# MSTAR Patchwork 7.III.2001

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The following file contains a description of the mosaic created different images of the the publicly available MSTAR Clutter collection. Request information and additional details about the MSTAR Clutter collection can be found at: http://www.mbvlab.wpafb.af.mil/public/MBVDATA.

## Data and Sensor Information

Data collected by Sandia National Laboratory with the synthetic aperture radar STARLOS in September 1995 near Huntsville, Alabama. This sensor operates in the X-band. The depression angle of the current set is 15°, stripmap mode and 1-foot resolution.

## File Information

Filename: patch512_16b.zip (zip compressed).
Format: 512x512 pixels. 16 bits per pixel.
Raw binary Big Endian encoding, as for the original MSTAR set.
File has no header, and the data block format is row-wise written.

The information regarding each region within the patchwork is summarized in Table 1. Source filename corresponds to the file in the original MSTAR Clutter data set. The coordinates indicate the region of the original image which was extracted to create the patchwork.

| Source Filename | Texture Type | Coordinates | | | |
|---|---|---|---|---|---|
| | | $x_{min}$ | $y_{min}$ | $X_{max}$ | $y_{max}$ |
| Hb06266 | Shadow | 125 | 925 | 381 | 1181 |
| Hb06272 | Short Grass | 370 | 1250 | 626 | 1506 |
| Hb06266 | Trees | 564 | 1050 | 820 | 1306 |
| Hb06274 | Tall Grass | 0 | 1492 | 256 | 1748 |
| Hb06275 | Crop UR | 50 | 1050 | 350 | 1350 |
| Hb06263 | Crop LL | 556 | 1144 | 856 | 1444 |

Table 1. Sample images for the patchwork.

In order to have equal areas for each region, the squared radius of the circle is set according to the following expression:

$$r^2 = \frac{s^2}{5\pi}$$

where $s$ is the total image width, in this case 512 pixels. The above value for $r^2$, results from equating the circle and the corner region areas, i.e. by solving:

$$A_{corner} = \left(\frac{s}{2}\right)^2 - \frac{1}{4}\pi r^2 = \pi r^2 = A_{circle}$$

The circular region is centered within the 512x512 pixels image and each corner corresponds originally to a 256x256 pixels region.

Some images with particular testing samples found in the MSTAR clutter collection are listed in the table below.

| Filename | Sample Type |
|---|---|
| Hb06192 | Pure forest (trees). |
| Hb06198 | Nice (clear) grass, trees and shadows. |
| Hb06201 | Tall grass and trees. |
| Hb06204 | Tall and short grass, crops and trees. |
| Hb06211 | Like Hb06204, but with less trees. |
| Hb06237 | Contains ponds. |
| Hb06238 | Contains ponds. |
| Hb06263 | Large crop areas. |
| Hb06266 | Good forest and shadow regions. |
| Hb06272 | Grass regions. |
| Hb06274 | Short and tall grass. |
| Hb06275 | Large crop areas. |

Table 2. Images in the MSTAR clutter collection with convenient testing samples.