

# Appendix A

## Benchmark Images

The image sets forming the benchmark for comparison between algorithms in this Ph.D. dissertation come from different corpus. This appendix briefly describes each of the images classes included in the experimental corpus. All images have 8-bit depth. Tables provide the name and size of the images. An example of image for each class is also given.

- **Natural Images:** In this work, *natural images* refers to a generic set of natural scene images. The 25 images in table [A.1](#) are used.
- **Synthetic Images:** Different kinds of synthetic images compose this class: two extracted of the JPEG2000 test set, other obtained from internet data bases, and others designed on purpose to test specific features of the algorithms. See table [A.2](#). Image “crosses”, used to illustrate a wavelet decomposition in §[2.1.3](#), is a 256x256 image obtained from <http://links.uwaterloo.ca/bragzone.base.html>.
- **Texture Images:** Several textured images have been employed in the experiments. In table [A.3](#) appear their name and sizes.
- **Biomedical Images:** The biomedical image set consists of three different corpus: mammography, axones, and MRI brain images.
  - **Mammography:** A set of 15 mammography is employed. Sizes are shown in table [A.4](#).
  - **Axones:** The axones class is a set of 9 medical images that have a size of 512x512 pixels.
  - **Magnetic Resonance Imaging (MRI):** This class is a group of 3-D human head images. They are a slice by slice view of the inside of a human head. The set is formed by 96 images of 256x256 pixels.

Image Name	# of rows	# of cols
aerial	256	256
aerial2	2048	2048
aquarium	576	720
baboon	512	512
barbara	512	512
bike	2560	2048
bridge	256	256
cafe	2560	2048
cameraman	256	256
carcett	536	672
cats	2048	3072
cheryl	512	512
farm	512	512
fish	200	500
fruit	256	256
girl	512	512
goldhill	256	256
hawaii1 gray	1391	2097
jp2.8	400	700
lena	512	512
mit	256	256
people	256	256
peppers	512	512
phone	384	510
water	1999	1465

Table A.1: Set of natural images.

Image Name	# of rows	# of cols
anemone	471	722
books	318	179
chart	2347	1688
cmpnd1	768	512
cwheel	600	800
docon3_001	288	360
house	600	800
music	111	111
plan1	583	860
stone	133	169
sunset	480	640
synCircle	256	256
syntheticHF	128	128
tdf1	576	720
winaw	465	633

Table A.2: Set of synthetic images.

- **Remote Sensing Images:** Two different kinds of remote sensing images appear in this work:
  - **SST images:** Sea Surface Temperature (SST) images are obtained with the *Advanced Very High Resolution Radiometer* sensors (AVHRR/2&3) from the *National Oceanic and Atmospheric Administration* (NOAA) satellite series [U.S]. Images size range from 5 to 7 Mbytes. This specific set (table A.5) is devoted to the African northwest.
  - **MOC images:** Images collected by the Mars Global Surveyor (MGS) Mars Orbiter Camera (MOC) narrow angle imaging since 20 August 2003. Images are archived in final form with the NASA Planetary Data System (PDS) in [Jet], where can be found with the name R20-00258p, R20-00329p, R20-00387p, R20-00485p.gif, R20-00502p, R20-00725p, R20-00923p and R20-01188p, instead of MOC-1 to MOC-8. They are listed in table A.6.

Image Name	# of rows	# of cols
bk17	150	150
bk25	150	150
bk36	150	150
bk40	150	150
bk42	150	150
bk44	150	150
bk48	150	150
rd04	256	256
rd09	256	256
rd24	256	256
rd49	256	256
rd57	256	256
rd65	256	256
rd77	256	256
rd87	256	256

**Table A.3:** Set of texture images.

Image Name	# of rows	# of cols
mamo1	1281	896
mamo2	1303	877
mamo3	1331	863
mamo4	1285	857
mamo5	1271	673
mamo6	1265	773
mamo7	727	1297
mamo8	821	1321
mamo9	1265	826
mamo10	831	1327
mamo11	1319	826
mamo12	1309	833
mamo13	799	1323
mamo14	1309	712
mamo15	748	1291

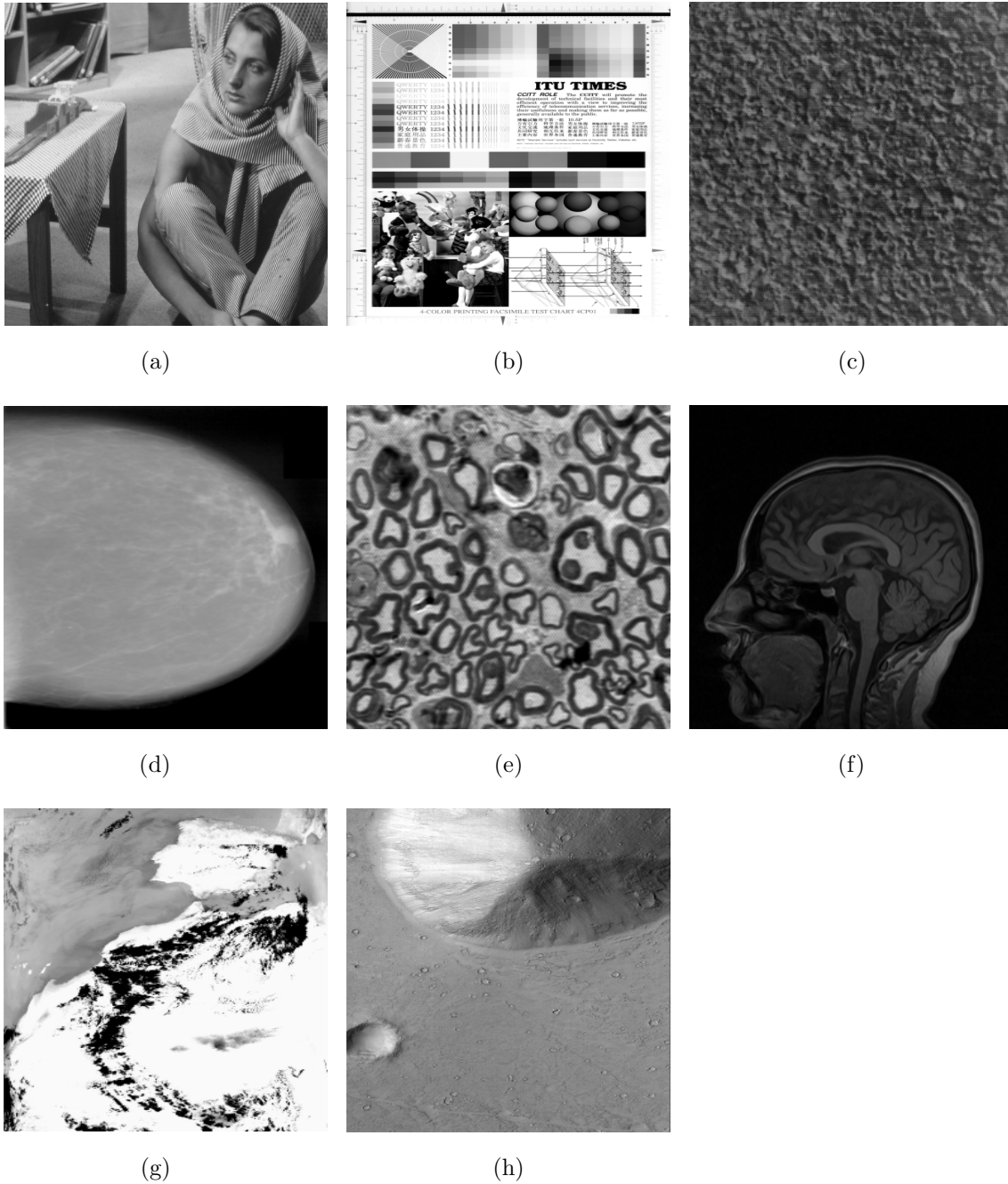
**Table A.4:** Set of mammography.

Image Name	# of rows	# of cols
SST AfrNW 1	3268	2048
SST AfrNW 2	3197	2048
SST AfrNW 3	3035	2048
SST AfrNW 4	2655	2048
SST AfrNW 5	2422	2048
SST AfrNW 6	2705	2048

**Table A.5:** Set of SST images.

Image Name	# of rows	# of cols
MOC 1	6528	512
MOC 2	5888	1024
MOC 3	6016	1024
MOC 4	3712	672
MOC 5	9216	672
MOC 6	6528	1024
MOC 7	6016	1024
MOC 8	7680	640

**Table A.6:** Set of MOC images.



**Figure A.1:** Image example from each image class. (a) natural image (Barbara), (b) synthetic image (chart), and (c) texture image (rd04). Biomedical images: (d) mammography (mammo-12), (e) axones, and (f) MRI image. Remote sensing images: (g) SST AfrNW 5 and (h) part of MOC-1 image.