**R Programs for Woody Features Detection**

**Data:**

**Image of this experiment is placed in the “data” folder with the corresponding ground truth. Ground truth contains only foreground objects (woody features).**

**Image: “SWF\_570d\_ext\_v1.tif”**

**Ground truth: SWF\_SAMPLE\_ext\_v1.tif**

**Sample program to detect the woody features with original input image, and NDVI is placed in the dropbox: “SIRS\_SingleFile\_RF\_Train\_Test.R”**

**Give the correct pathname to the input image, and the run the “SIRS\_SingleFile\_RF\_Train\_Test.R” to see the classification map of woody features. Detected woody features are shown in green.**

**Modify the “SIRS\_SingleFile\_RF\_Train\_Test.R” in order to do the following assignments.**

**Question 1:**

1. **Compute the NDVI of the input image. The order of bands in the input image is as follows: NIR, Red, Green**
2. **Once NDVI is computed, compute the attribute profiles of the NDVI image using area attributes with max tree. Beware that NDVI has to be scaled to positive numbers. For e.g, scale to [0,1] or simply [0,2] (that is add, 1 to the NDVI image. Let’s call the NDVI attribute profiles as :NDVIAP**

**Area thresholds = [1000, 2500, 5000, 10000]**

1. **Now load the original image, NDVIAP, Groundtruth image**
2. **Perform RF classification.**

**Question 2:**

1. **Load the original image, ground truth image, and NDVIAP from (b) of question 1**
2. **Use the NDVIAP from the question 1 to compute differential attribute profiles (DAP), as mentioned in the slides, and we call as NDVIDAP:**

*NDVI- NDVIAP(1000), NDVI-NDVIAP(2500), NDVI-NDVIAP(5000), NDVI-NDVIAP(10000*)

Remember that: first band in NDVIAP indicates the NDVI image, and second band indicates NDVIAP with threshold 1000, and so on

1. **Now concatenate OrgImg, NDVI, NDVIDAP, and perform RF classification**
2. **Display the detected woody feature map**