

# Image Compression

Huffman and Arithmetic  
coding



# Huffman coding

Original source		Source reduction				
Symbol	Probability	1	2	3	4	
$a_2$	0.4	0.4	0.4	0.4	0.6 0.4	
$a_6$	0.3	0.3	0.3	0.3		
$a_1$	0.1	0.1	0.2	0.3		
$a_4$	0.1	0.1				0.1
$a_3$	0.06	0.1	0.1			
$a_5$	0.04					

# Huffman coding

Original source			Source reduction							
Symbol	Probability	Code	1		2		3		4	
$a_2$	0.4	1	0.4	1	0.4	1	0.4	1	0.6	0
$a_6$	0.3	00	0.3	00	0.3	00	0.3	00	0.4	1
$a_1$	0.1	011	0.1	011	0.2	010	0.3	01		
$a_4$	0.1	0100	0.1	0100	0.1	011				
$a_3$	0.06	01010	0.1	0101						
$a_5$	0.04	01011								

# Arithmetic coding

Source Symbol	Probability	Initial Subinterval
$a_1$	0.2	[0.0, 0.2)
$a_2$	0.2	[0.2, 0.4)
$a_3$	0.4	[0.4, 0.8)
$a_4$	0.2	[0.8, 1.0)

# Arithmetic coding

