APPENDIX

SAMPLE OF DATA LOGGING

1. Otsu method

Log file: *1-agar-io-Otsu_Trial_1.txt*

File name: 1-agar-io
Percobaan Otsu ke-1

RED	Frequency	GREEN	Frequency	BLUE	Frequency
0	3181	0	1636	0	3537
1	1439	1	540	1	256
2	449	2	301	2	1385
3	295	3	228	3	334
4	387	4	199	4	765
5	281	5	183	5	429
.					
.					
.					
255	5262	255	2108	255	8437

Jumlah semua pixel = 65536

Max Frequency
5262 pixels (Red), zone R = 5 - val R = 255
2470 pixels (Green), zone G = 5 - val G = 250
8437 pixels (Blue), zone B = 5 - val B = 255

Optimal Threshold
117 (Red), zone R = 3
120 (Green), zone G = 3
124 (Blue), zone B = 3

Log file: *1-agar-io-Otsu_Trial_2.txt*

File name: 1-agar-io
Percobaan Otsu ke-2

RED	Frequency	GREEN	Frequency	BLUE	Frequency
0	5629	0	2840	0	6384
1	2766	1	1040	1	468
2	902	2	597	2	2502
3	633	3	483	3	731
4	760	4	411	4	1448
5	637	5	378	5	935
.					
.					
.					
255	9763	255	3813	255	15585

Jumlah semua pixel = 65536

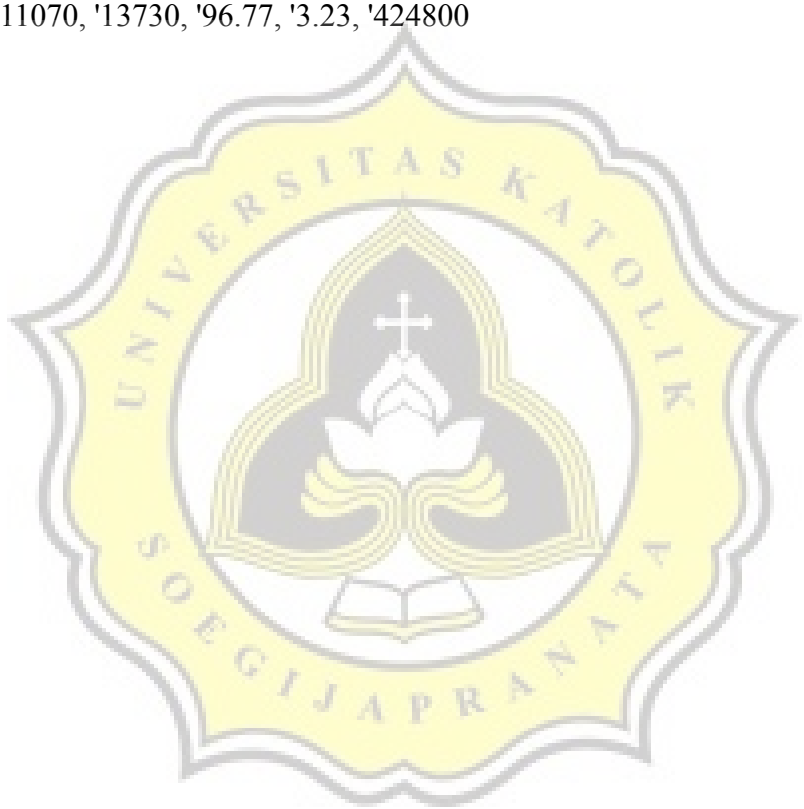
Max Frequency
9763 pixels (Red), zone R = 5 - val R = 255
4808 pixels (Green), zone G = 5 - val G = 249
15585 pixels (Blue), zone B = 5 - val B = 255

Optimal Threshold
222 (Red), zone R = 5
224 (Green), zone G = 5
225 (Blue), zone B = 5

2. Manual thresholding

Log file: *16-snake-Monochrome_Threshold.csv*

Threshold, Black freq, White freq, Background (BLACK) %, Object (WHITE) %, Total pixel
110, '343615, '81185, '80.89, '19.11, '424800
130, '364658, '60142, '85.84, '14.16, '424800
150, '383346, '41454, '90.24, '9.76, '424800
170, '397783, '27017, '93.64, '6.36, '424800
190, '411070, '13730, '96.77, '3.23, '424800



5.2.1. OTSU METHOD

Comparison 2

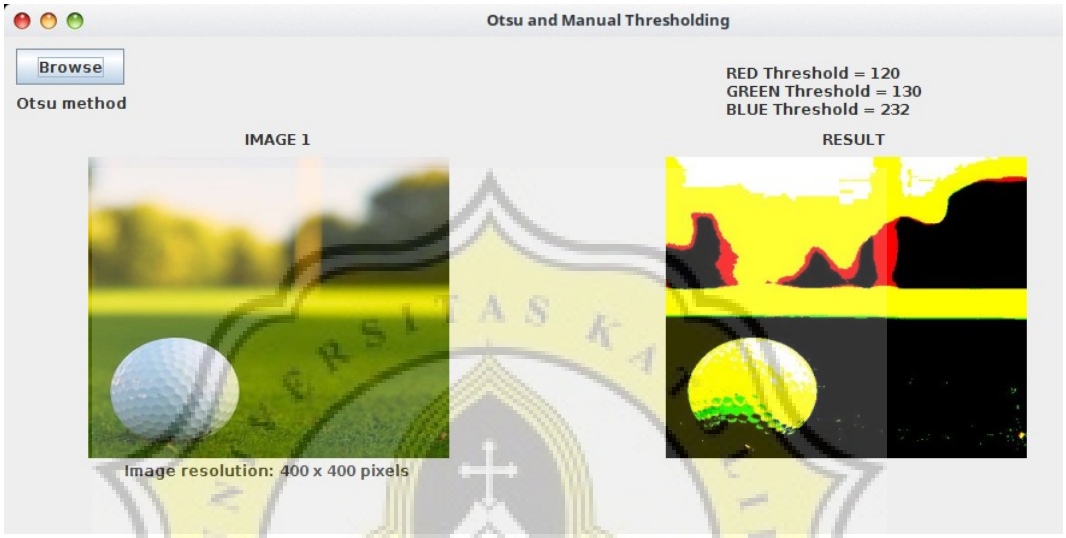


Illustration 6.1: Discrete image 2 - Otsu

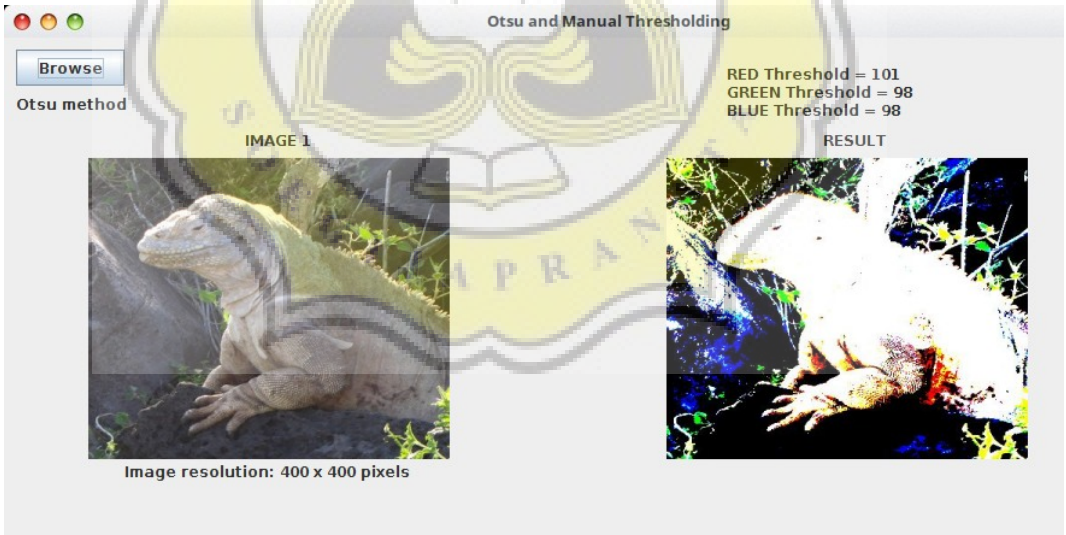


Illustration 6.2: Camouflage image 2 - Otsu

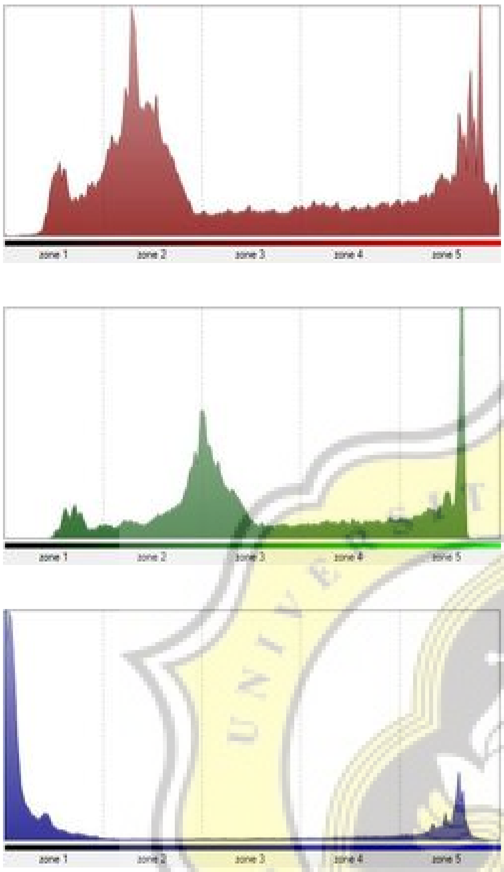


Illustration 6.3: Histogram of discrete image 2

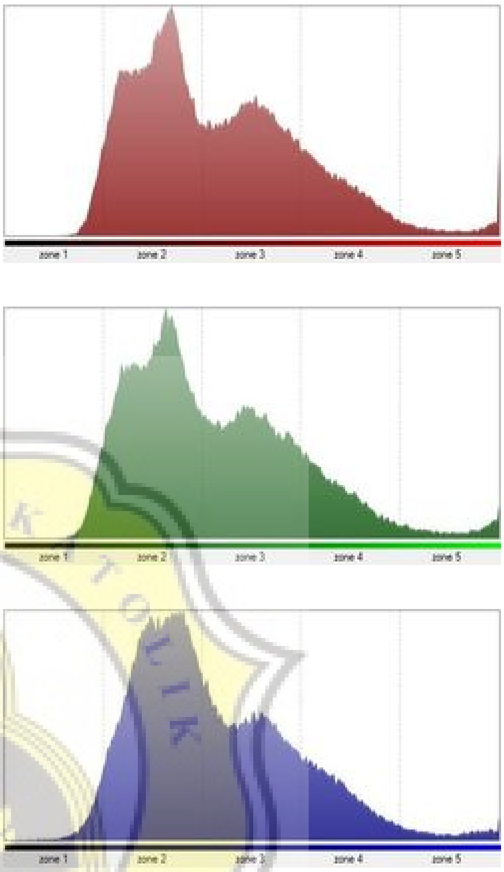


Illustration 6.4: Histogram of camouflage image 2

Comparison 3

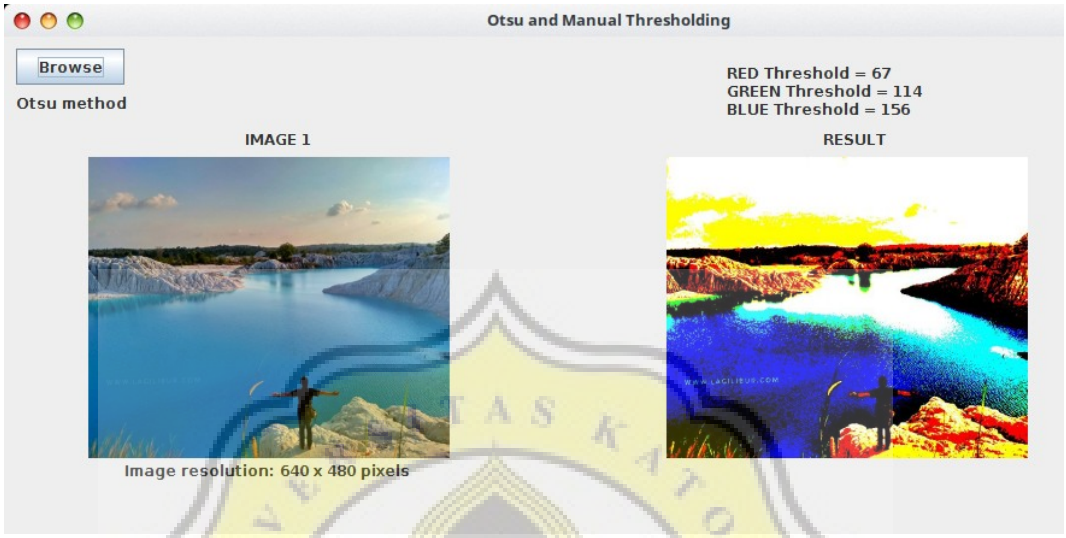


Illustration 6.5: Discrete image 3 - Otsu

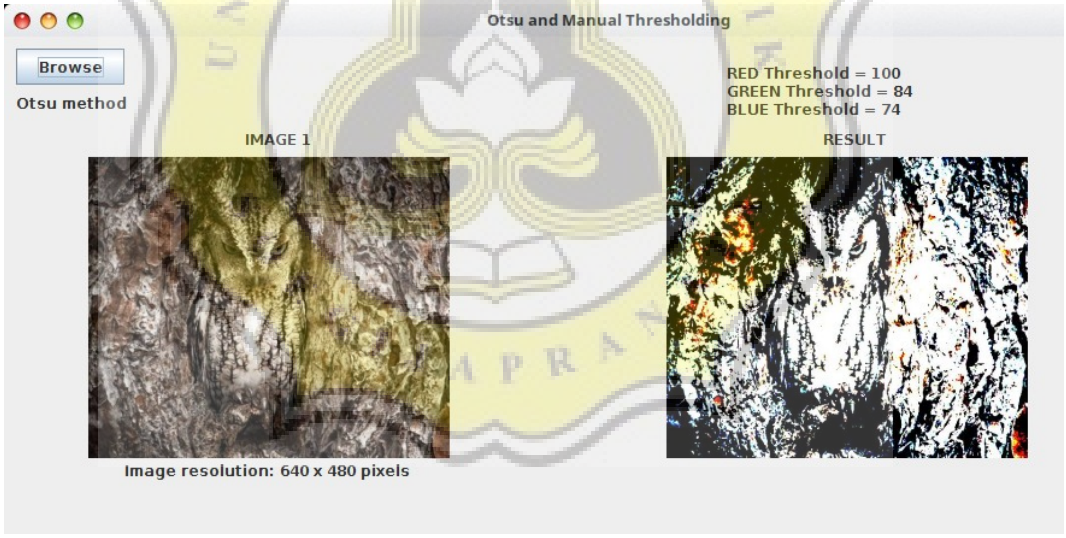


Illustration 6.6: Camouflage image 3 - Otsu

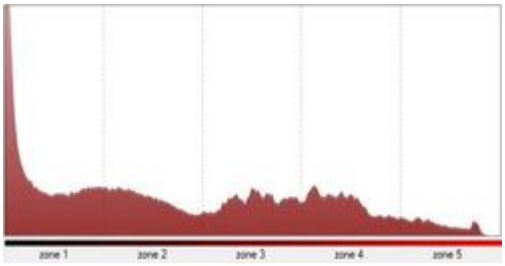


Illustration 6.7: Histogram of discrete image 3

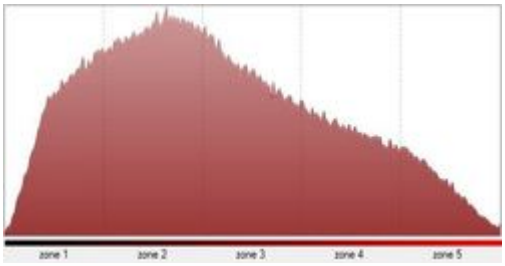
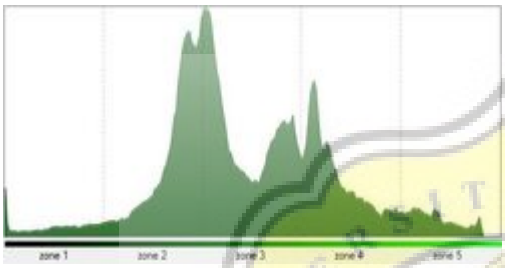
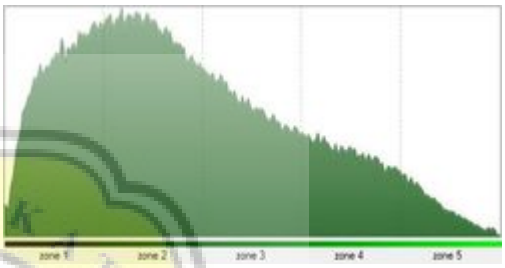
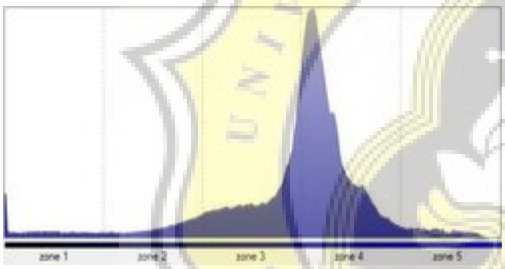
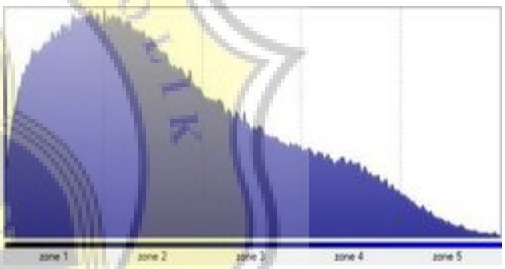


Illustration 6.8: Histogram of camouflage image 3









Comparison 4

Illustration 6.9: Discrete image 4 - Otsu

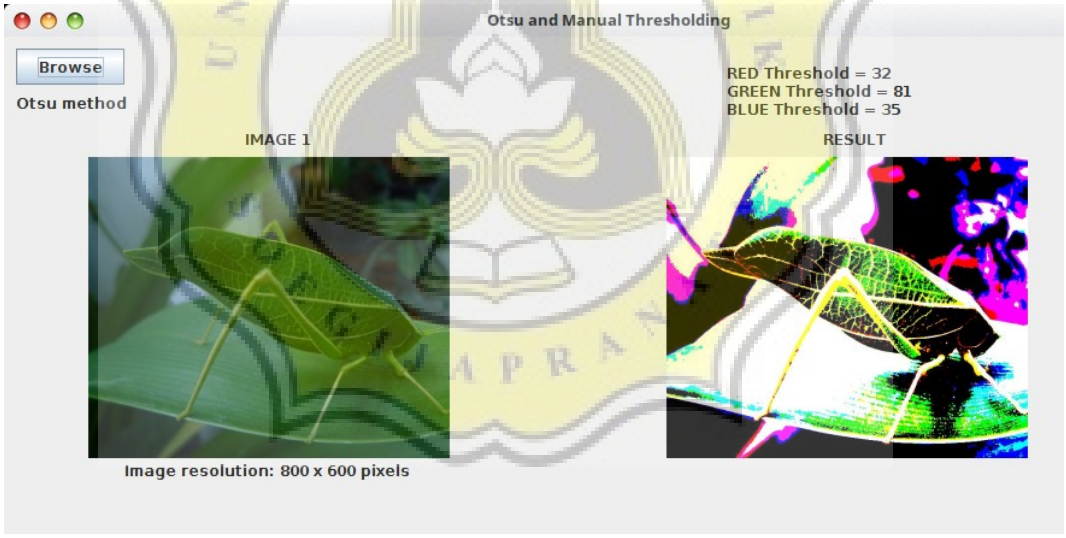


Illustration 6.10: Camouflage image 4 - Otsu

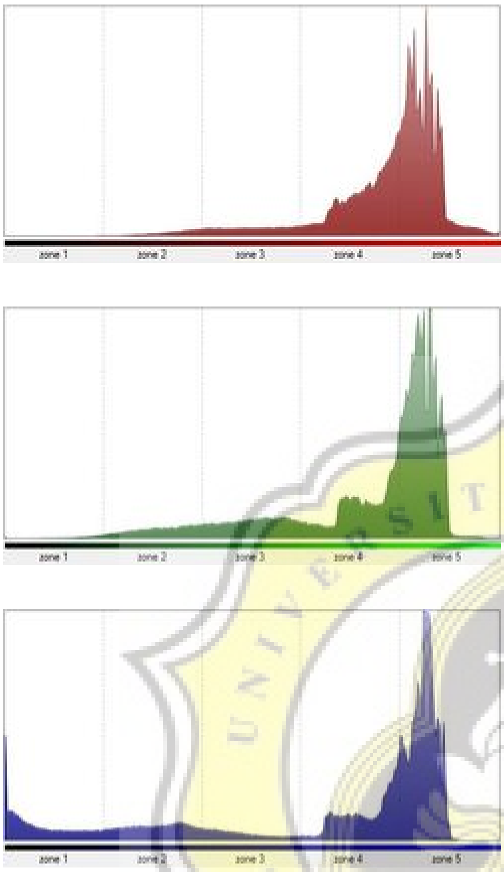


Illustration 6.11: Histogram of discrete image 4

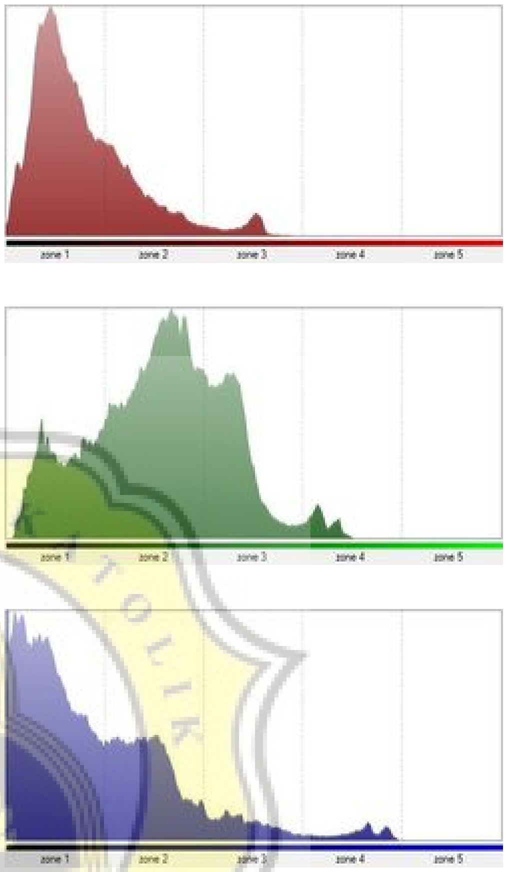


Illustration 6.12: Histogram of camouflage image 4

Comparison 5

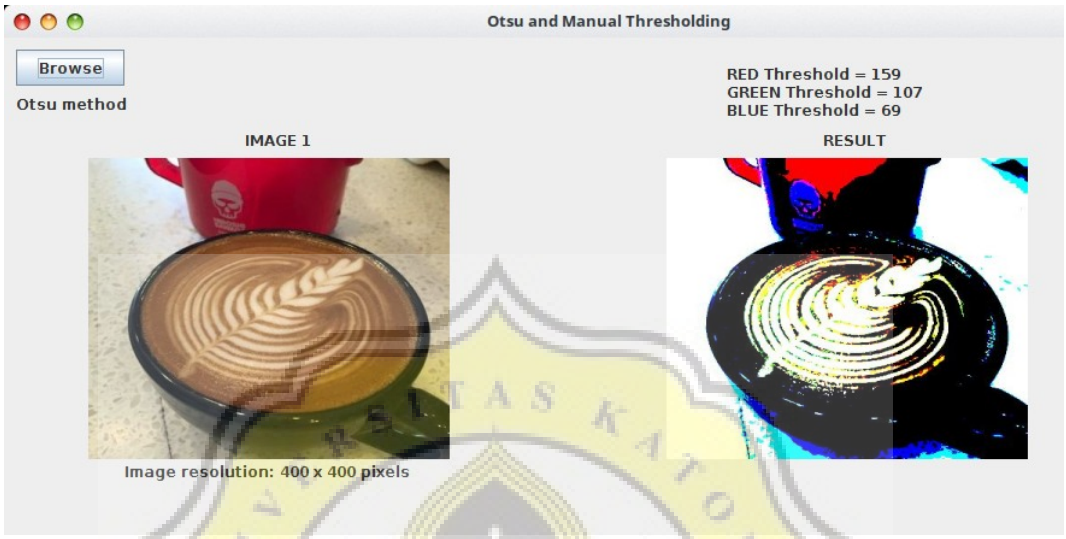


Illustration 6.13: Discrete image 5 - Otsu

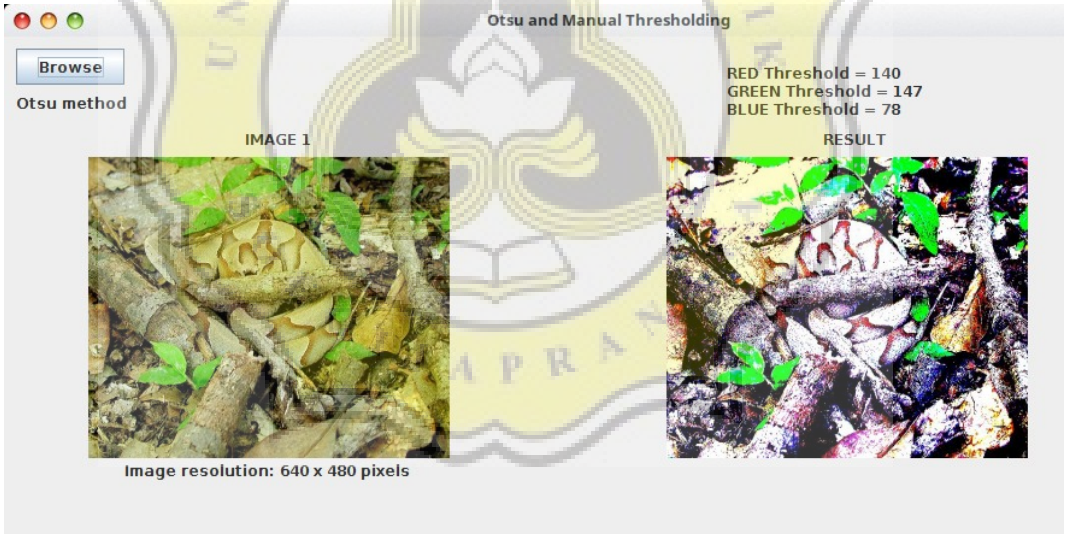


Illustration 6.14: Camouflage image 5 - Otsu

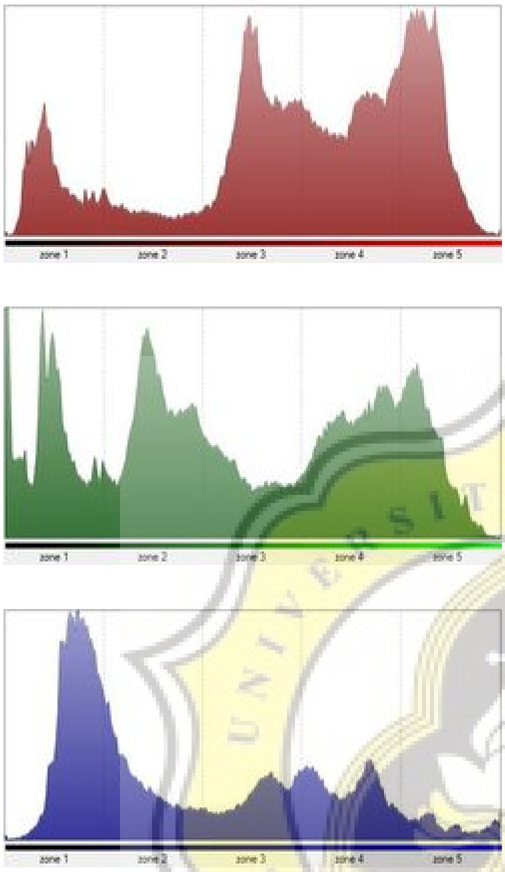


Illustration 6.15: Histogram of discrete image 5

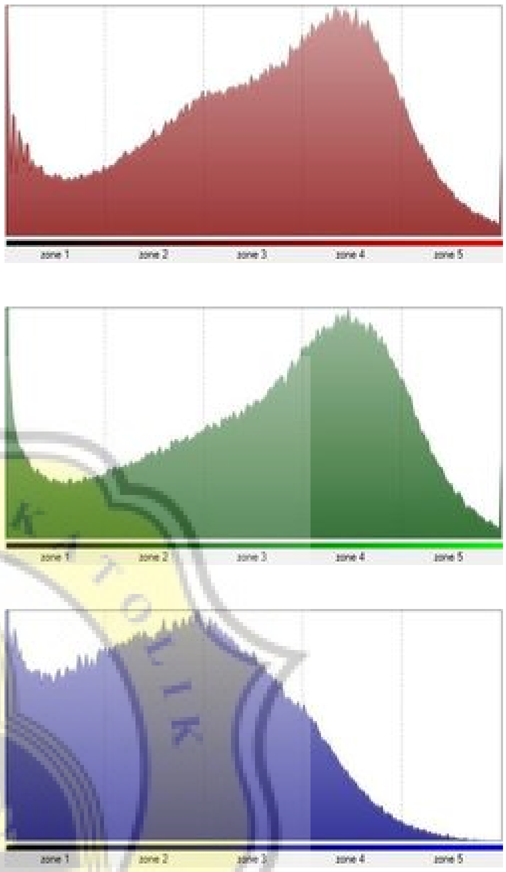


Illustration 6.16: Histogram of camouflage image 5

Comparison 6

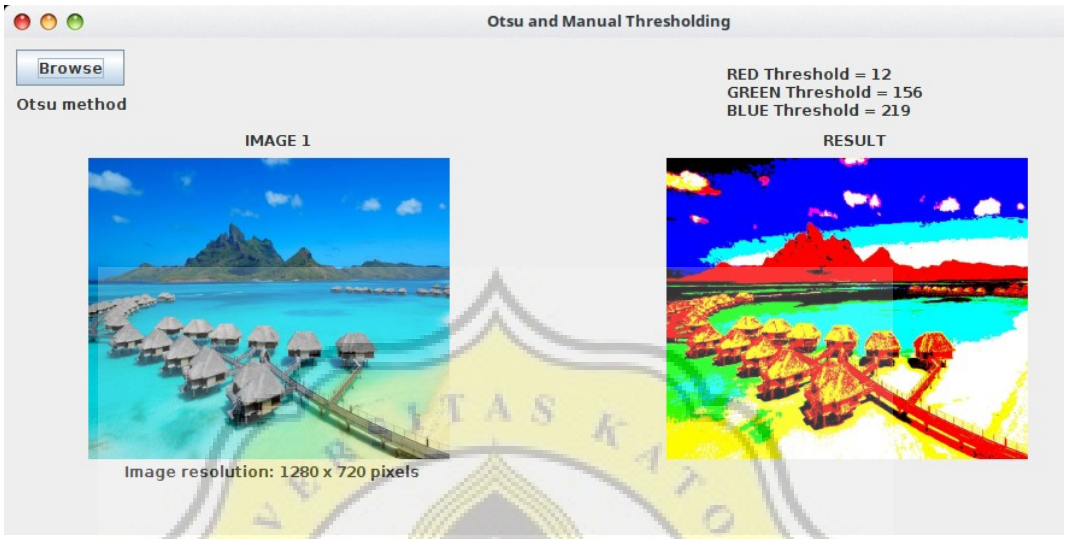


Illustration 6.17: Discrete image 6 - Otsu

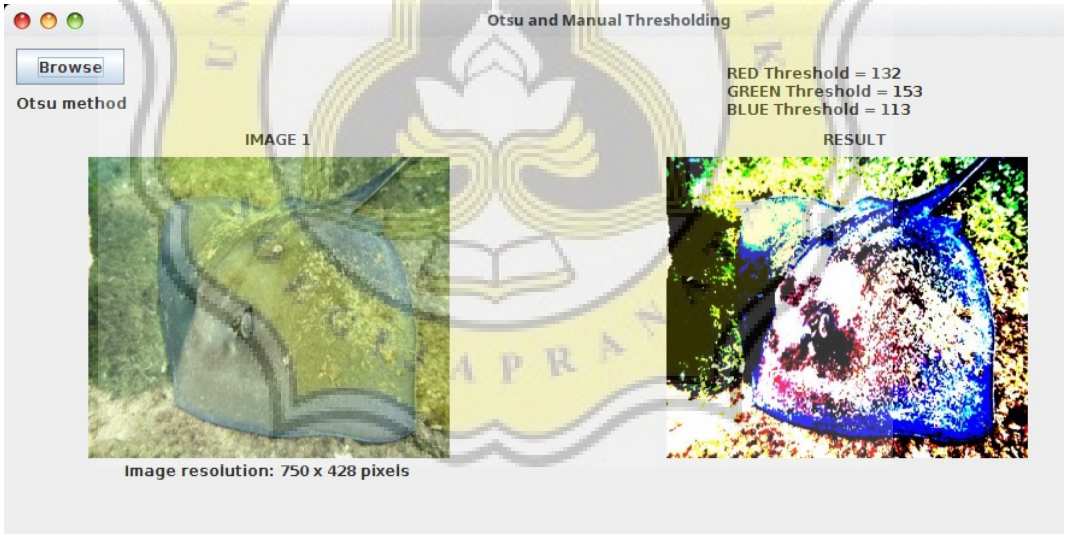


Illustration 6.18: Camouflage image 6 - Otsu

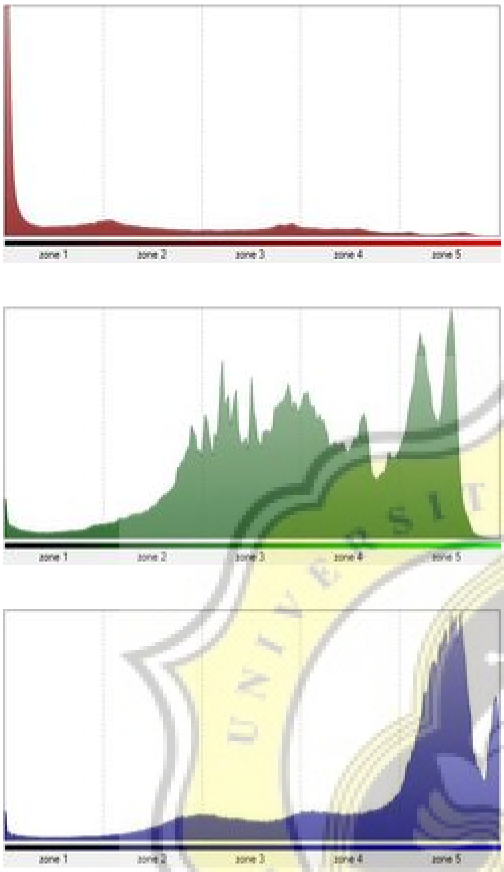


Illustration 6.19: Histogram of discrete image 6

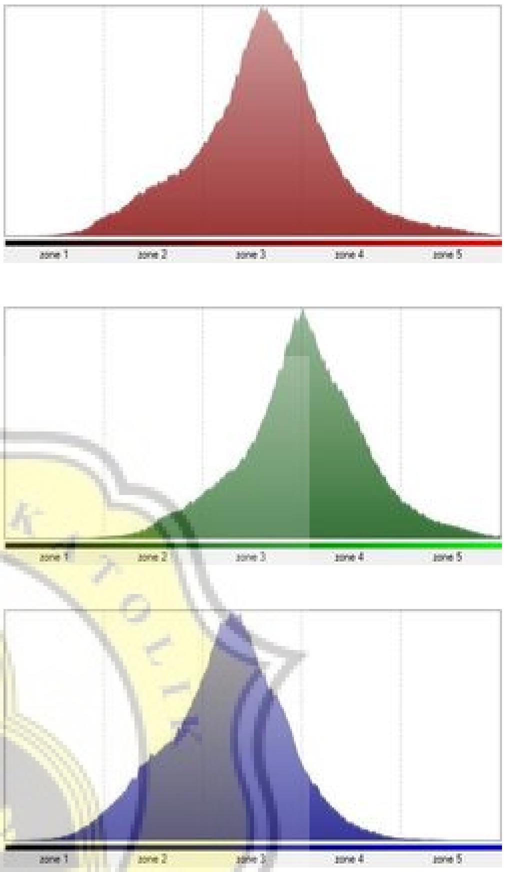


Illustration 6.20: Histogram of camouflage image 6

Comparison 7

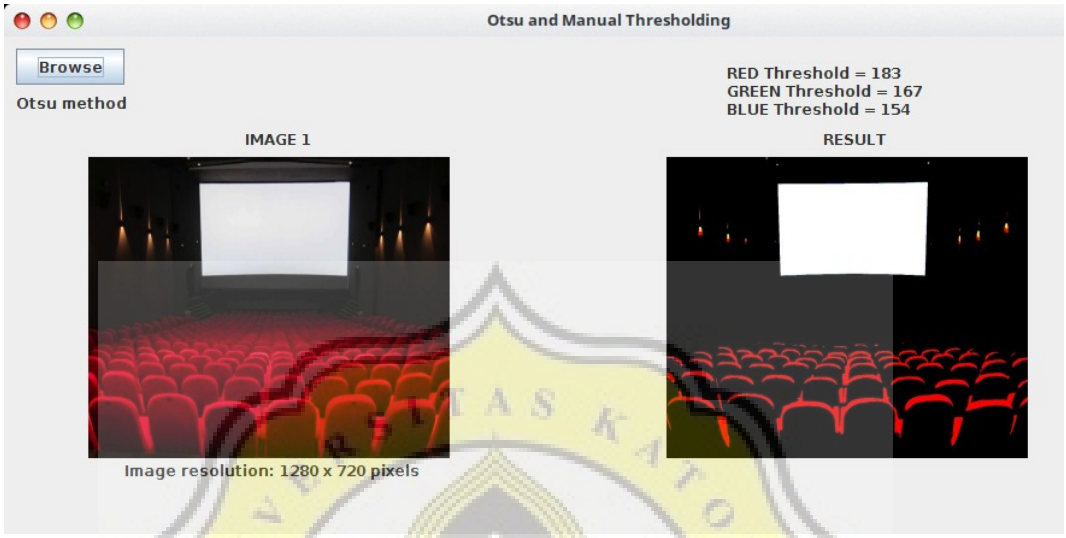


Illustration 6.21: Discrete image 7 - Otsu

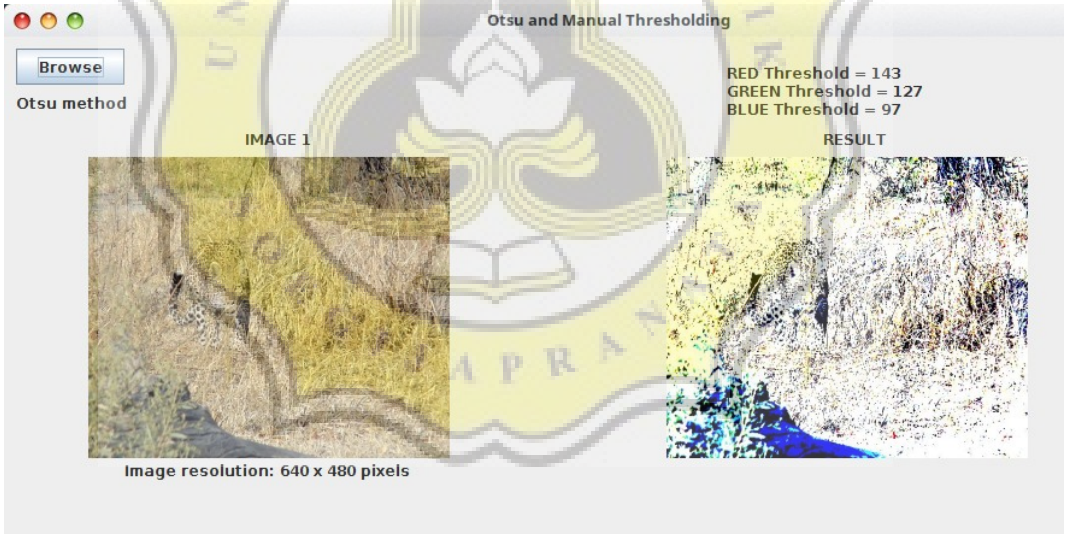


Illustration 6.22: Camouflage image 7 - Otsu

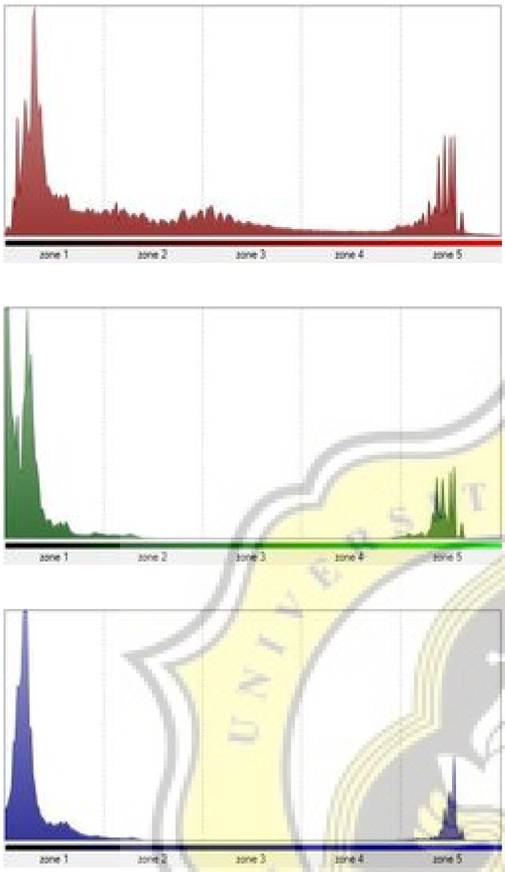


Illustration 6.23: Histogram of discrete image 7

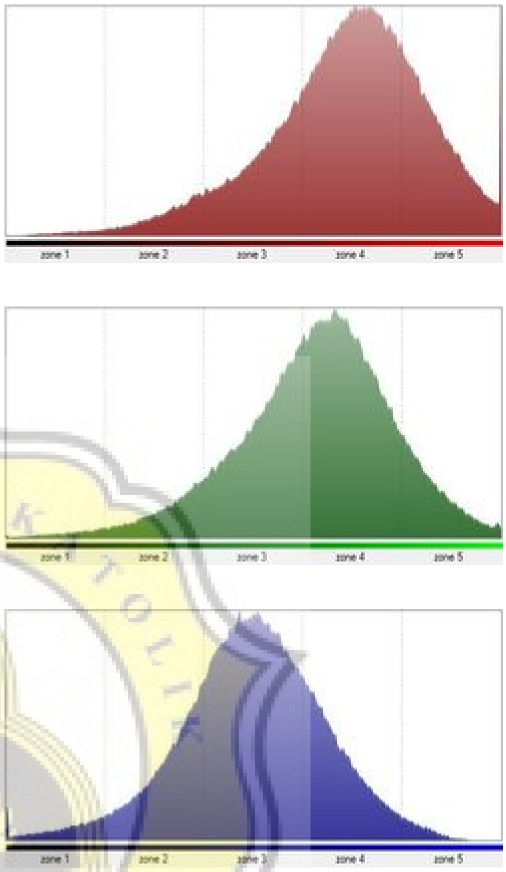


Illustration 6.24: Histogram of camouflage image 7

Comparison 8

Illustration 6.25: Discrete image 8 - Otsu

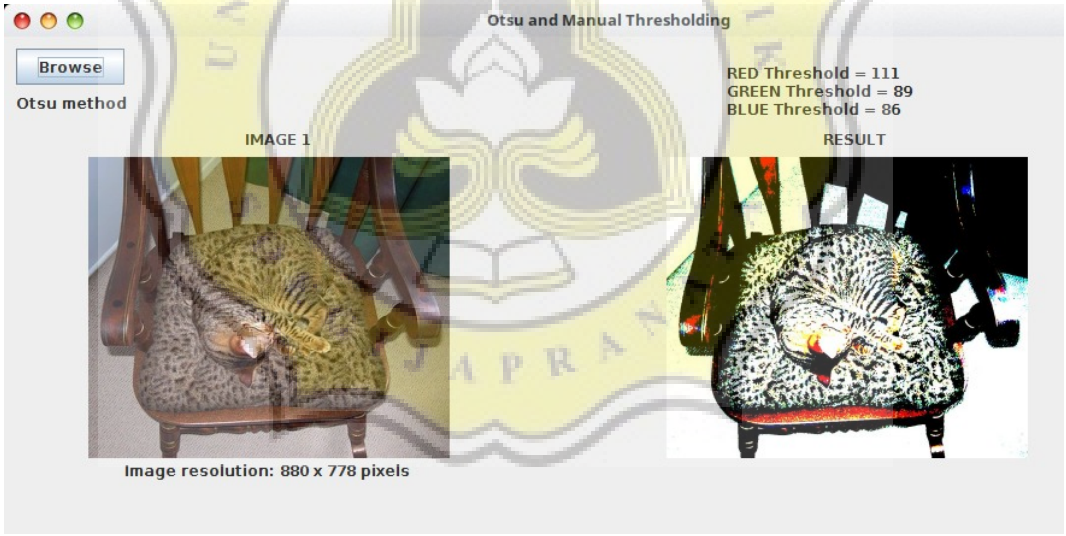


Illustration 6.26: Camouflage image 8 - Otsu

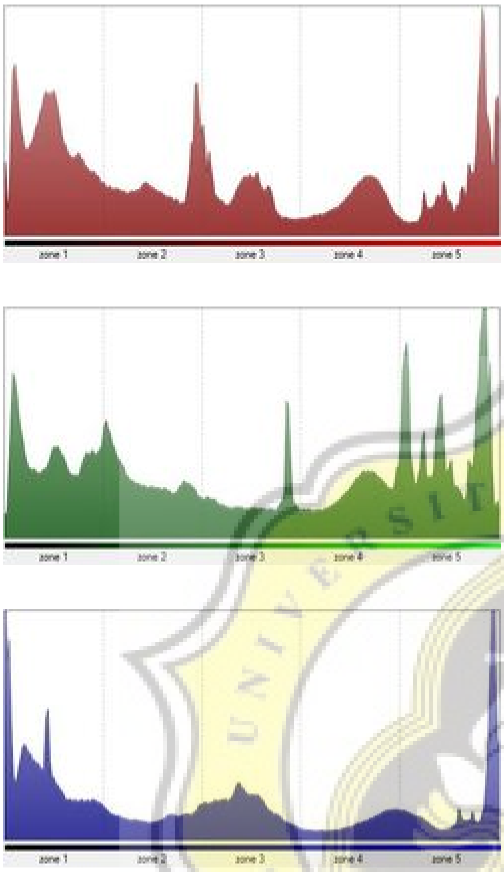


Illustration 6.27: Histogram of discrete image 8

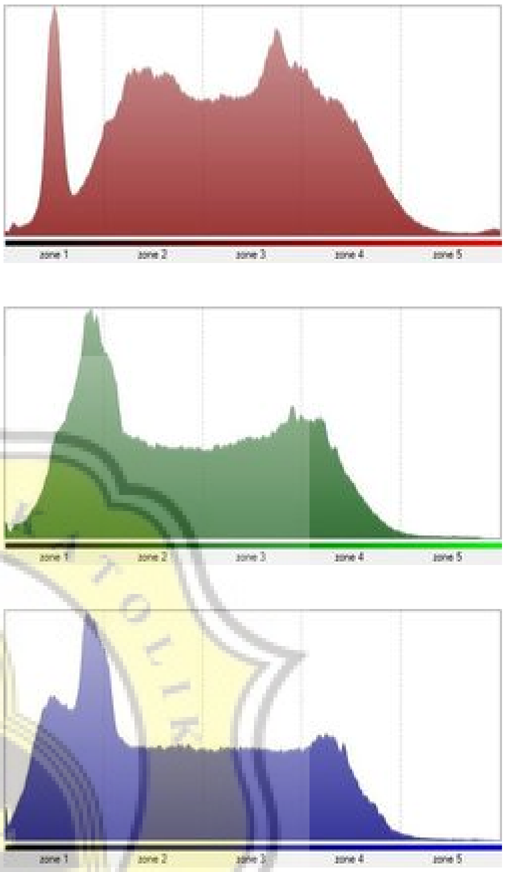


Illustration 6.28: Histogram of camouflage image 8

Comparison 9

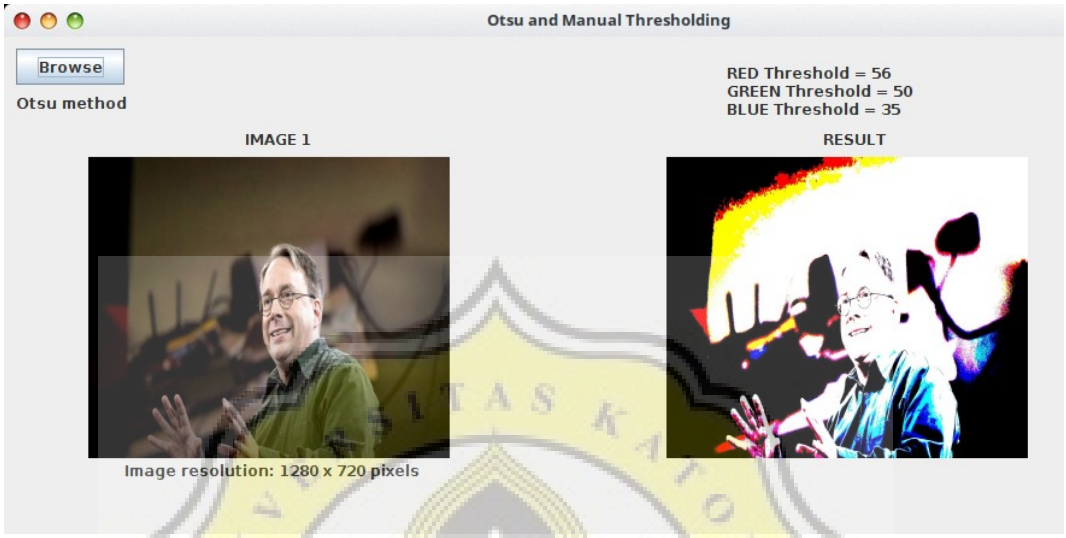


Illustration 6.29: Discrete image 9 - Otsu

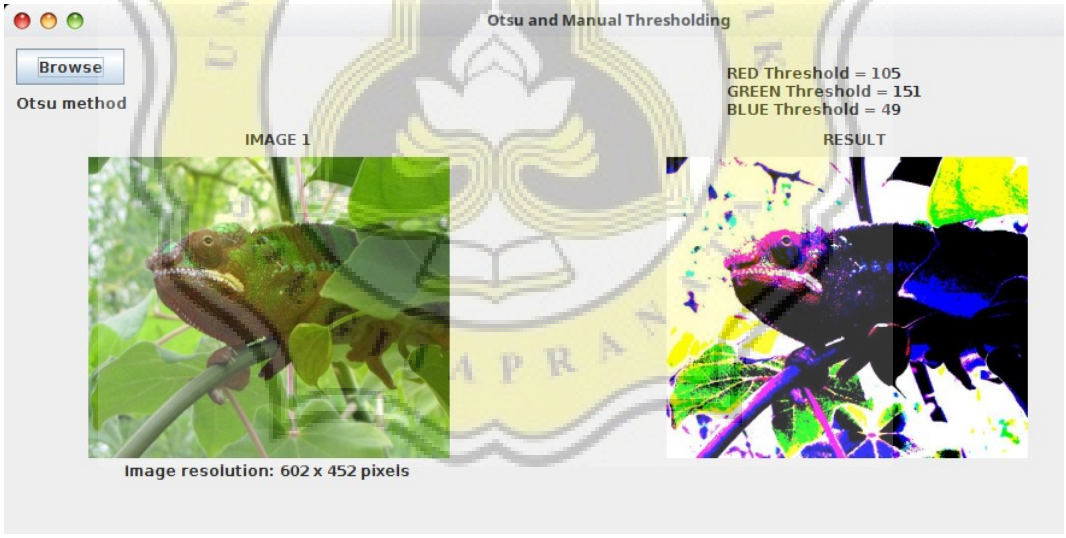


Illustration 6.30: Camouflage image 9 - Otsu

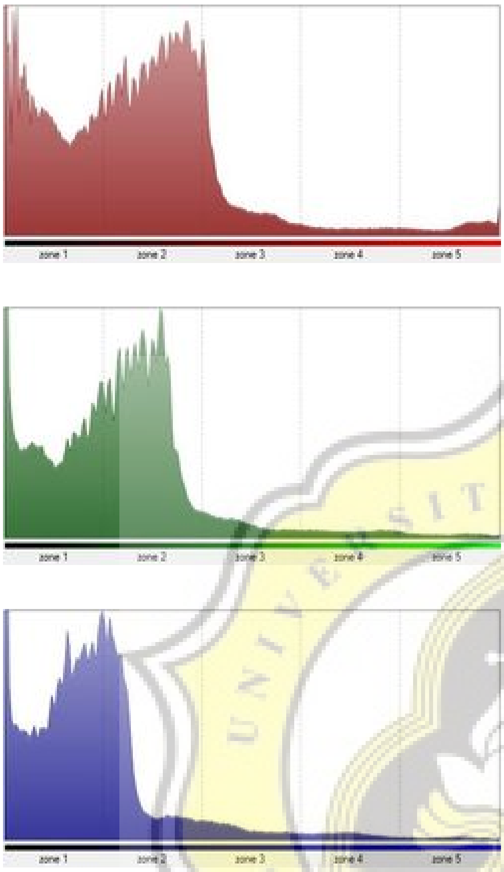


Illustration 6.31: Histogram of discrete image 9

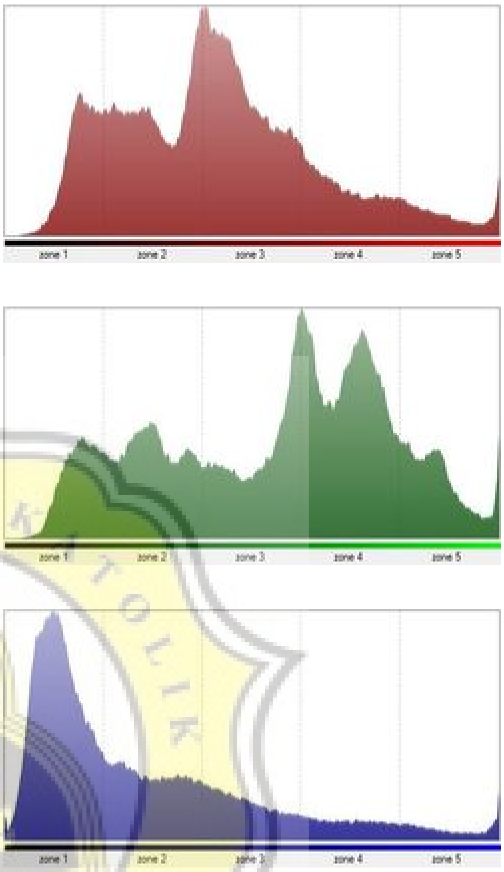


Illustration 6.32: Histogram of camouflage image 9

Comparison 10

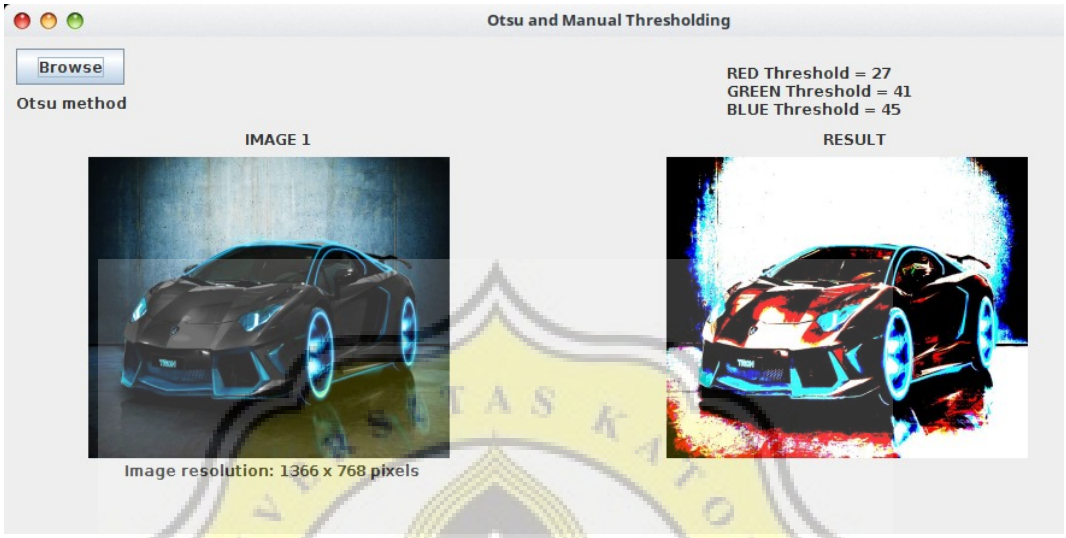


Illustration 6.33: Discrete image 10 - Otsu

Illustration 6.34: Camouflage image 10 - Otsu

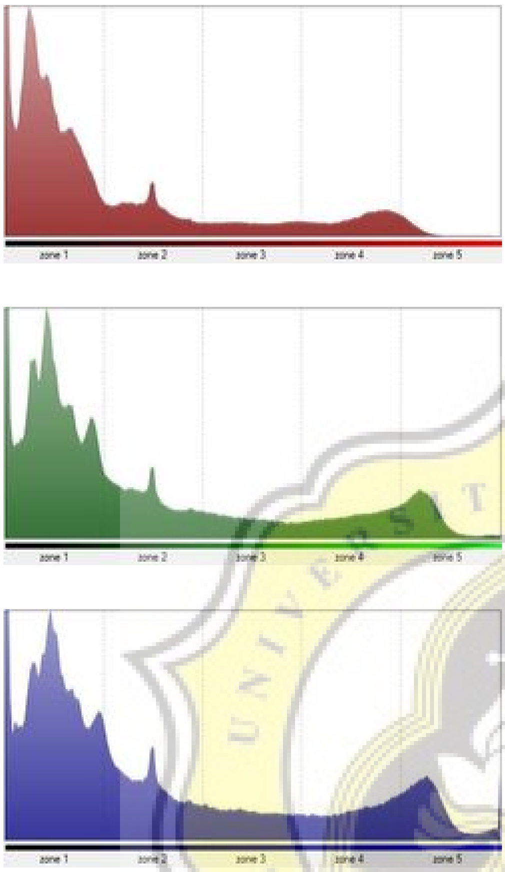


Illustration 6.35: Histogram of discrete image 10

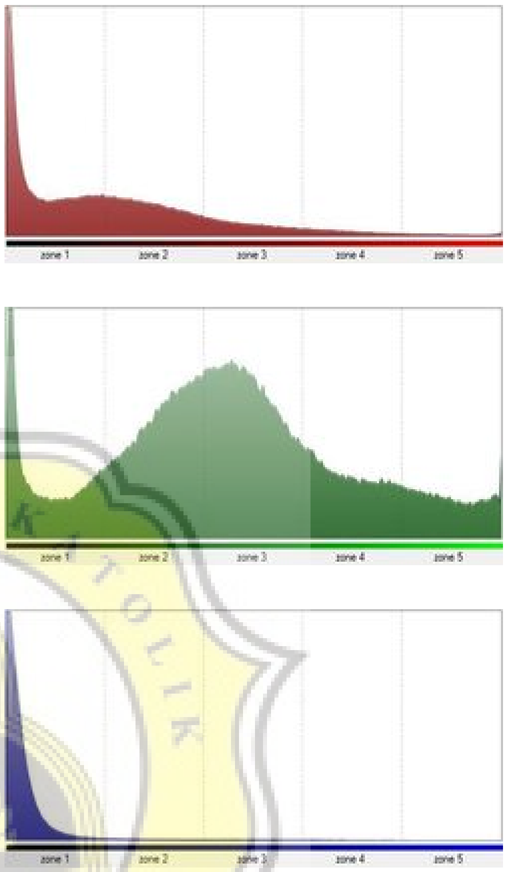


Illustration 6.36: Histogram of camouflage image 10

5.2.2. MANUAL THRESHOLDING

Table 6.1: Camouflage image 1 - Manual

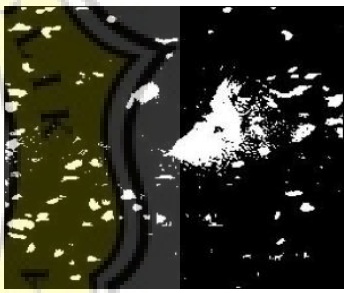
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.2: Camouflage image 2 - Manual

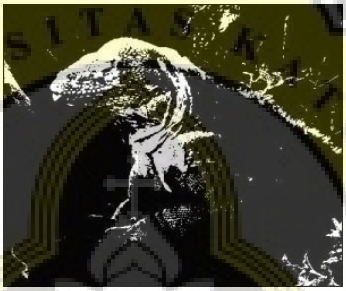
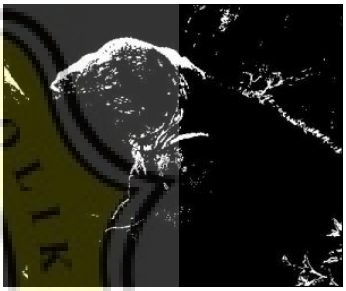
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.3: Camouflage image 3 - Manual

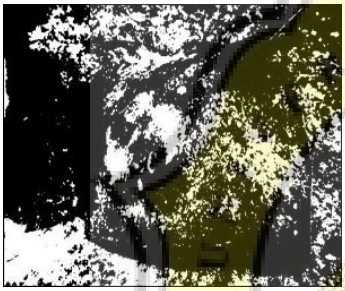
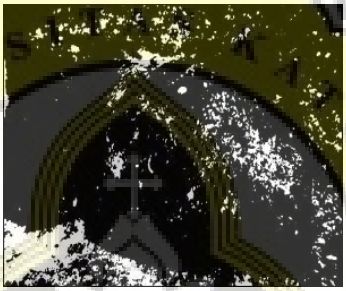
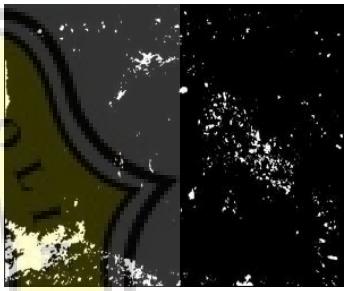
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.4: Camouflage image 4 – Manual

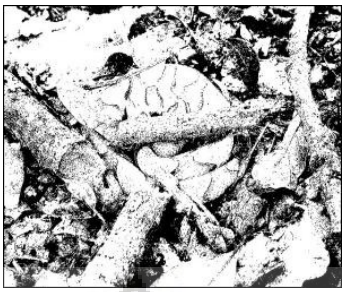
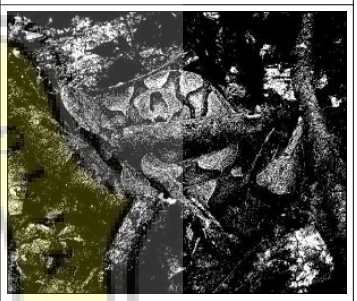
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.5: Camouflage image 5 - Manual

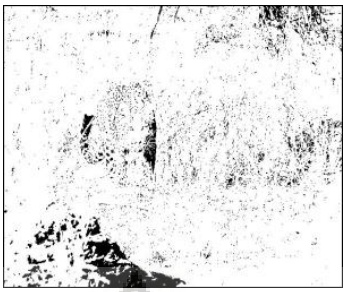
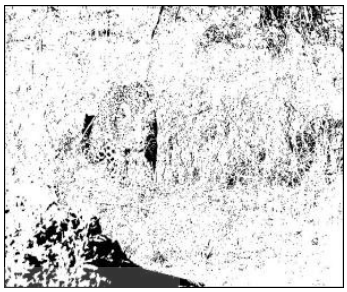
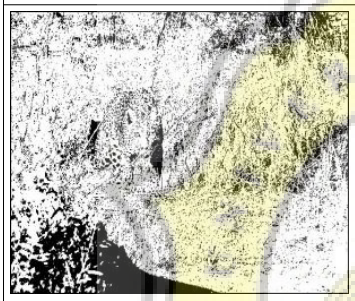
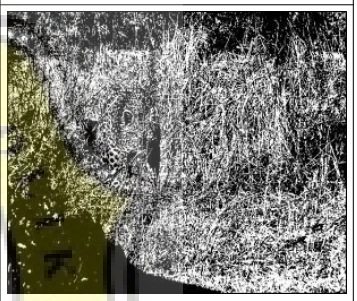
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.6: Camouflage image 6 - Manual

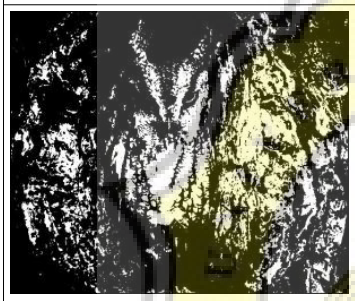
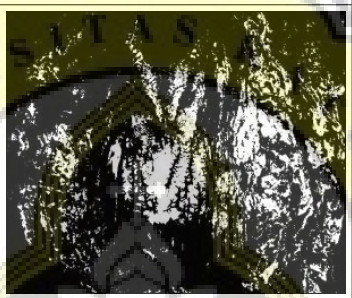
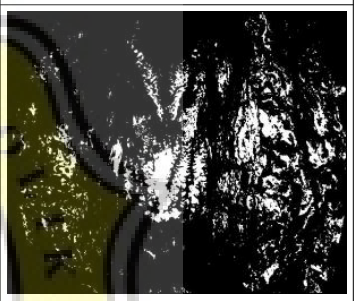
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.7: Camouflage image 7 - Manual

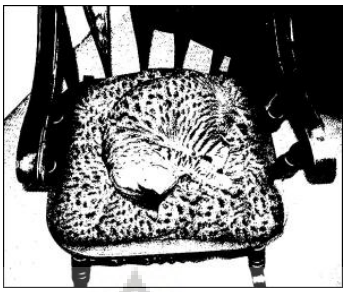
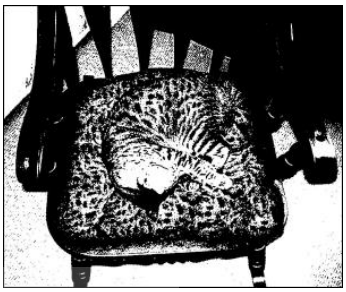
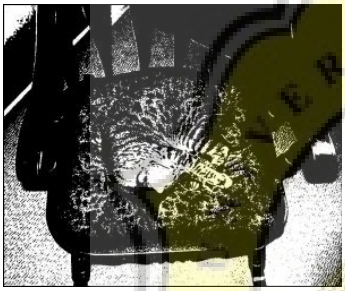
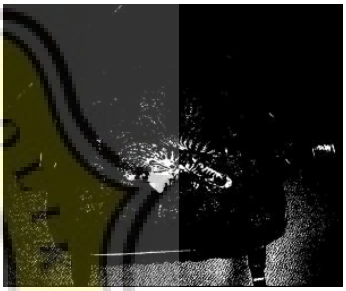
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.8: Camouflage image 8 - Manual

Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.9: Camouflage image 9 - Manual

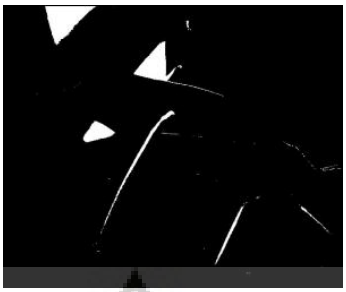
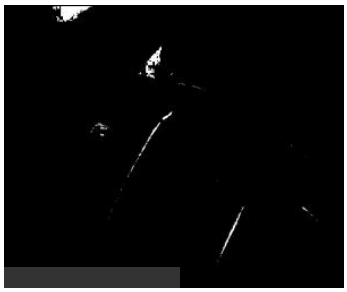
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.10: Camouflage image 10 - Manual

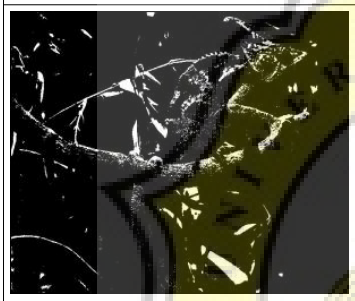
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.11: Camouflage image 11 - Manual

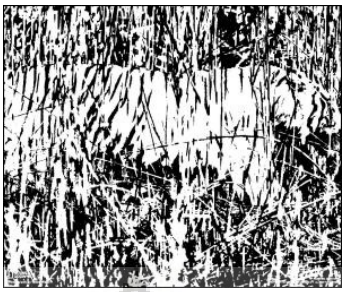
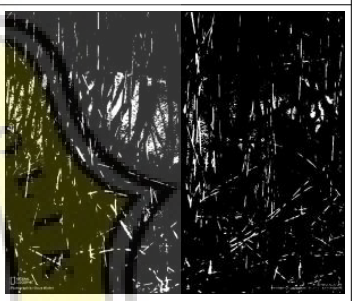
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.12: Camouflage image 12 - Manual

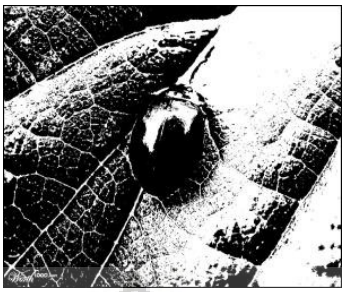
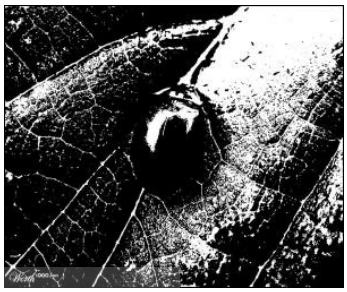
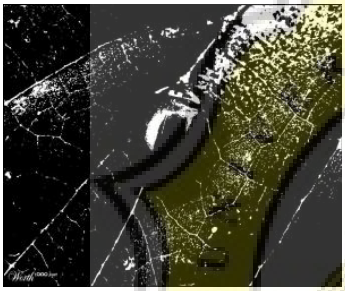
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.13: Camouflage image 13 - Manual

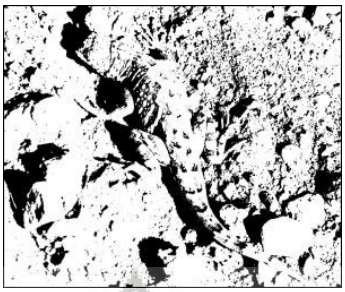
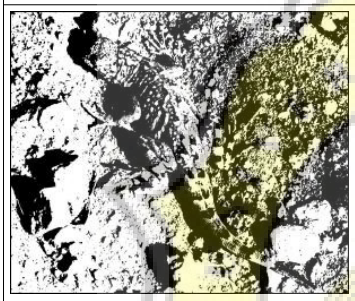
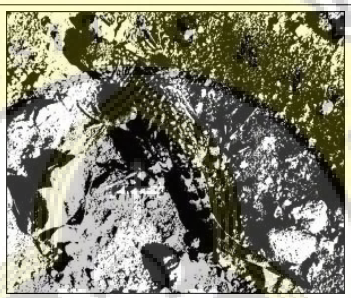
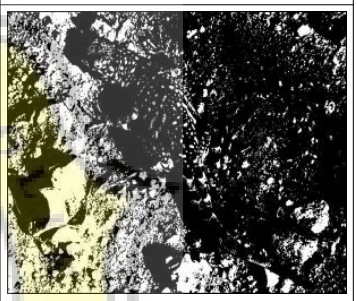
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.14: Camouflage image 14 - Manual

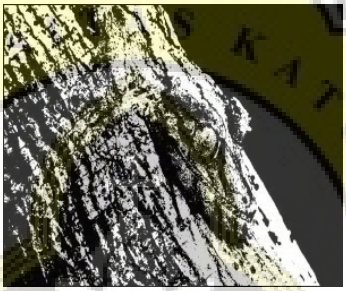
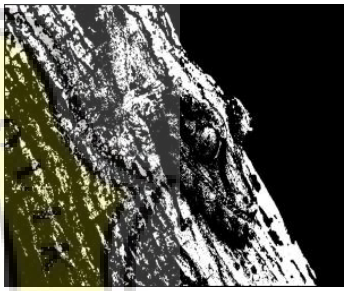
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.15: Camouflage image 15 - Manual

Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.16: Camouflage image 16 - Manual

Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.17: Camouflage image 17 - Manual

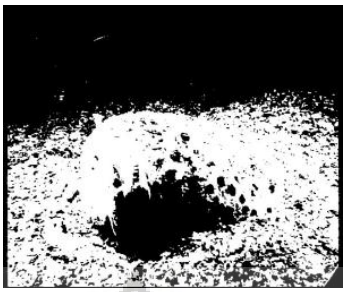
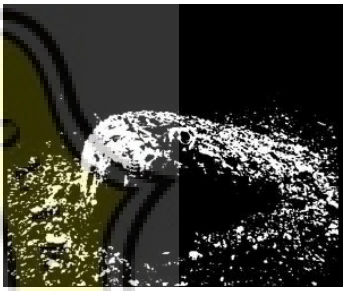
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.18: Camouflage image 18 - Manual

Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

Table 6.19: Camouflage image 19 - Manual

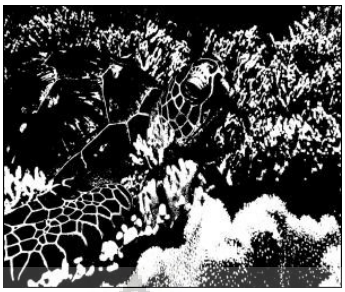
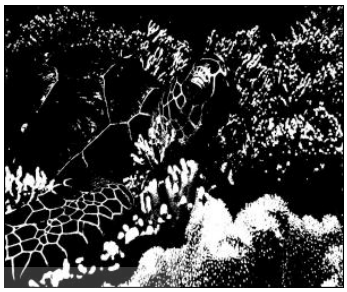
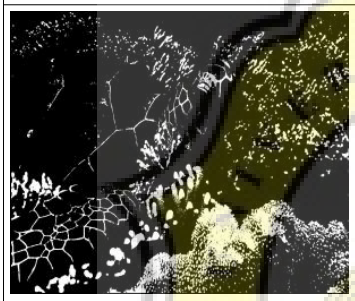
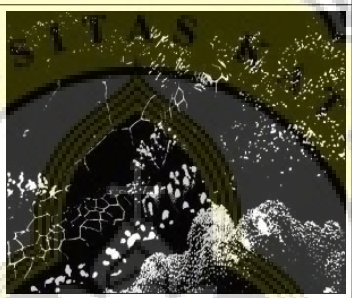
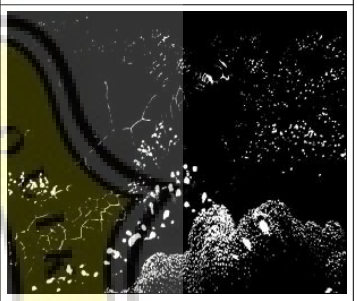
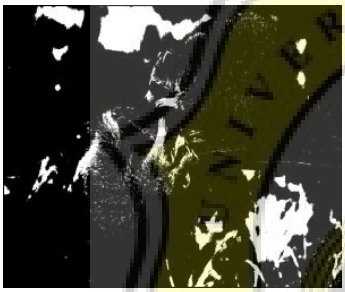
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

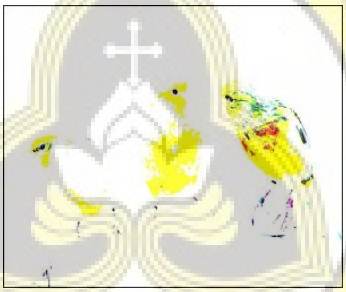
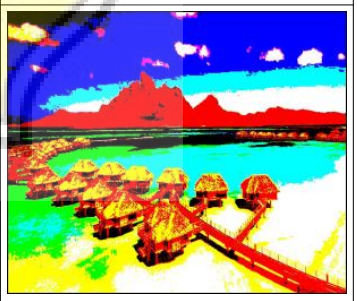
Table 6.20: Camouflage image 20 - Manual

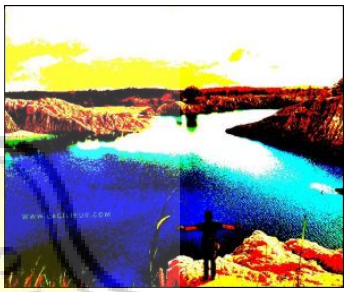
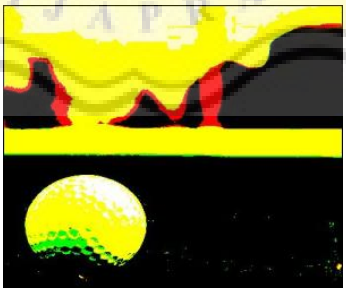
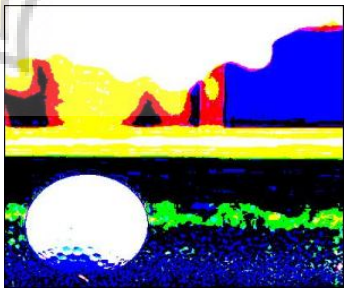
Original image	T = 110	T = 130
		
T = 150	**T = 170**	**T = 190**
		

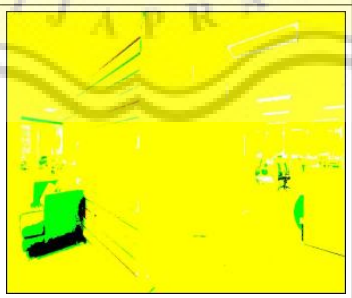
5.2.3. OTSU METHOD & MANUAL THRESHOLDING

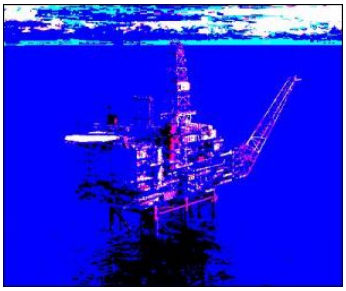
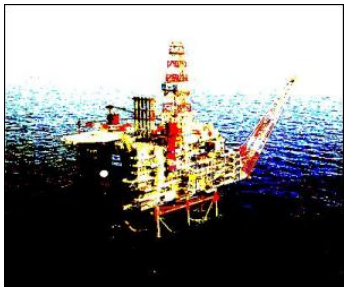
Otsu

Table 6.21: Result Table of Otsu method – Discrete images

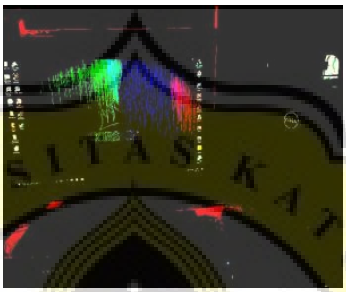
Original image (Discrete)	Trial 1	Trial 2
 1 – Agar.io		
 2 - Birds		
 3 - Bora-Bora		
 4 - Car		

		
5 - Cinema		
		
6 - Lake		
		
7 - Flixbus		
		
8 - Golf		

		
9 – Latte Art		
		
10 - Linus Torvalds		
		
11 - Monas		
		
12 - Office		

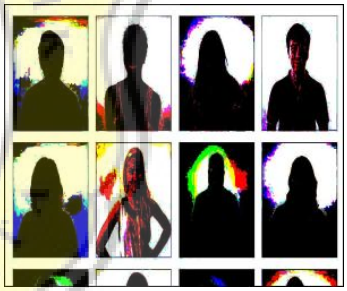




13 – Oil Rig

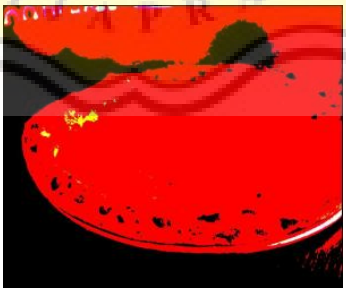




14 - PC

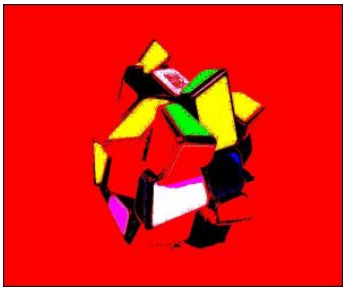
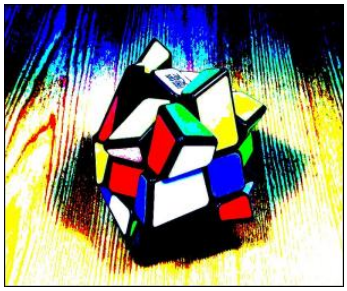




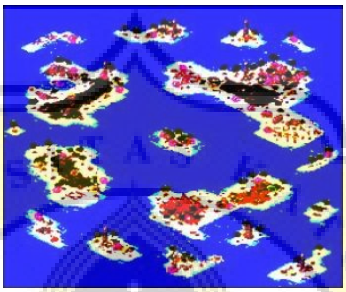
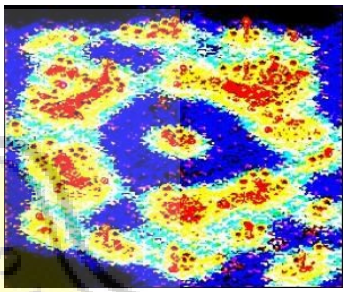
15 - People

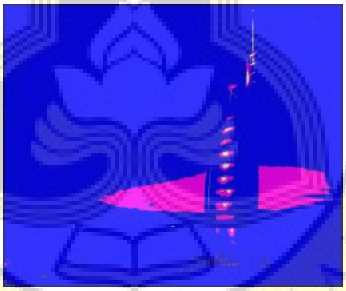

16 - Pizza

17 - Rubic

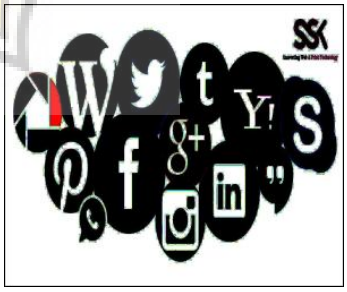




18 – Shark Archipelago

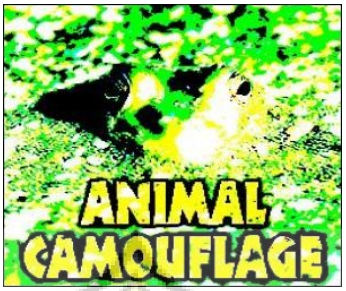
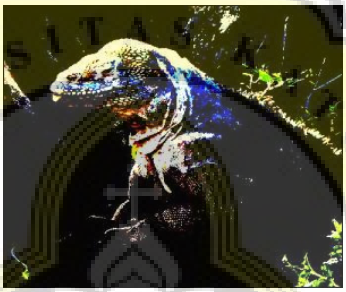
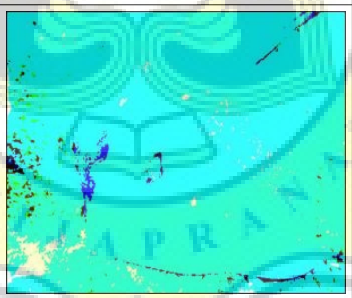

19 - Skyscraper

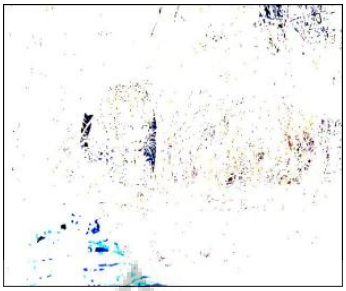
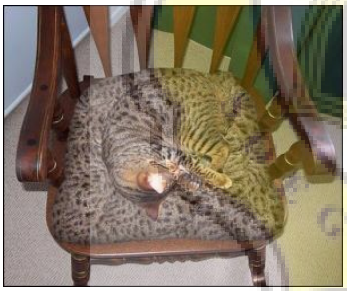
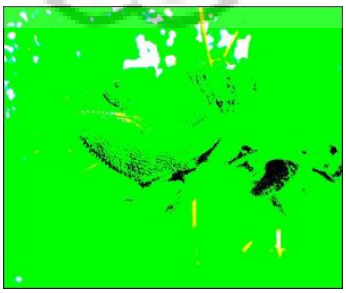


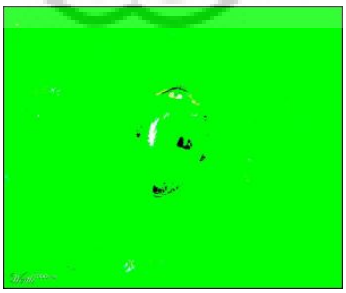


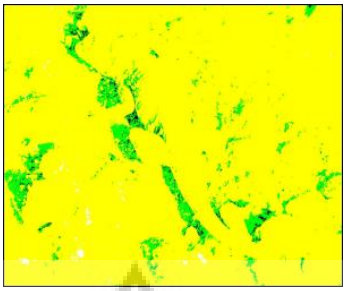
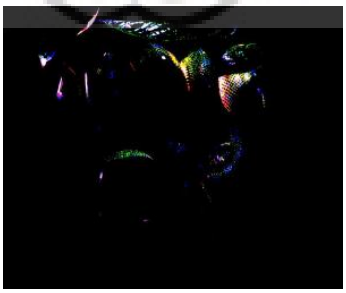
20 – Social Media

Table 6.22: Result Table of Otsu method – Camouflage images

Original image (Camouflage)	Trial 1	Trial 2
 1 – Frog		
 2 - Iguana		
 3 - Stingray		
 4 - Snake		

Original image (Camouflage)	Trial 1	Trial 2
 5 – Leopard		
 6 – Owl		
 7 - Cat		
 8 – Chameleon		

Original image (Camouflage)	Trial 1	Trial 2
 9 – Leafbug		
 10 – Chameleon		
 11 – Tiger		
 12 – Ladybug		

Original image (Camouflage)	Trial 1	Trial 2
 13 – Lizard		
 14 – Lizard		
 15 – Leafbug		
 16 – Snake		

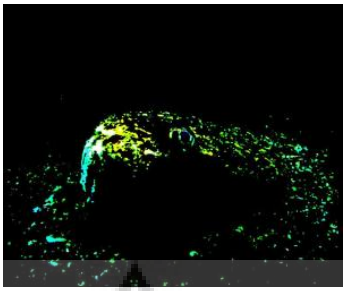
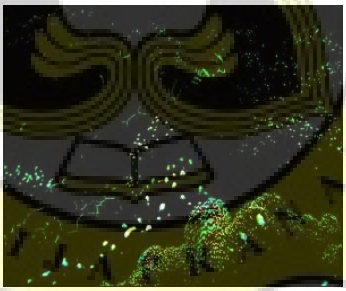
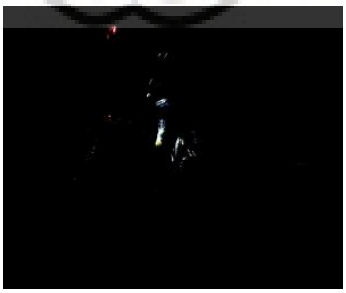
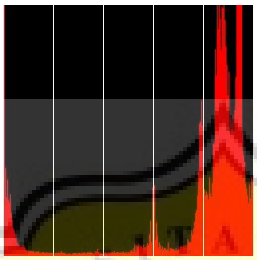
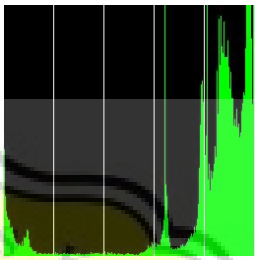
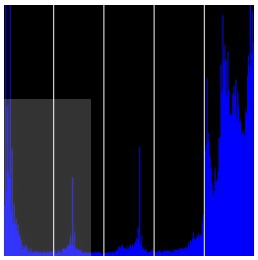
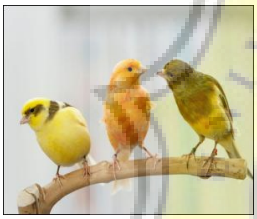
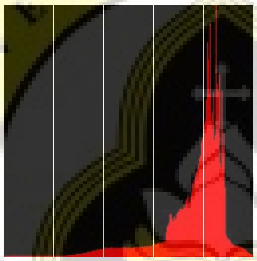
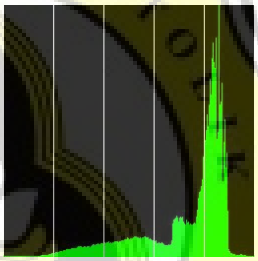
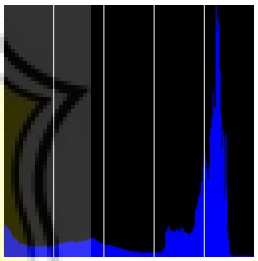
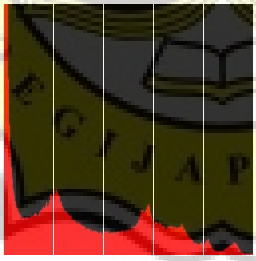
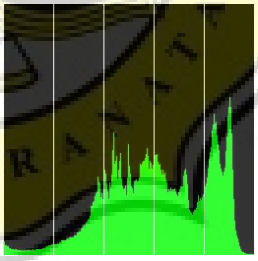
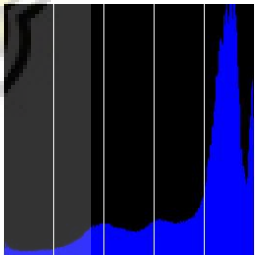
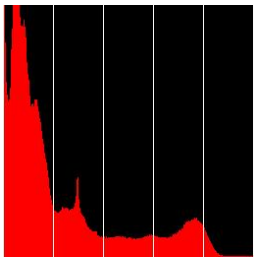
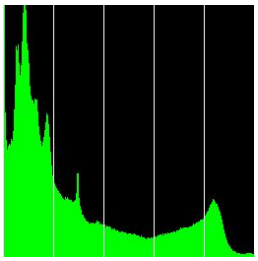
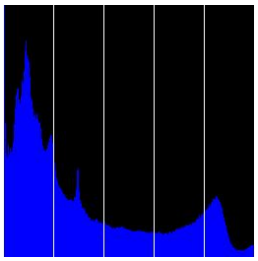
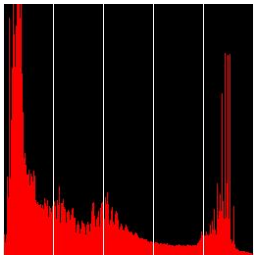
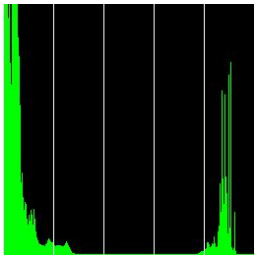
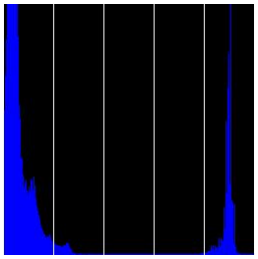
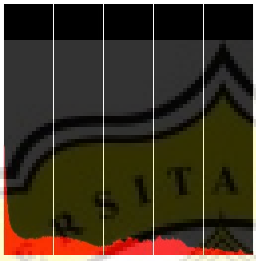
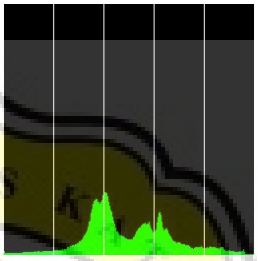
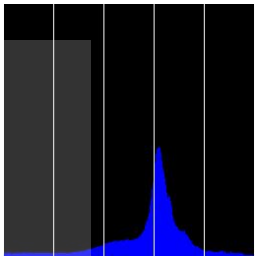
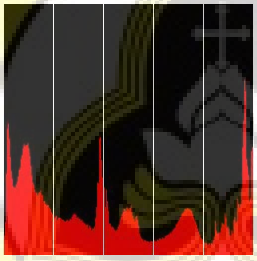
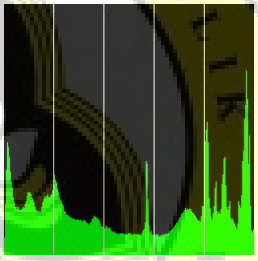
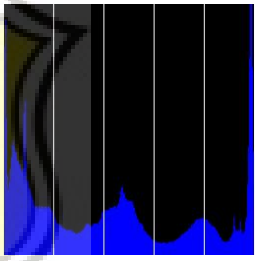
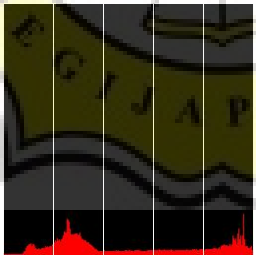
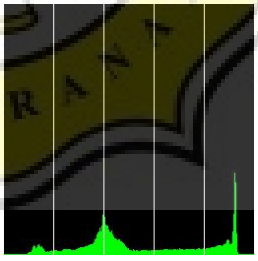
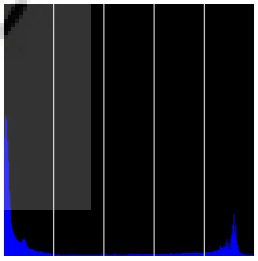
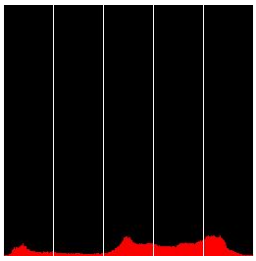
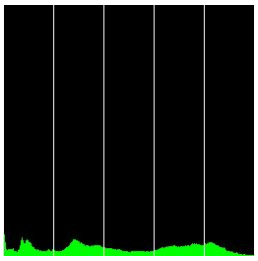
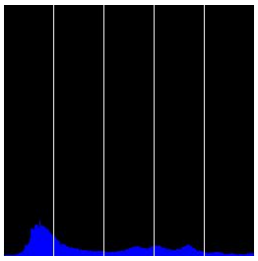
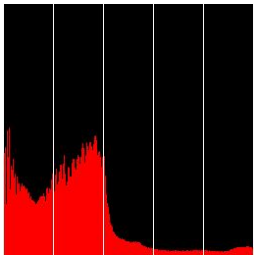
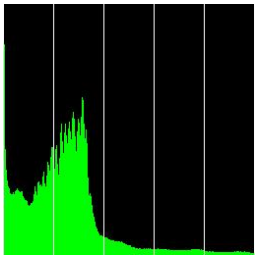
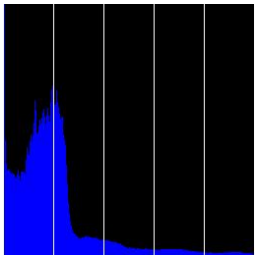
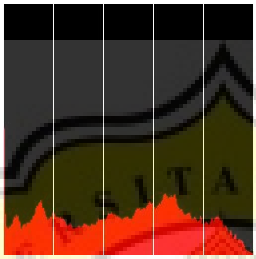
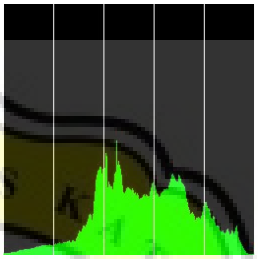
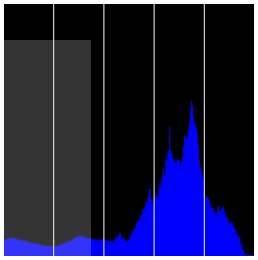
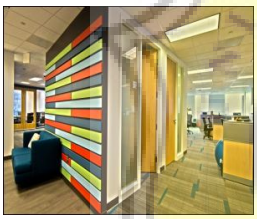
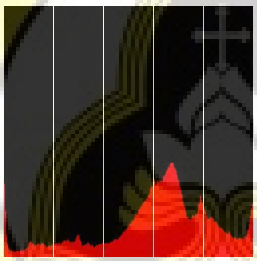
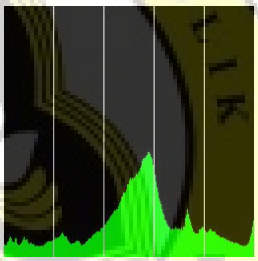
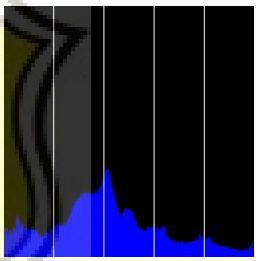
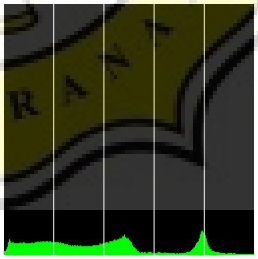
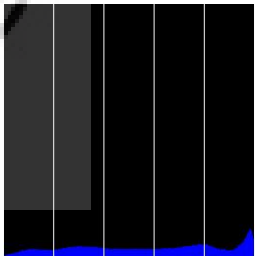
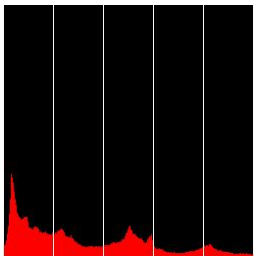
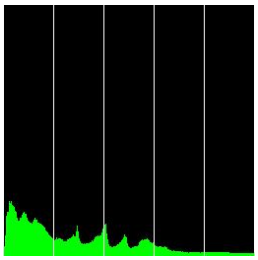
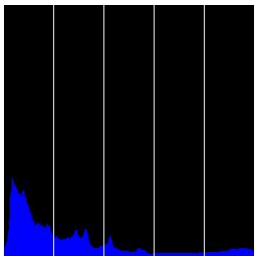
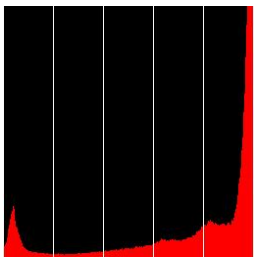
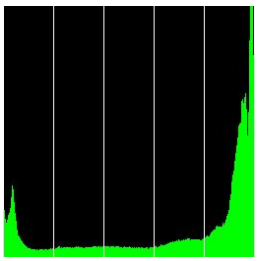
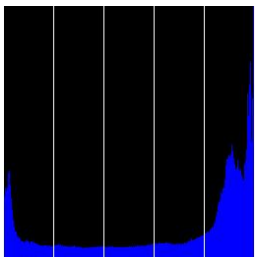
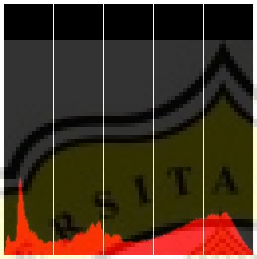
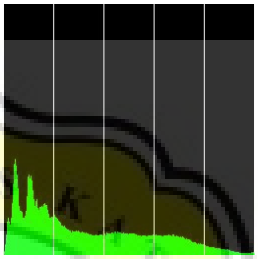
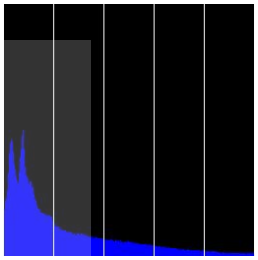
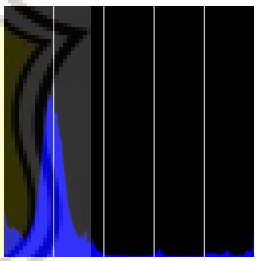
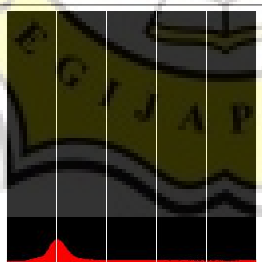
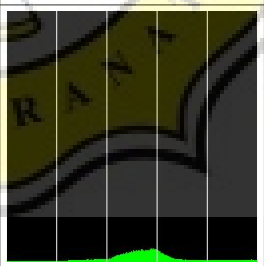
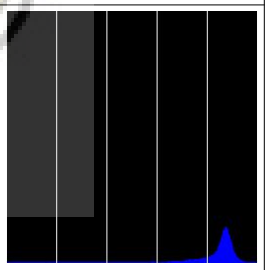
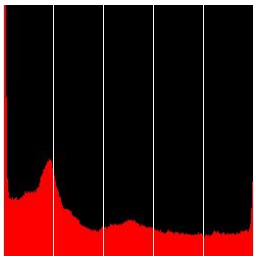
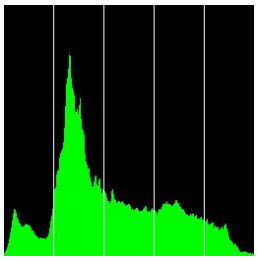
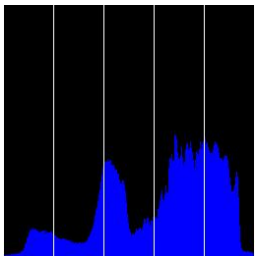
Original image (Camouflage)	Trial 1	Trial 2
 17 – Fish		
 18 – Chameleon		
 19 – Turtle		
 20 – Raccoon		

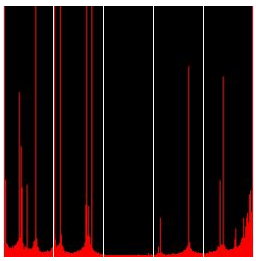
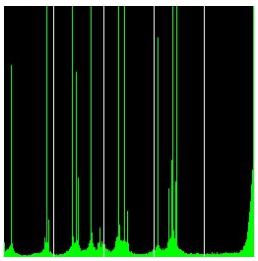
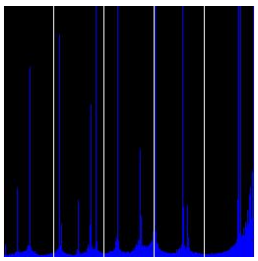
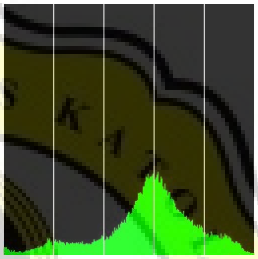
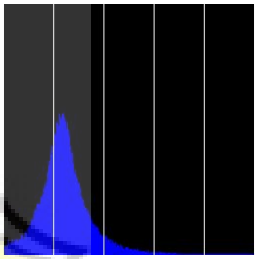
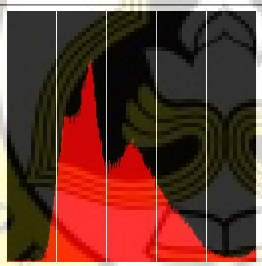
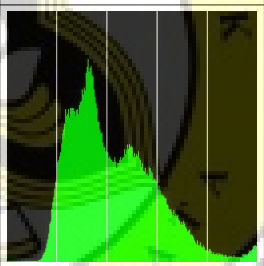
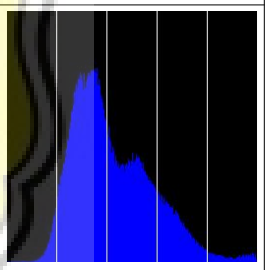
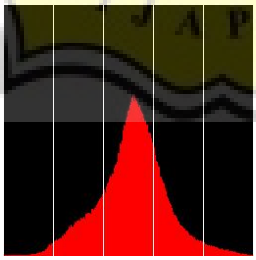
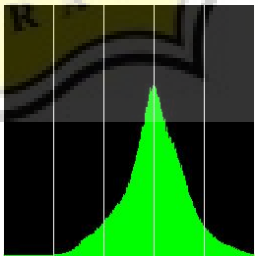
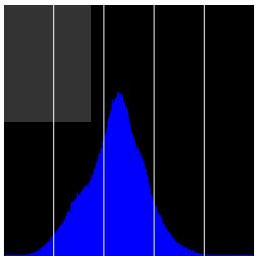
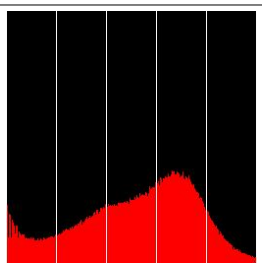
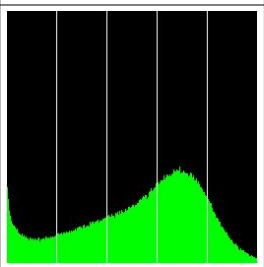
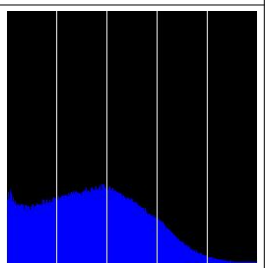
Table 6.23: Table of Histogram

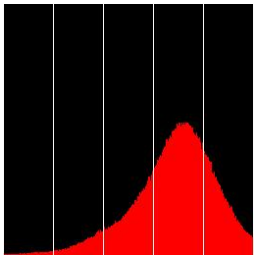
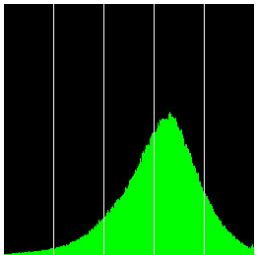
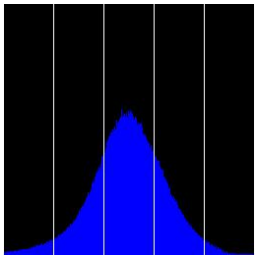
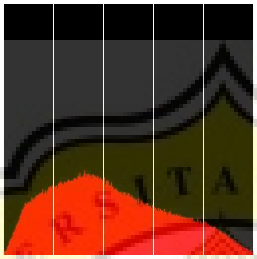
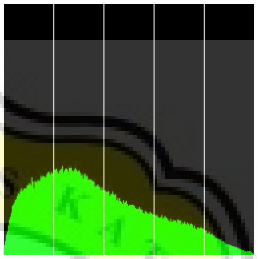
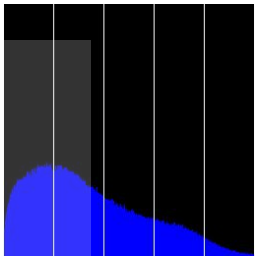
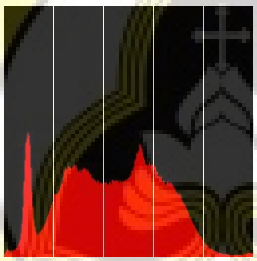
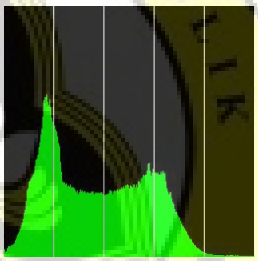
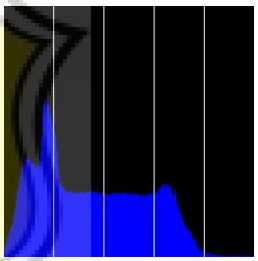
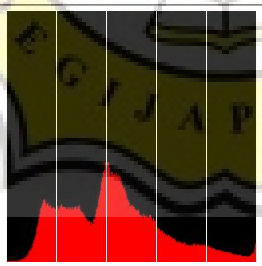
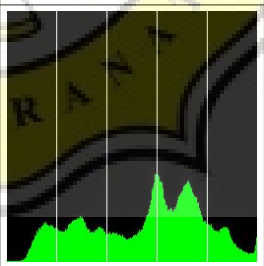
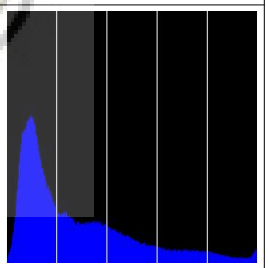
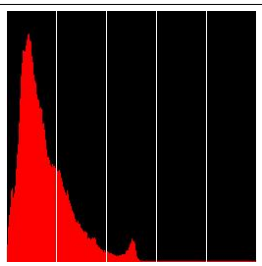
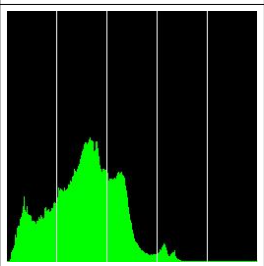
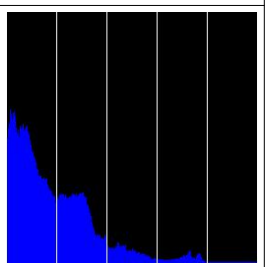
Original image (Discrete)	Red	Green	Blue
 1 – Agar.io			
 2 - Birds			
 3 - Bora-Bora			
 4 - Car			

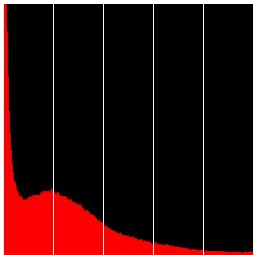
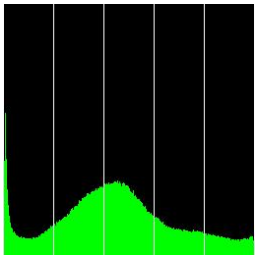
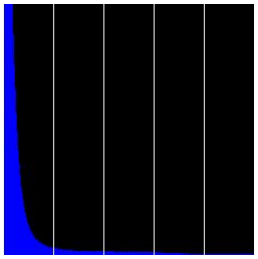
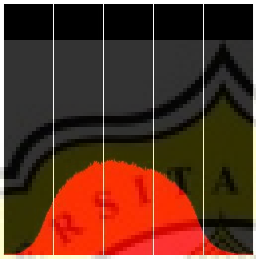
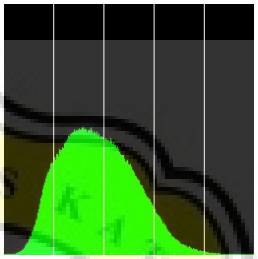
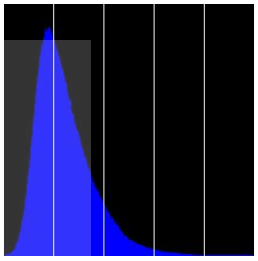
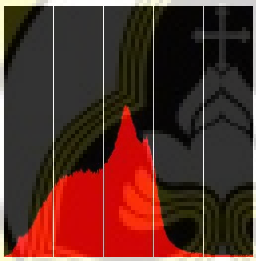
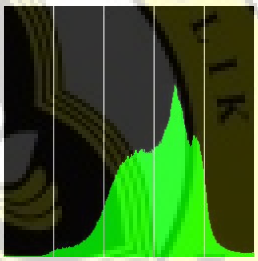
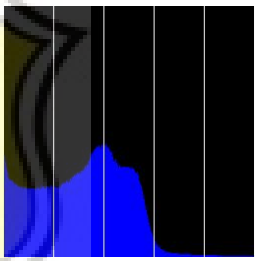
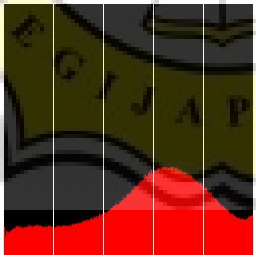
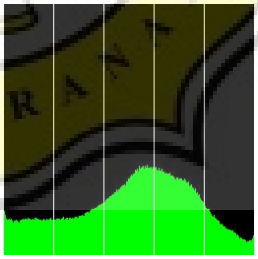
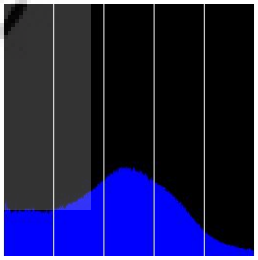
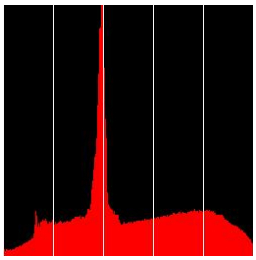
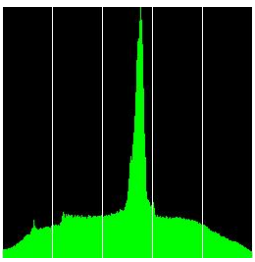
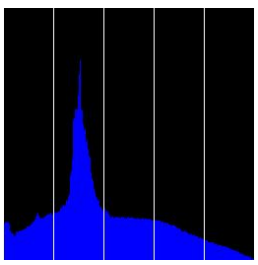
 5 - Cinema			
 6 - Lake			
 7 - Flixbus			
 8 - Golf			
 9 – Latte Art			

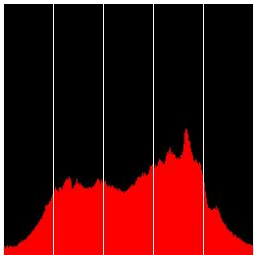
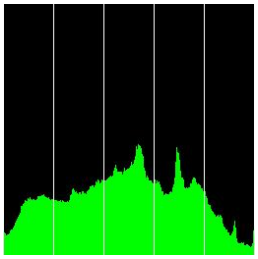
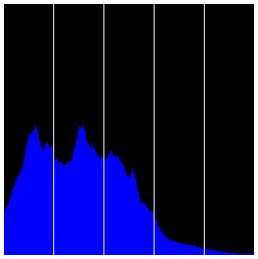
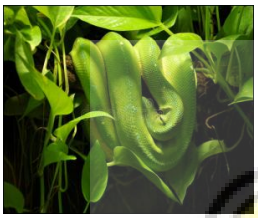
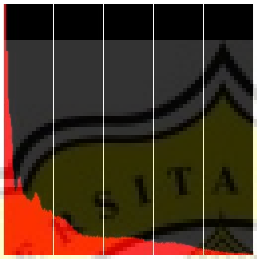
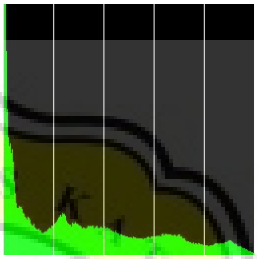
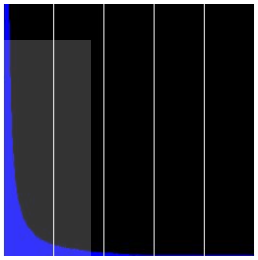
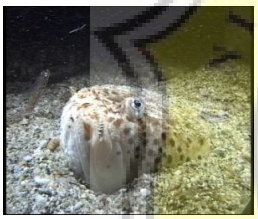
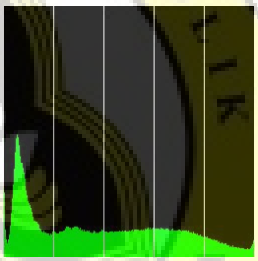
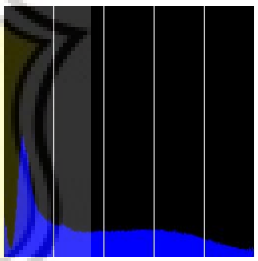
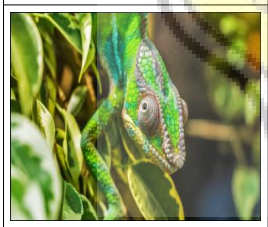
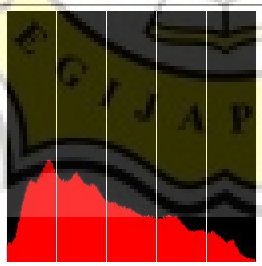
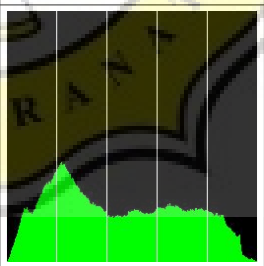
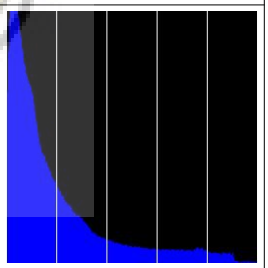
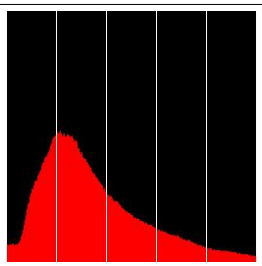
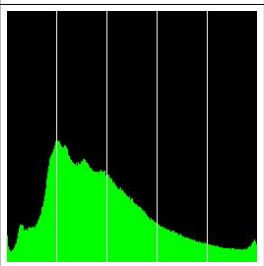
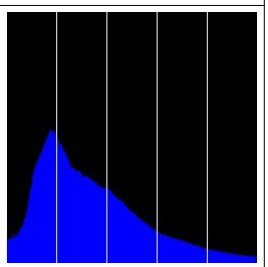
 10 - Linus Torvalds			
 11 - Monas			
 12 - Office			
 13 – Oil Rig			
 14 - PC			

 15 - People			
 16 - Pizza			
 17 - Rubic			
 18 – Shark Archipelago			
 19 - Skyscraper			

 20 – Social Media			
Original image (Camouflage)	**Red**	**Green**	**Blue**
 1 – Frog			
 2 - Iguana			
 3 - Stingray			
 4 - Snake			

 5 – Leopard			
 6 – Owl			
 7 - Cat			
 8 – Chameleon			
 9 – Leafbug			

 10 – Chameleon			
 11 – Tiger			
 12 – Ladybug			
 13 – Lizard			
 14 – Lizard			

 15 – Leafbug			
 16 – Snake			
 17 – Fish			
 18 – Chameleon			
 19 – Turtle			

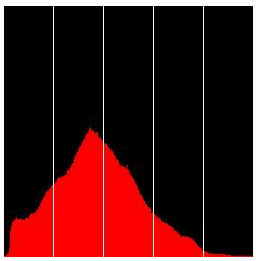
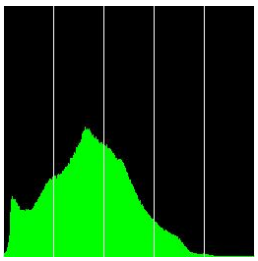
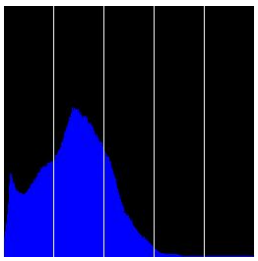
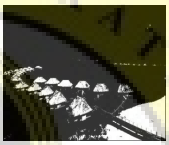
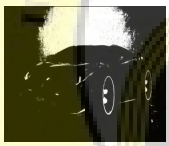
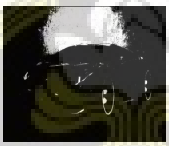
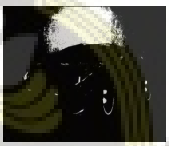
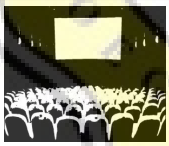
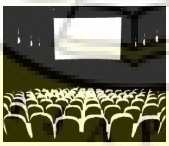
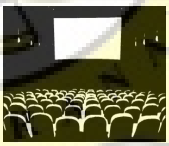
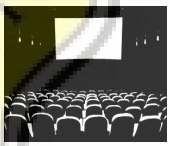
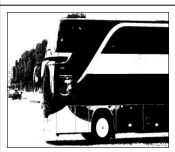
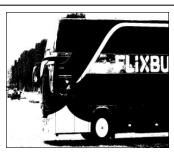
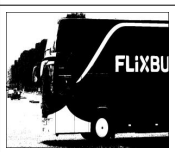
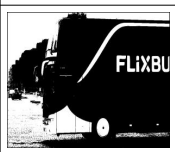
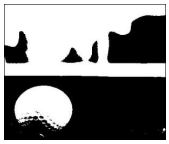
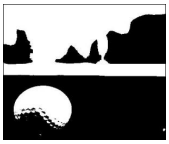
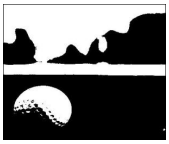
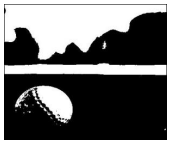
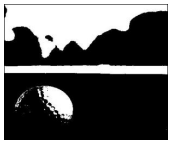
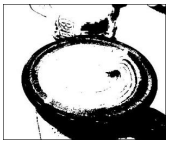
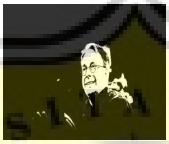
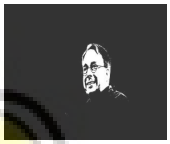
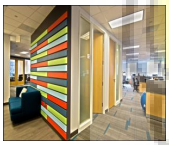
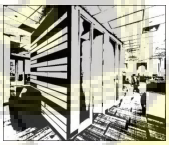
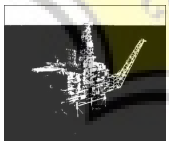
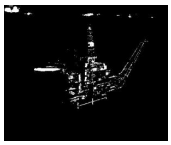
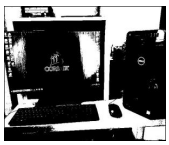
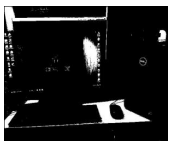
 20 – Raccoon			

Table 6.24: Result Table of Manual Thresholding - Discrete Images

Original image	T = 110	T = 130	T = 150	T = 170	T = 190
 1 – Agar.io					
 2 - Birds					
 3 - Bora-Bora					
 4 - Car					
 5 - Cinema					
 6 - Lake					
 7 - Flixbus					

 8 - Golf					
 9 – Latte Art					
 10 - Linus Torvalds					
 11 - Monas					
 12 - Office					
 13 – Oil Rig					
 14 - PC					
 15 - People					

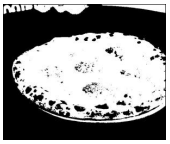
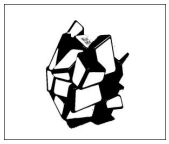
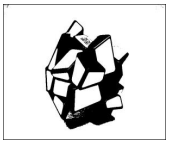
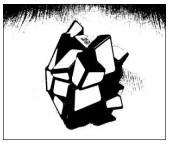
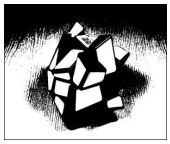
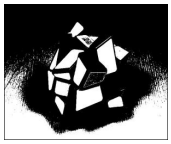
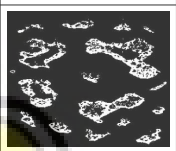
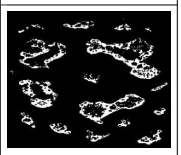
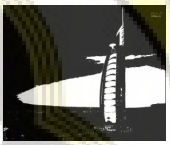
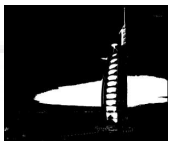
 16 - Pizza					
 17 - Rubic					
 18 – Shark Archipelago					
 19 - Skyscraper					
 20 – Social Media					

Table 6.25: Result Table of Manual Thresholding - Camouflage Images

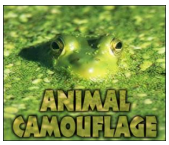
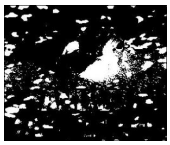
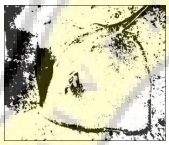
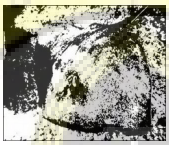
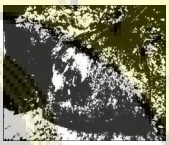
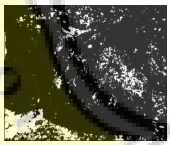
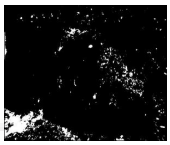
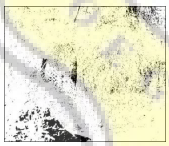
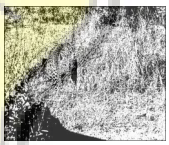
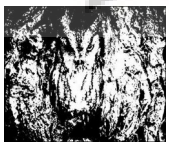
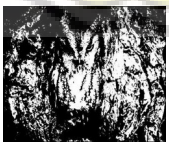
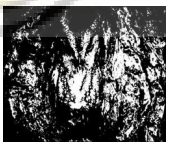
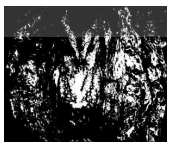
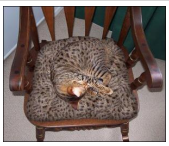
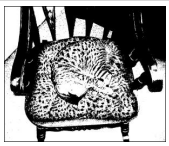
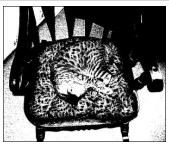
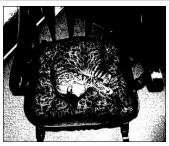
Original image	T = 110	T = 130	T = 150	T = 170	T = 190
 1 – Frog					
 2 - Iguana					
 3 - Stingray					
 4 - Snake					
 5 – Leopard					
 6 – Owl					
 7 - Cat					

Table 6.25: Result Table of Manual Thresholding - Camouflage Images

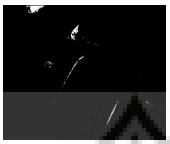
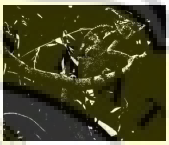
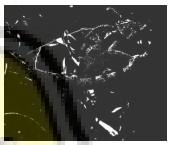
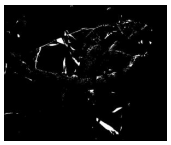
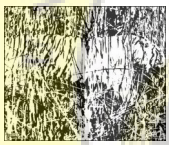
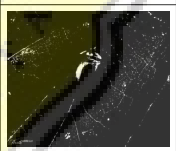
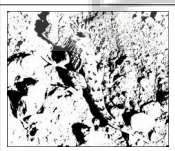
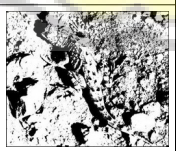
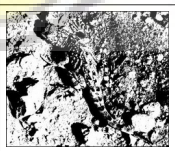
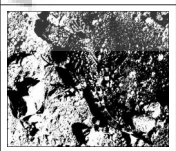
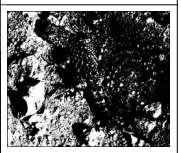
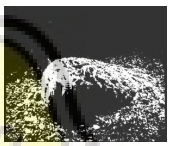
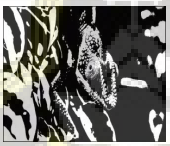
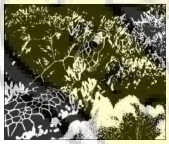
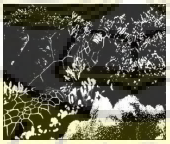
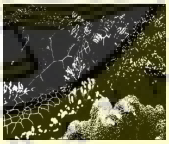
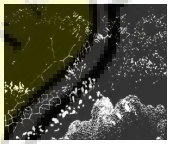
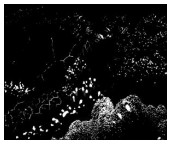
 8 – Chameleon					
 9 – Leafbug					
 10 – Chameleon					
 11 – Tiger					
 12 – Ladybug					
 13 – Lizard					
 14 – Lizard					

Table 6.25: Result Table of Manual Thresholding - Camouflage Images

 15 – Leafbug					
 16 – Snake					
 17 – Fish					
 18 – Chameleon					
 19 – Turtle					
 20 – Raccoon					

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