DIP Project 1

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1. Source code

```
image = imread('Bird feeding 3 low contrast.tif');
image_double = double(image);
figure(1);
imshow(image);
figure(2);
imhist(image);

im_after_transfer = zeros(512);
im_after_transfer = transformation(image_double);

figure(3);
imshow(uint8(im_after_transfer));
figure(4);
imhist(uint8(im_after_transfer));


function output = transformation(im)
    for i = 1:512
        for j = 1:512
            output(i, j) = (atan((im(i, j)-128)/32));
            range = ((atan((255-128)/32))-(atan((0-128)/32)));
            output(i, j) = (255/range)*(output(i, j)-(atan((0-
128)/32))); %h{}
        end
    end
end
```

2. Figures of s=T(r)

```
function output = transformation(im)
    for i = 1:512
        for j = 1:512
            output(i, j) = (atan((im(i, j)-128)/32));
            range = pi;
            output(i, j) = 255*((output(i, j) + (pi/2))/range); %h{}
        end
    end
end
```

3. Table of transformation function to show the mapping from the input gray level r to the output gray level s

0	1	2	3	4	5	6	7	8	9
0	0	1	1	1	1	1	2	2	2

10	11	12	13	14	15	16	17	18	19
2	2	3	3	3	3	3	4	4	4

20	21	22	23	24	25	26	27	28	29
4	5	5	5	5	6	6	6	7	7

30	31	32	33	34	35	36	37	38	39
7	7	8	8	8	9	9	9	10	10

40	41	42	43	44	45	46	47	48	49
10	11	11	11	12	12	13	13	13	14

50	51	52	53	54	55	56	57	58	59
14	15	15	16	16	17	17	18	18	19

60	61	62	63	64	65	66	67	68	69
19	20	20	21	22	22	23	24	24	25

70	71	72	73	74	75	76	77	78	79
26	26	27	28	29	30	30	31	32	33

80	81	82	83	84	85	86	87	88	89
34	35	36	37	38	39	40	41	43	44

90	91	92	93	94	95	96	97	98	99
45	46	48	49	51	52	54	55	57	58

100	101	102	103	104	105	106	107	108	109
60	62	64	66	68	70	72	74	76	78

110	111	112	113	114	115	116	117	118	119
81	83	85	88	90	93	96	98	101	104

120	121	122	123	124	125	126	127	128	129
107	110	113	116	119	122	125	128	131	134

130	131	132	133	134	135	136	137	138	139
137	140	143	145	148	151	154	157	159	162

140	141	142	143	144	145	146	147	148	149
165	167	170	172	175	177	179	181	183	186

150	151	152	153	154	155	156	157	158	159
188	190	191	193	195	197	198	200	202	203

160	161	162	163	164	165	166	167	168	169
205	206	207	209	210	211	213	214	215	216

170	171	172	173	174	175	176	177	178	179
217	218	219	220	221	222	223	224	225	226

180	181	182	183	184	185	186	187	188	189
226	227	228	229	230	230	231	232	232	233

190	191	192	193	194	195	196	197	198	199
234	234	235	235	236	236	237	237	238	239

200	201	202	203	204	205	206	207	208	209
239	239	240	240	241	241	242	242	243	243

210	211	212	213	214	215	216	217	218	219
243	244	244	244	245	245	246	246	246	247

220	221	222	223	224	225	226	227	228	229
247	247	247	248	248	248	249	249	249	249

230	231	232	233	234	235	236	237	238	239
250	250	250	251	251	251	251	252	252	252

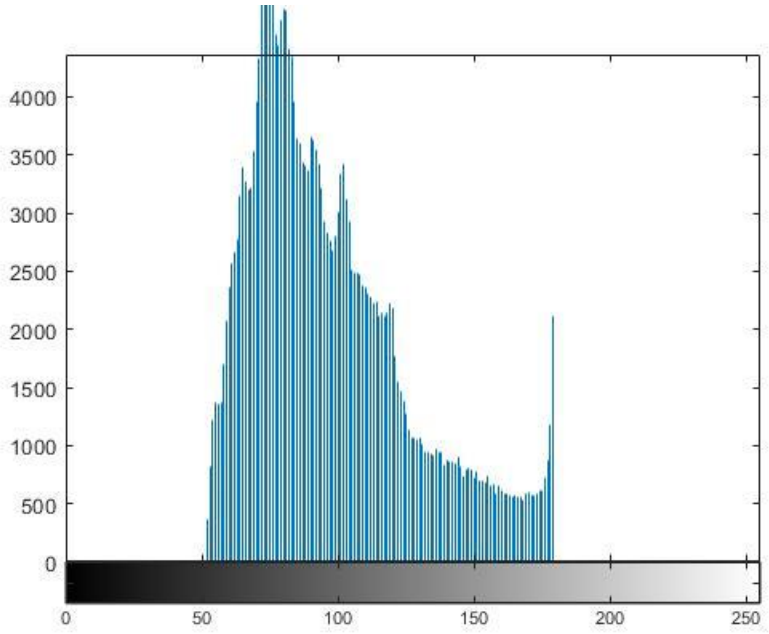
240	241	242	243	244	245	246	247	248	249
252	252	253	253	253	253	253	254	254	254

250	251	252	253	254	255
254	254	255	255	255	255

4. Figure of the output image after applying the intensity transformation function

5. Figures of the original and output histograms

Original histogram:



Output histogram: