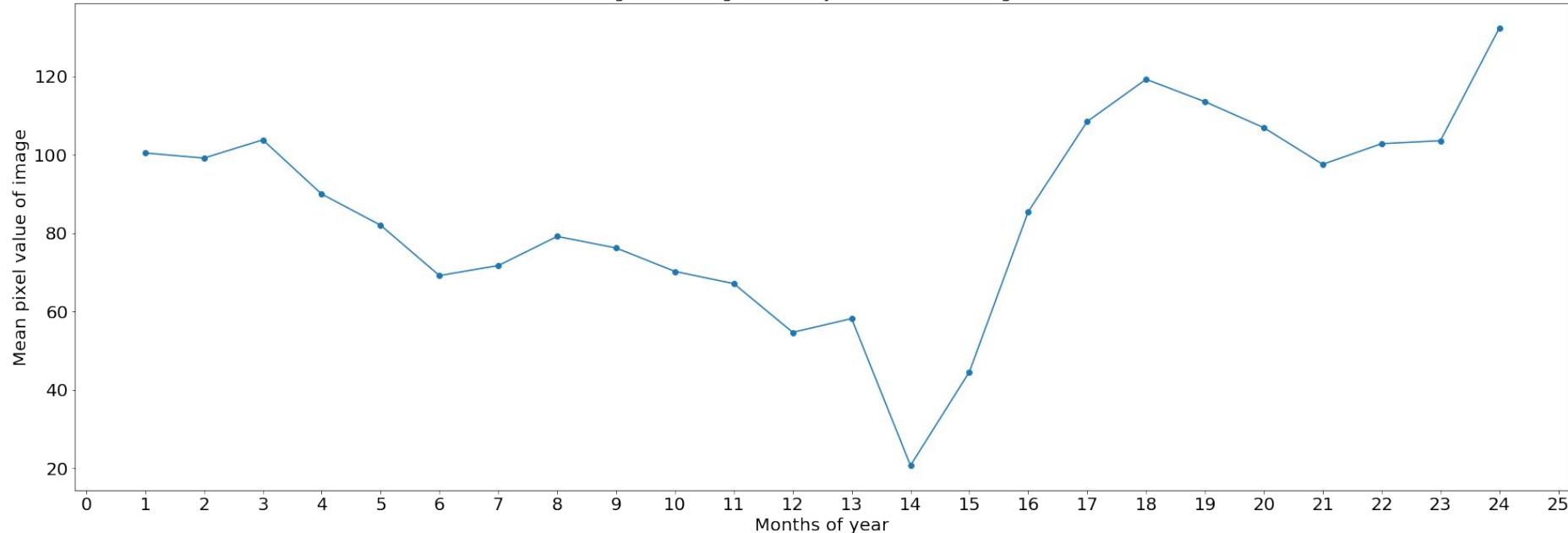
Platinum Partner





Image Analysis

Harvesting and sowing trend for year 2017 both image combined



Organisers



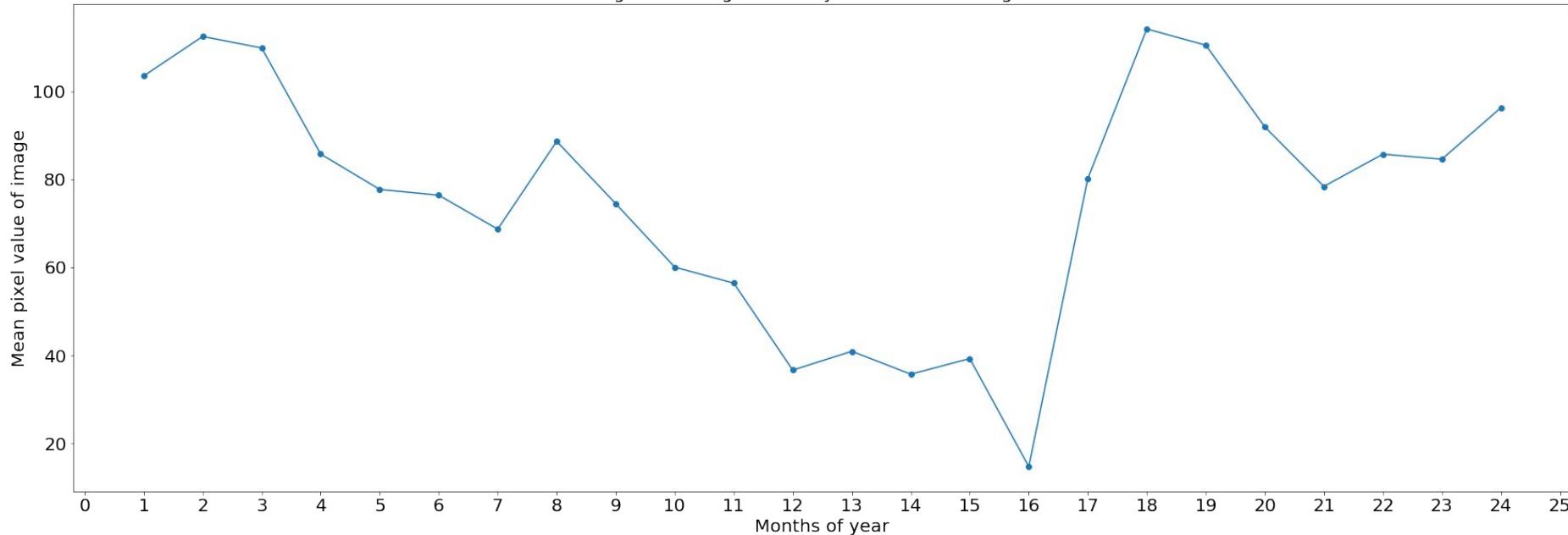
Platinum Partner





Image Analysis

Harvesting and sowing trend for year 2018 both image combined



Organisers



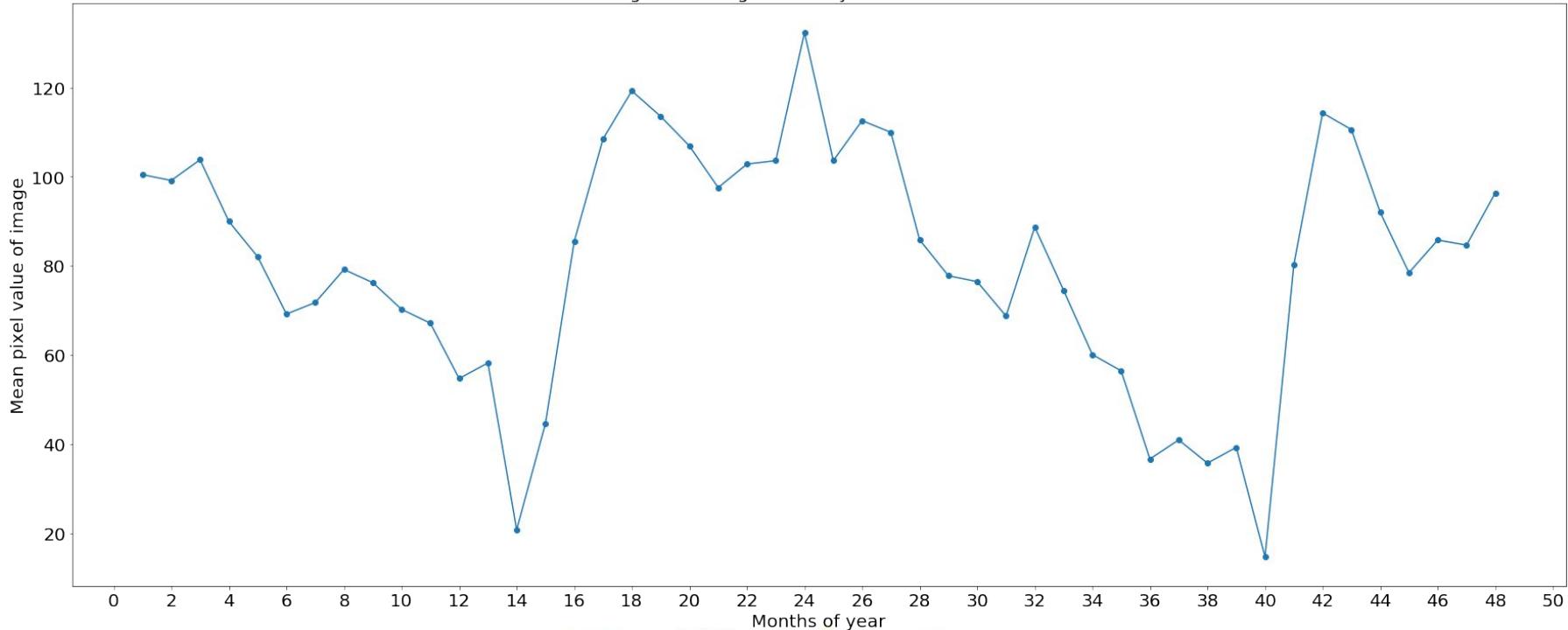
Platinum Partner





Image Analysis

Harvesting and sowing trend for year 2017 & 2018 combined



Organisers



Platinum Partner





Image Analysis

- Jan - March -> Sowing (60-125)
- April -> Harvesting (70-110)
- May - July -> sowing (15-100)
- August - September -> Harvesting (17-120)
- October - November -> Sowing (70-120)
- December -> Harvesting (90-150)

Organisers



MHRD



MIC



AICTE
The Directorate of Technical Education
Government of India



Persistent



ISRO

Platinum Partner





Approaches

- Deep Neural Networks for Fine tuning.
 - a. Aim was to predict month from Image.
 - b. Inception model used with Dense(1024)->Dropout(0.4)->Dense(12) as additional layers.
 - c. Each Image cropped in 100 equal parts and ImageDataGenerator used to augment the data.
 - d. Trained for 40 epochs.
 - e. Overfitting led to poor results.
- Decompression of tif images
 - a. Various softwares were used to get high resolution RGB image.

Organisers



MHRD



MIC



ANTRI
The Incubation Center



Persistent



Platinum Partner





Working method

- Mean Calculation method
 - Mean of RGB values of each pixel are calculated.
 - The mean gives an idea of which crop season is going on.
 - That gives a threshold value to calculate a pixel's information.
 - Higher the mean -> Lower the crop density
 - Lower the mean -> Higher the crop density.
 - **No of harvests are the average pixel values which are greater than the threshold.**
 - time of sowing and harvesting is found after observing the pattern.

Organisers



MHRD



MIC



AICTE



Persistent



DST

Platinum Partner



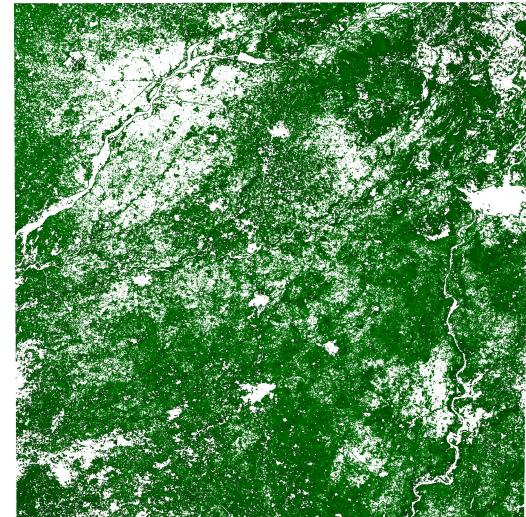
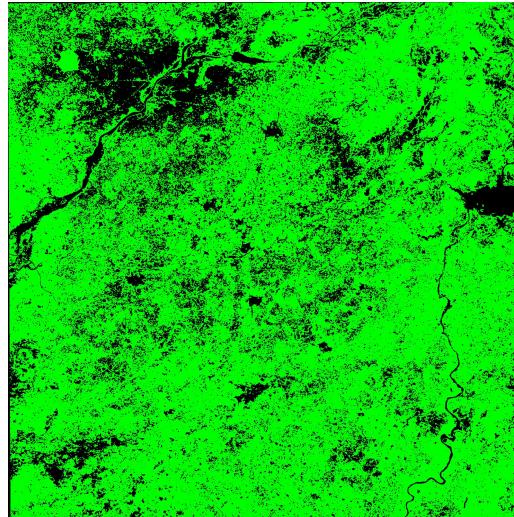
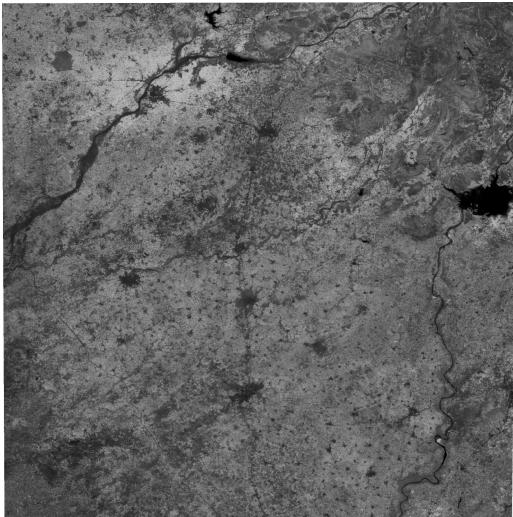


SMART INDIA HACKATHON 2020
NITK Internal Hackathon
(January 21-22, 2020)



Final Result 01-2017

3047377



Organisers



MHRD



MIC



ANTRIX



Persistent



ISRO

Platinum Partner



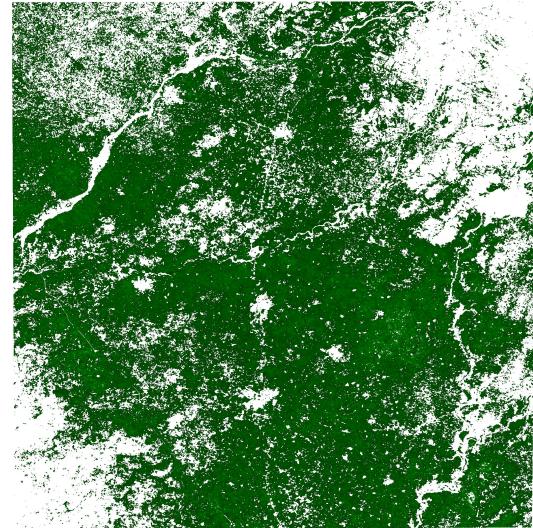
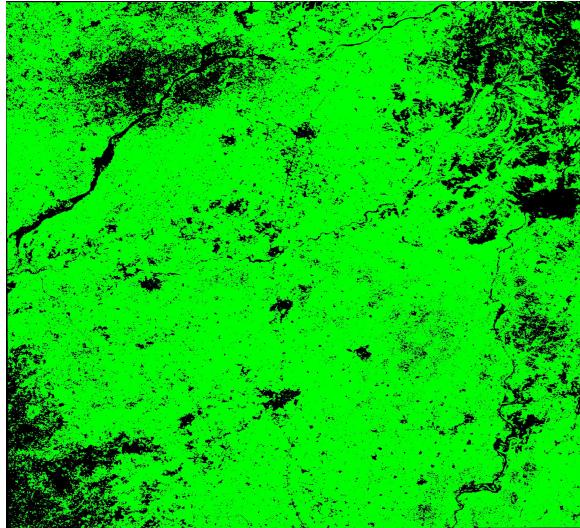
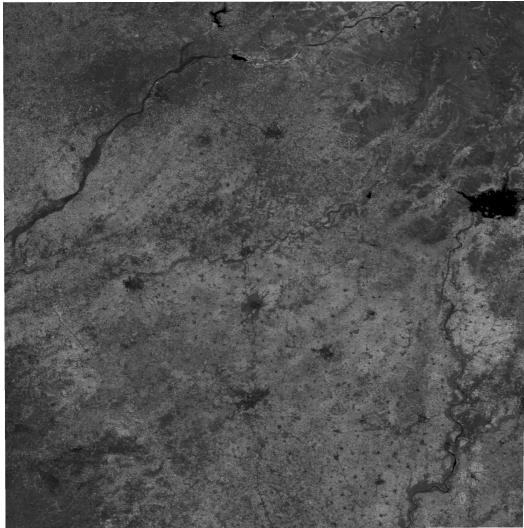


SMART INDIA HACKATHON 2020
NITK Internal Hackathon
(January 21-22, 2020)



Final Result 03-2017

2963395



Organisers



Platinum Partner





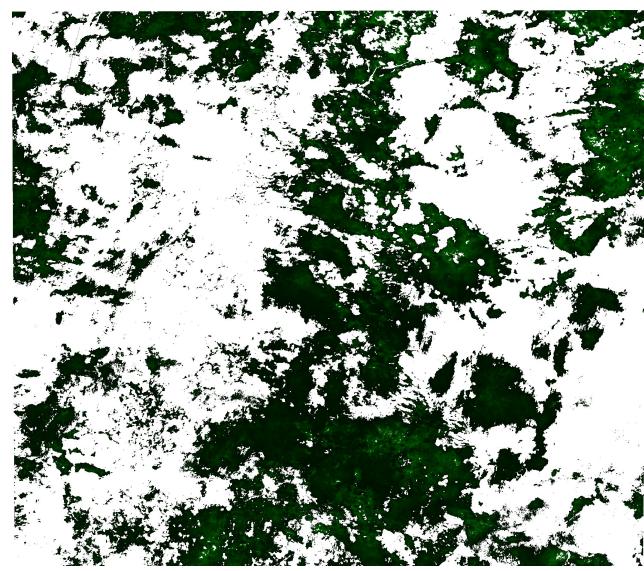
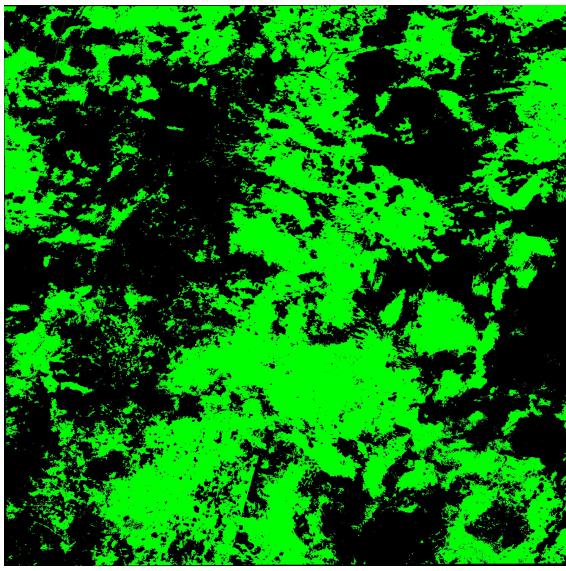
SMART INDIA HACKATHON 2020
NITK Internal Hackathon
(January 21-22, 2020)



Final Result

07-2017

4150103



Organisers



MHRD



MIC



AICTE



Persistent



ISRO

Platinum Partner



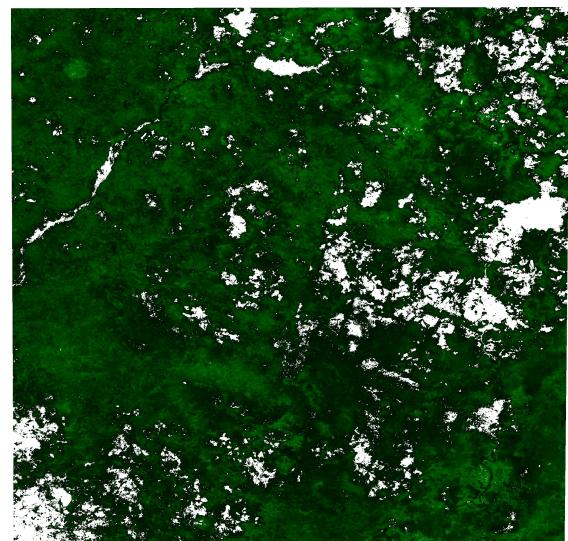
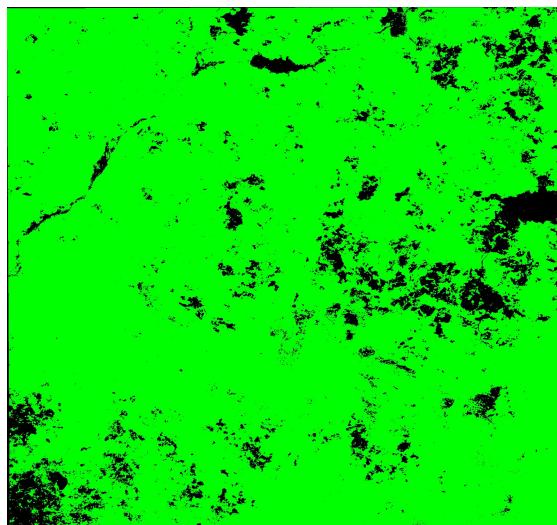
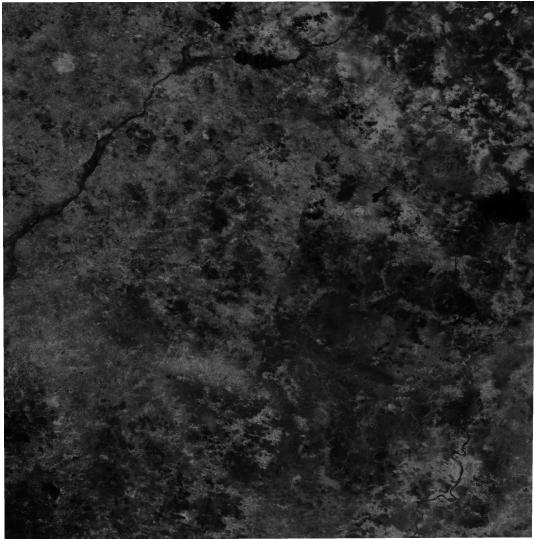


SMART INDIA HACKATHON 2020
NITK Internal Hackathon
(January 21-22, 2020)



Final Result 08-2017

3896431



Organisers



MHRD



MIC



DST



Persistent



ISRO

Platinum Partner



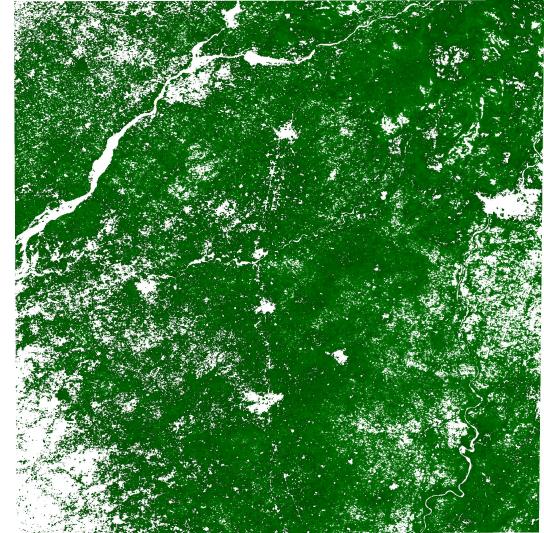
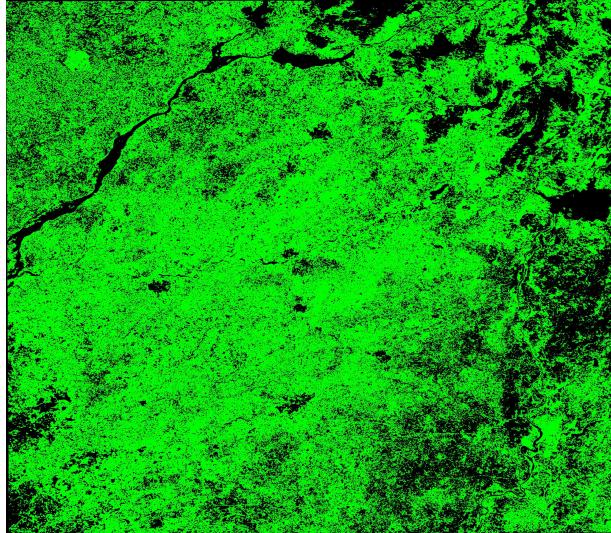
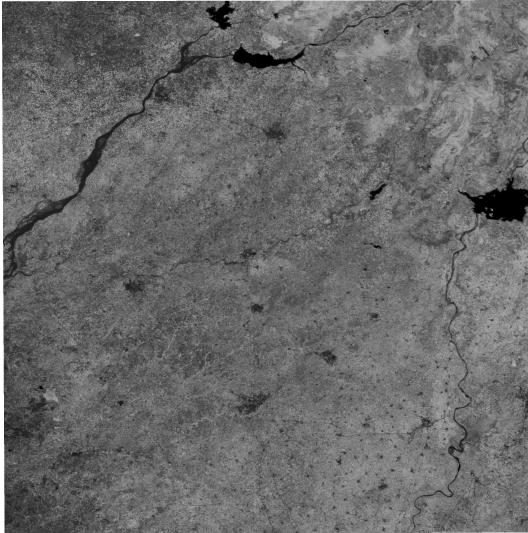


SMART INDIA HACKATHON 2020
NITK Internal Hackathon
(January 21-22, 2020)



Final Result 10-2017

2614671



Organisers



MHRD



MIC



ANTRIX
The Space Agency



Persistent



ISRO
Indian Space Research Organisation

Platinum Partner



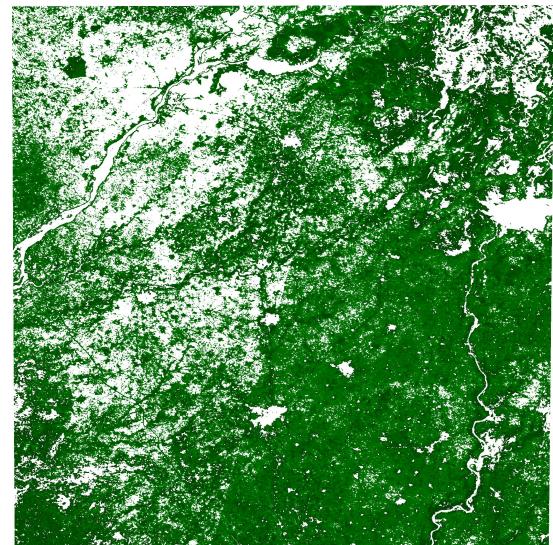
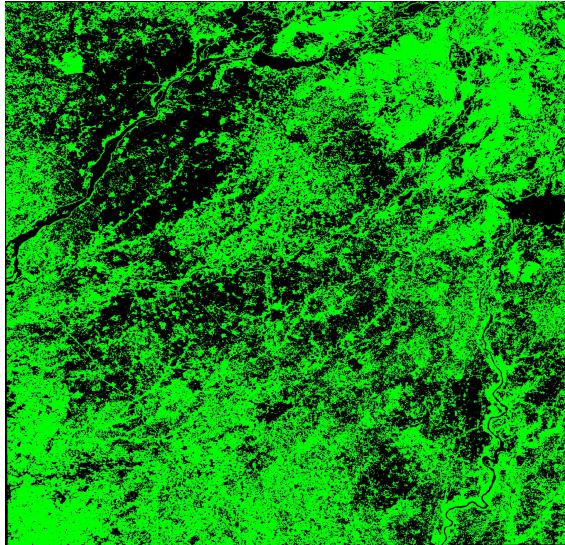
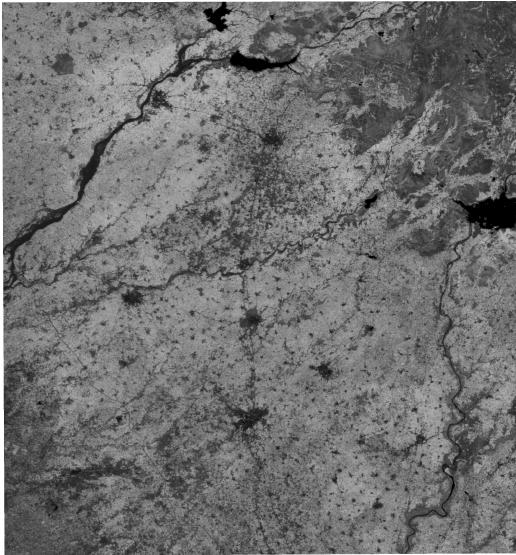


SMART INDIA HACKATHON 2020
NITK Internal Hackathon
(January 21-22, 2020)



Final Result 01-2018

3059253



Organisers



MHRD



MIC



AICTE
All India Council
for Technical Education



Persistent



ISRO

Platinum Partner





SMART INDIA HACKATHON 2020
NITK Internal Hackathon
(January 21-22, 2020)



Organisers



MHRD



MIC



Platinum Partner

