
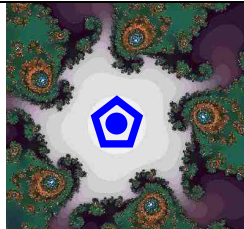
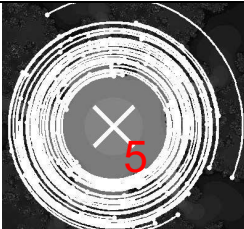
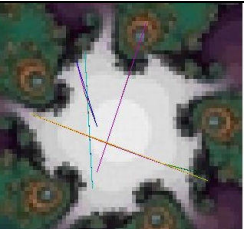
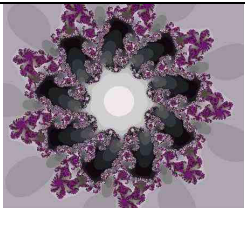
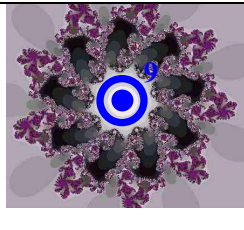
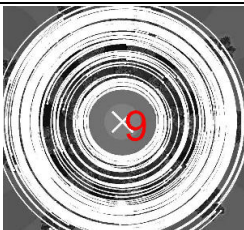
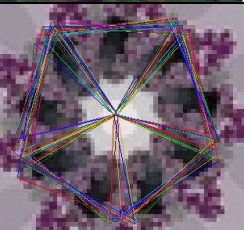
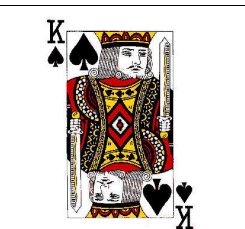
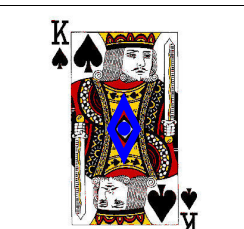
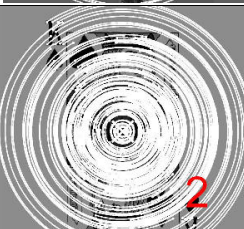


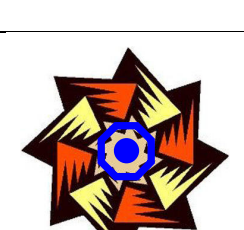
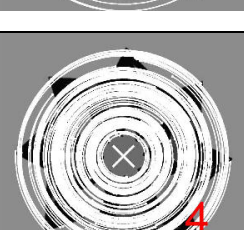
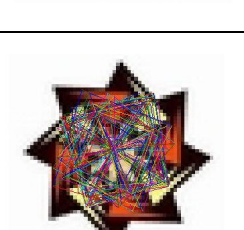
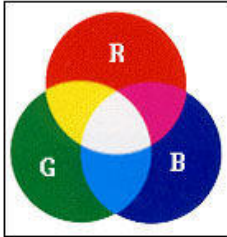
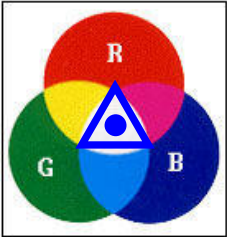
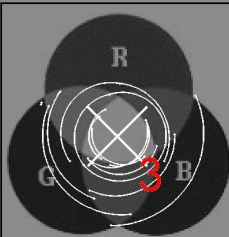
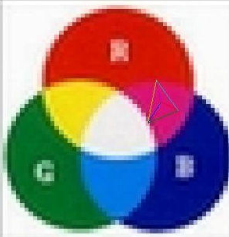



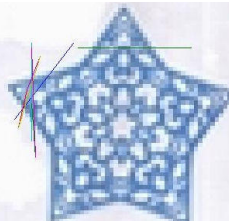
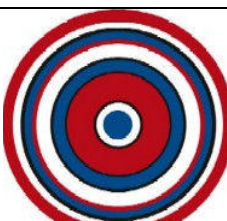
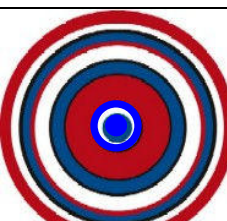
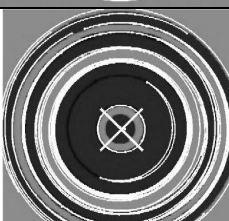
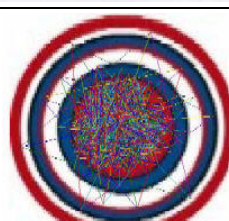
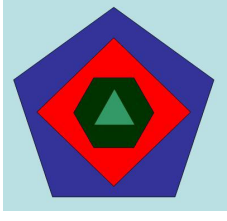
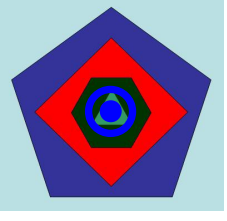

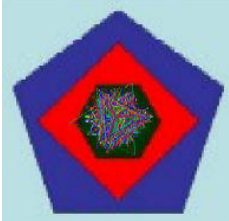
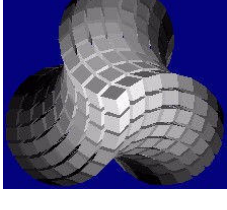
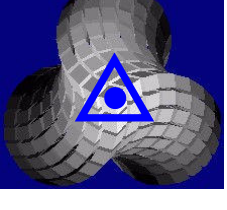

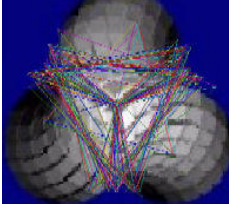



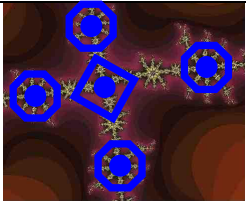

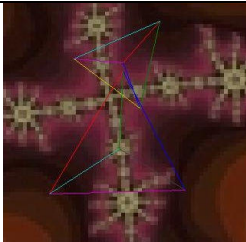

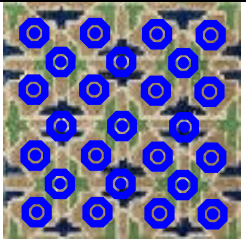
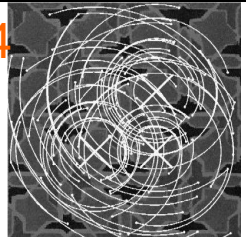
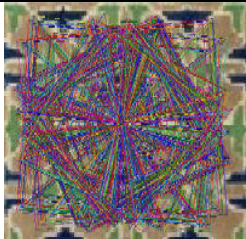

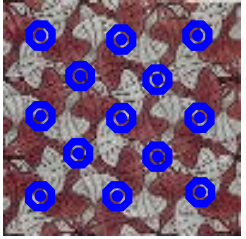
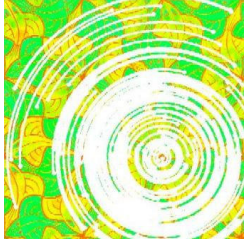


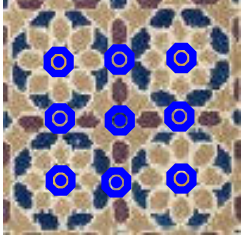
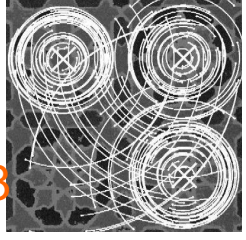

**\* Synthetic image – single symmetry (Rot\_SS, nine images total)**


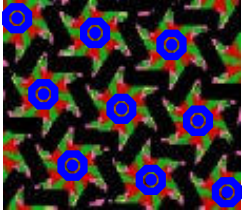
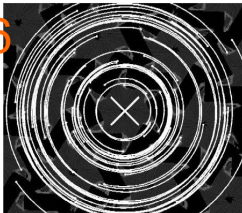
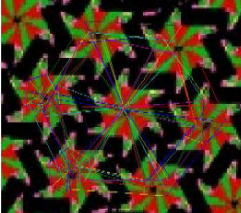

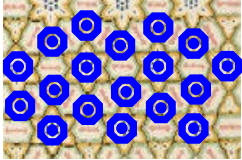



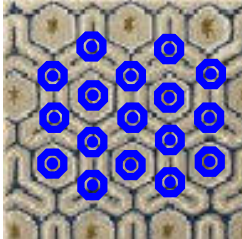
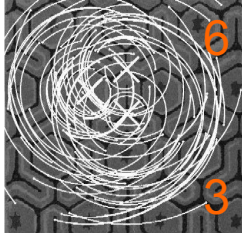
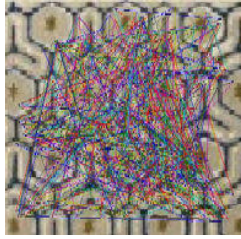

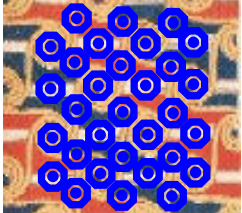
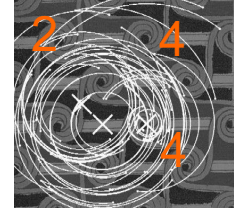
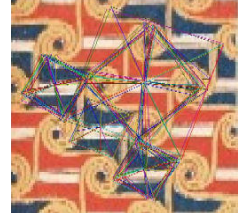

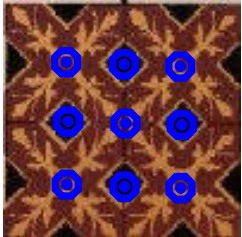


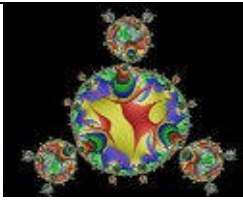
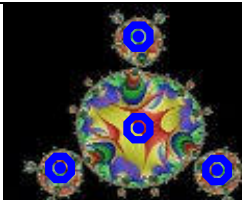
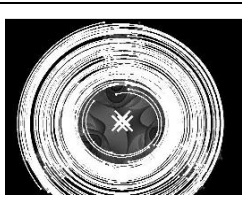
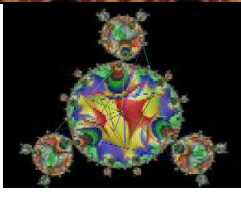
Image Number	Original Image	Ground Truth	Description /Challenges	Loy and Eklundh 2006	Prasad and Davis 2005	Loy and Eklundh 2006			Prasad and Davis 2005		
						S0	S1	GT,TP,FP	S0	S1	GT,TP,FP
Rot_SS1			[C5] Color variation; Global and local.			1	1	1/1/0	0	-1	1/0/1
Rot_SS2			[C9] Color variation; Global and local.			1	1	1/1/0	1	1	1/1/0
Rot_SS3			[C2] Complex texture.			1	1	1/1/0	1	1	1/1/0
Rot_SS4			[C8] Color difference.			1	1	1/1/0	1	1	1/1/0

Rot_SS5			[D3] Color difference; Low texture.			1	1	1/1/0	0	-1	1/0/1
Rot_SS6			[D5] Paper Cutting			1	1	1/1/0	0	-1	1/0/1
Rot_SS7			[SO(2)] No texture			1	1	1/1/0	1	1	1/1/0
Rot_SS8			Multi fold fir same center			1	1	1/1/0	1	1	1/1/0
Rot_SS9			[C3] texture			1	-1	1/1/2	1	1	1/1/0



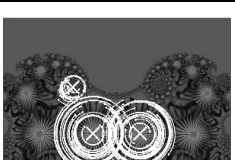

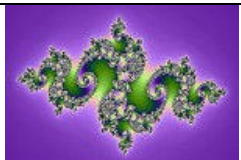
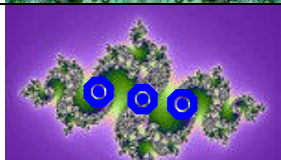
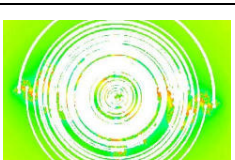
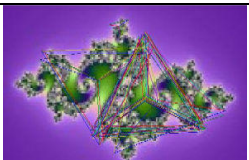
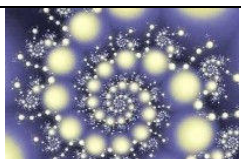


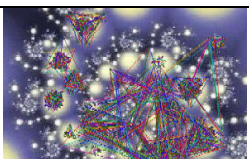


**\* Synthetic image – multiple symmetry (Rot\_SM, 13 images total)**


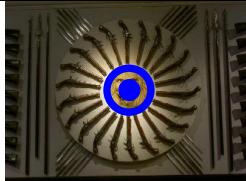

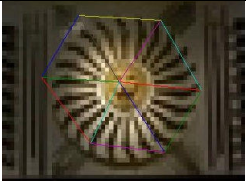












Num	Original Image	Ground Truth	Description /Challenges	Loy and Eklundh 2006	Prasad and Davis 2005	Loy and Eklundh 2006			Prasad and Davis 2005		
						S0	S1	GT/TP/FP	S0	S1	GT/TP/FP
Rot_SM1			[D8, D16] Color variation; Global and local.			3/5	3/5	5/3/0	0	-2/5	5/0/2
Rot_SM2			PMM, multiple symmetries, D4			3/25	3/25	25/3/0	4/25	4/25	25/4/0
Rot_SM3			P4, multiple rotation centers, C4			1/13	1/13	13/1/0	3/13	3/13	13/3/0
Rot_SM4			P4M			1/3	1/3	9/3/0	1/3	1/3	9/3/0

Rot_SM5			P6, multiple rotation centers, pure cyclic subgroups			1/9	1/9	9/1/0	4/9	4/9	9/4/0
Rot_SM6			P6M, local and global symmetries			1/6	1/6	18/3/0	4/9	4/9	18/8/0
Rot_SM7			P3M1 Multiple-symmetry centers, local and global symmetries, low color-contrast			3/19	3/19	19/3/0	10/19	7/19	19/10/17
Rot_SM8			P2, multiple rotation centers, color-symmetry			3/31	3/31	31/3/0	4/31	4/31	31/4/0
Rot_SM9			P4M, multiple rotation symmetry centers			1/9	1/9	9/1/0	1/9	0	9/1/1
Rot_SM10			Approximate local and global symmetries			1/4	1/4	4/1/0	1/4	1/4	4/1/0












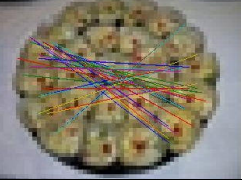
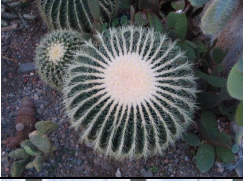
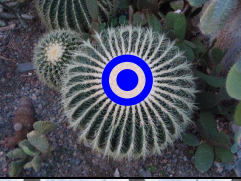
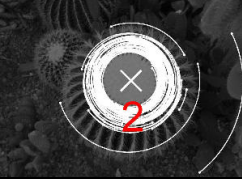
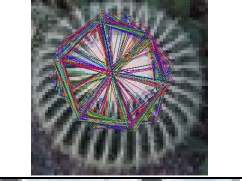

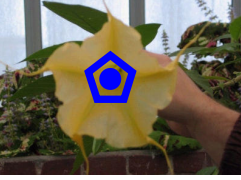
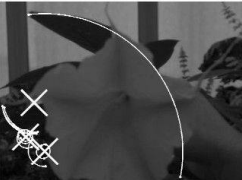
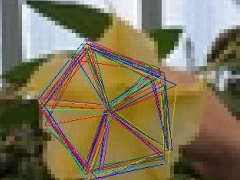

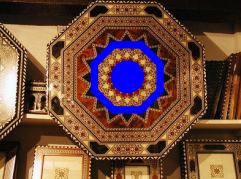

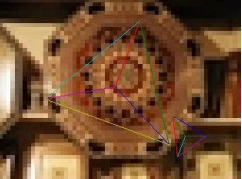





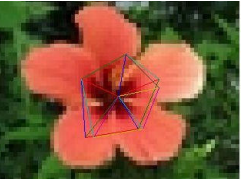



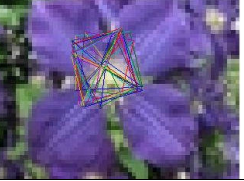

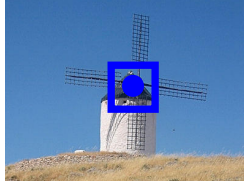








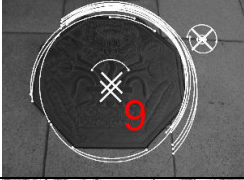

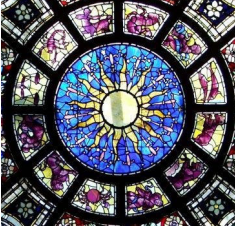
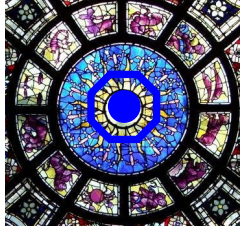
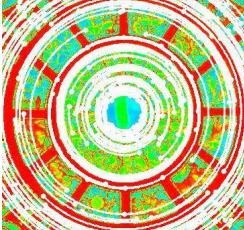

Rot_SM11			Near-regular, local symmetries			1/3	1/6	6/2/1	0	-2/3	6/0/4
Rot_SM12			C2			1/3	1/3	3/1/0	1/3	-2/3	3/1/3
Rot_SM13			Spiral, approximate C2 symmetry			1/13	1/3	13/1/0	8/13	2/13	13/8/6

**\* Real photo – single symmetry (Rot\_RS, 25 images total)**



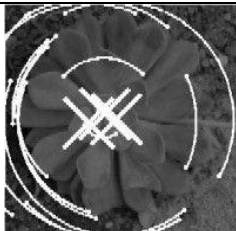
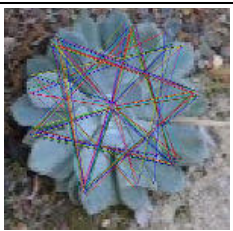

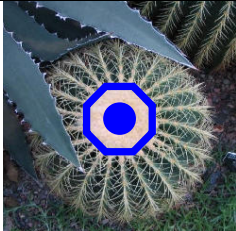










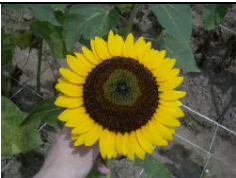






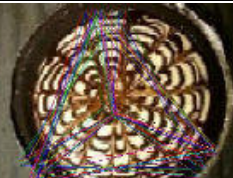
Num	Original Image	Ground Truth	Description /Challenges	Loy and Eklundh 2006	Prasad and Davis 2005	Loy and Eklundh 2006			Prasad and Davis 2005		
						S0	S1	GT,TP,FP	S0	S1	GT,TP,FP
Rot_RS1			[C22] Intensity variation; High order rotation.			1	1	1/1/0	1	1	1/1/0
Rot_RS2			Near-regular			1	1	1/1/0	0	-1	1/0/1
Rot_RS3			[C4] Cluttered background			1	0	1/1/1	0	-1	1/0/1
Rot_RS4			[D24] Cluttered background Inside the rotation region			1	1	1/1/0	0	-1	1/0/1




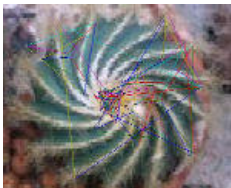
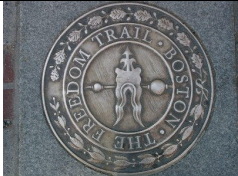

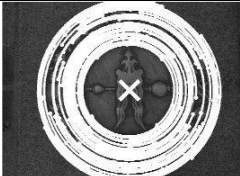







Rot_RS5			Near-regular; Higher order rotation.			1	1	1/1/0	1	1	1/1/0
Rot_RS6			[D5] Cluttered background.			1	0	1/1/1	1	1	1/1/0
Rot_RS7			[D9] Skewed.			0	-3	1/0/3	0	-1	1/0/1
Rot_RS8			[D33] High order rotation.			1	1	1/1/0	1	1	1/1/0
Rot_RS9			[D5] Blurred; Skewed; Cluttered background.			0	-3	1/0/3	1	1	1/1/0
Rot_RS10			[D8] Skewed. High texture			1	1	1/1/0	0	-1	1/0/1

Rot_RS11			[D5] Skewed.			1	1	1/1/0	1	1	1/1/0
Rot_RS12			[D4] Skewed.			1	0	1/1/1	1	1	1/1/0
Rot_RS13			[D4] Cluttered background			1	0	1/1/1	0	0	1/0/0
Rot_RS14			[D3] Skewed			0	-2	1/0/2	0	0	1/0/0
Rot_RS15			[D8] Skewed.			1	0	1/1/1	0	-1	1/0/1
Rot_RS16			[D12] High texture			1	1	1/1/0	1	1	1/1/0



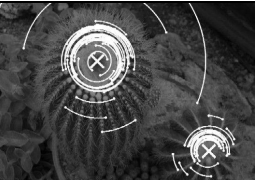


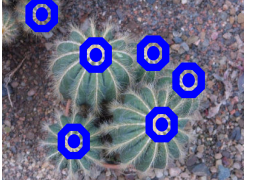
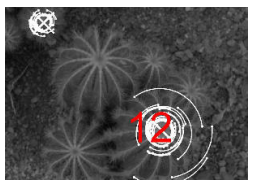




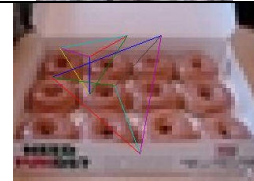






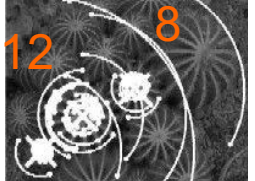





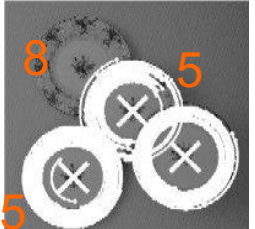






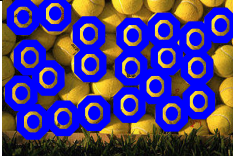



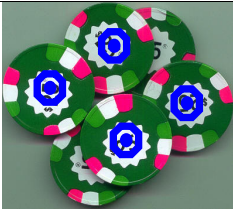
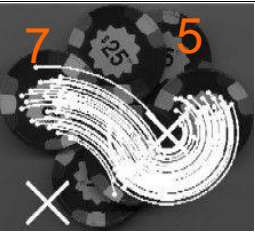
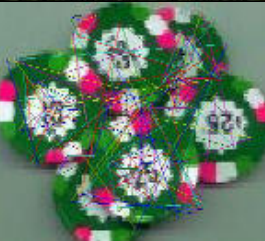
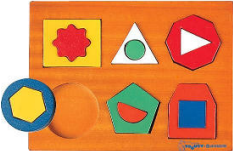
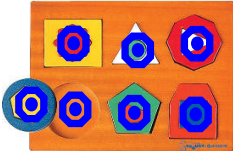


Rot_RS17			Near-regular			1	0	1/1/1	1	1	1/1/0
Rot_RS18			[D22] Occluded High fold			1	1	1/1/0	0	-1	1/0/1
Rot_RS19			Near-regular Intensity difference			1	0	1/1/1	1	1	1/1/0
Rot_RS20			[D6] Near-regular High texture			1	-1	1/1/2	0	-1	1/0/1
Rot_RS21			High fold			1	1	1/1/0	1	0	1/1/1
Rot_RS22			Near-regular			1	1	1/1/0	1	1	1/1/0

Rot_RS23			[C14] High texture			1	1	1/1/0	1	-2	1/1/3
Rot_RS24			Near-regular texture/ $D_{\{2*2\}}$			1	1	1/1/0	0	-1	1/0/1
Rot_RS25			Near-regular			1	1	1/1/0	1	0	1/1/1


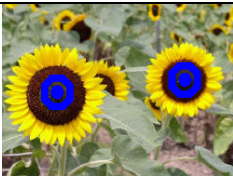



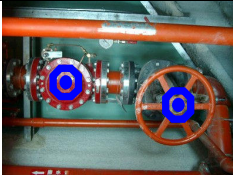
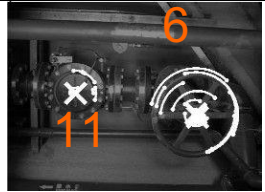


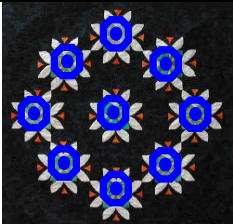
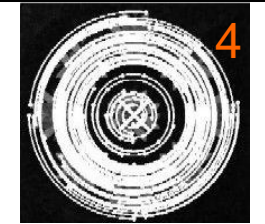










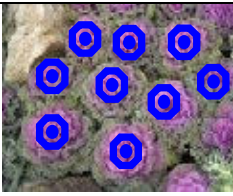





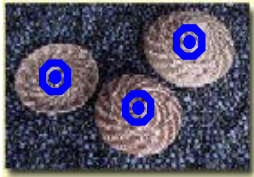
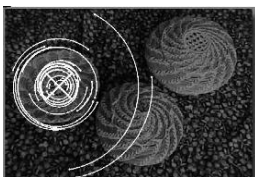
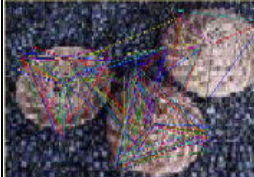

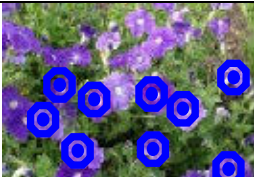
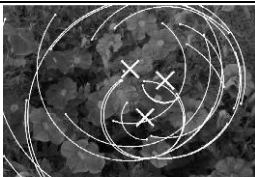



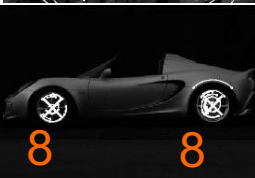



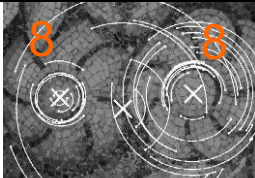
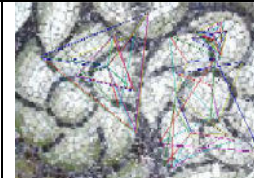


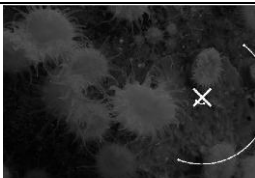





**\* Real photo – multiple symmetry (Rot\_RM, 24 images)**

Num	Original Image	Ground Truth	Description /Challenges	Loy and Eklundh 2006	Prasad and Davis 2005	Loy and Eklundh 2006			Prasad and Davis 2005		
						S0	S1	GT,TP,FP	S0	S1	GT,TP,FP
Rot_RM1			High texture Near-regular			1	1	2/2/0	½	0	2/1/1
Rot_RM2			[D13] Multiple objects.			1/3	1/3	6/2/0	1/6	1/6	6/1/0
Rot_RM3			[D4] Skewed; Global and local.			0	0	12/0/0	0	-1/6	12/0/2
Rot_RM4			Skewed High texture			1/3	1/3	3/1/0	0	-1/3	3/0/1
Rot_RM5			multiple symmetry centers, D Highly textured			3/14	3/14	14/3/0	1/14	1/14	14/1/0



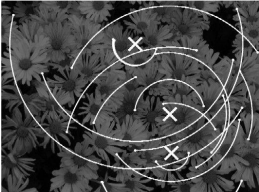





Rot_RM6			Occlusion Different fold			3/4	3/4	4/3/0	1/2	1/2	4/2/0
Rot_RM7			Near-regular, perspective skew, large scale differences, high, inexact folds			0	$-\frac{3}{10}$	10/0/3	0	-1/10	10/0/1
Rot_RM8			Multiple centers of rotation, near regular, occlusion			0	$-\frac{1}{21}$	21/0/1	0	-2/21	21/0/2
Rot_RM9			Occlusion, off- centered, non- symmetrical center regions, purely cyclic color- symmetry			0	-1/2	4/0/2	1/2	-5/2	4/2/12
Rot_RM10			Multiple symmetries, different rotation folds			2/7	2/7	7/2/0	3/7	3/7	7/3/0



Rot_RM11			High fold, near-regular			1/2	1/2	2/1/0	1	1	2/2/0
Rot_RM12			Off-centered symmetries, BG clutters			1	1	2/2/0	0	-1/2	2/0/1
Rot_RM13			clean but real, global and local symmetries			1/9	1/9	9/1/0	1/3	1/3	9/3/0
Rot_RM14			Near-regular			1/4	-1/4	4/1/2	1/2	1/2	4/2/0
Rot_RM15			Skewed, non- discrete			0	-3/5	5/0/3	0	-11/5	5/0/11
Rot_RM16			Near-regular, no precise folds			0	-1/3	9/0/3	4/9	4/9	9/4/0

Rot_RM17			Cyclic Skewed, highly textured (FG and BG)			1/3	1/3	3/1/0	1	-1/3	3/3/4
Rot_RM18			Near-regular, occlusion, skewed			0	-1/3	9/0/3	0	-2/9	9/0/2
Rot_RM19			Off centered symmetries			1	1	2/2/0	0	-1/2	2/0/1
Rot_RM20			Highly textured locally, near- regular			1	1	2/2/0	1/2	-5/2	2/1/6
Rot_RM21			Near-regular, unfocused			0	-1/7	7/0/1	0	-3/7	7/0/3
Rot_RM22			Cluttered background, oblique angle			1/2	1/2	2/1/0	0	-3	2/0/6



Rot_RM23			Near-regular, very cluttered, occluded, non-frontal and skewed views, high # of rotation centers			0	$\frac{-}{1/10}$	30/0/3	0	$\frac{-}{11/30}$	30/0/11
Rot_RM24			Different folds with Dihedral symmetry groups (rotation + reflection symmetry)			0	$\frac{-}{1/5}$	5/0/1	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{5}{1/0}$