**Run Spatial Features (MapPy)**

1. > cd C:\Program Files (x86)\Python27\ArcGIS10.3\Lib\site-packages\mappy\features
2. > feas.py -i C:\Users\wb486933\Secondary\_Cities\IMAGERY\_4band\orthorectified\rubavu\_img\_spot6\_pms\_201308250754469\_sen\_1337646101\_r1c1.img -o C:\Users\wb486933\Secondary\_Cities\Mappy\_Classification\rubavu -blk 8 -scs 16 -tr ndvi -bd 1

**Create Virtual Stack of Features (MapPy)**

1. Text file (Includes dmp, fourier, gabor, hog, lbpm, mean, ndvi, pantex = 108 layers): C:\Users\wb486933\Ten\_Cities\Mappy\_Classification\nairobi\_new\_file\_list.txt
2. > import subprocess
3. > subprocess.call(["gdalbuildvrt", "-separate", "-input\_file\_list", "C:\\Users\\wb486933\\Ten\_Cities\\Mappy\_Classification\\kigali\_new\\kigali\_new\_file\_list.txt", "C:\\Users\\wb486933\\Ten\_Cities\\Mappy\_Classification\\kigali\_new\\kigali\_new\_stack01.vrt"])

**Train the VRT (ArcGIS)**

1. Create training polygons: nairobi\_new\_training\_cutline01\_class01.shp
   1. Polygon, projection in UTM zone
   2. Classes:
      1. 1: residential regular (formal)
      2. 2: residential irregular (informal)
      3. 3: commercial/industrial
      4. 4: veg
      5. 5: barren
      6. 6: water
2. Dissolve each training class into 1 polygon:
   1. C:\Users\wb486933\Ten\_Cities\Training\Nairobi\_new\nairobi\_new\_training\_cutline01\_class01\_dissolve.shp
3. Create random points, 500 per class
   1. C:\Users\wb486933\Ten\_Cities\Training\Nairobi\_new\nairobi\_new\_training\_cutline01\_class01\_point500.shp
4. Open attribute tables
   1. Column CID > field calculator > assign their proper classes
5. Merge all points into one class:
   1. C:\Users\wb486933\Ten\_Cities\Training\Nairobi\_new\nairobi\_new\_training\_cutline01\_points\_merge.shp

**Sample training polygons (MapPy)**

1. > cd C:\Program Files (x86)\Python27\ArcGIS10.3\Lib\site-packages\mappy\sample
2. > sampleRst.py -p C:\Users\wb486933\Ten\_Cities\Training\dakar\_new\cutline02\dakar\_new\_training\_cutline02\_points\_merge.shp -c cid -i C:\Users\wb486933\Ten\_Cities\Mappy\_Classification\dakar\_new\dakar\_new\_stack01.vrt -o C:\Users\wb486933\Ten\_Cities\Mappy\_Classification\dakar\_new
3. Parameters:
   1. -p = Points shapefile to sample
   2. -c = attribute column with classes
   3. -i = virtual stack to sample
   4. -o = output directory

**Classify the image (MapPy)**

1. > cd C:\Program Files (x86)\Python27\ArcGIS10.3\Lib\site-packages\mappy\classifiers
2. > classification.py -s C:\Users\wb486933\Ten\_Cities\Mappy\_Classification\dakar\_new\dakar\_new\_training\_cutline02\_points\_merge\_01.txt -cli classifier:RF,trees:100 -i C:\Users\wb486933\Ten\_Cities\Mappy\_Classification\dakar\_new\dakar\_new\_stack01.vrt -o C:\Users\wb486933\Ten\_Cities\Mappy\_Classification\dakar\_new\dakar\_new\_stack01\_cutline02\_classified01.img
3. Parameters:
   1. -s = sample info you just created from the points (will be in your output directory you just created)
   2. -cli = what kind of classification you want to do. Random forests with 100 trees
   3. -i = virtual stack to classify
   4. -o = output classified image with extension

**Clip to cutline (if have mosaicked VRT) (ArcGIS)**

1. Raster clip
2. Output: C:\Users\wb486933\Ten\_Cities\Mappy\_Classification\Nairobi\_new\nairobi\_new\_stack01\_cutline01\_classified01\_clipped.img

**PROJECT the classified image to UTM ZONE** if not already in correct zone(ArcGIS)

**Merge cutlines together (if you have a mosaicked VRT) (ArcGIS)**

1. Mosaic to new raster
2. Cell size: whatever the mappy classification outputs.
   1. For example, if you have 0.5m imagery, and use block size of 32, your cell size is 0.5x32 = 16m
3. Output: C:\Users\wb486933\Ten\_Cities\Mappy\_Classification\Nairobi\_new\nairobi\_new\_mosaic\_classified.img

**Smooth the Classified image (gets rid of anomalous pixels) (Erdas)**

1. Erdas > Raster > Thematic > Neighborhood
2. 5x5 Majority Filter: C:\Users\wb486933\Secondary\_Cities\Mappy\_Classification\muhanga\muhanga\_classified\_smooth5.img

**Make raster a thematic layer (Erdas)**

1. Erdas > Subset and Chip > thematic
   1. C:\Users\wb486933\Ten\_Cities\Mappy\_Classification\Nairobi\_new\nairobi\_new\_mosaic\_classified\_smooth5\_thematic.img