Project #1

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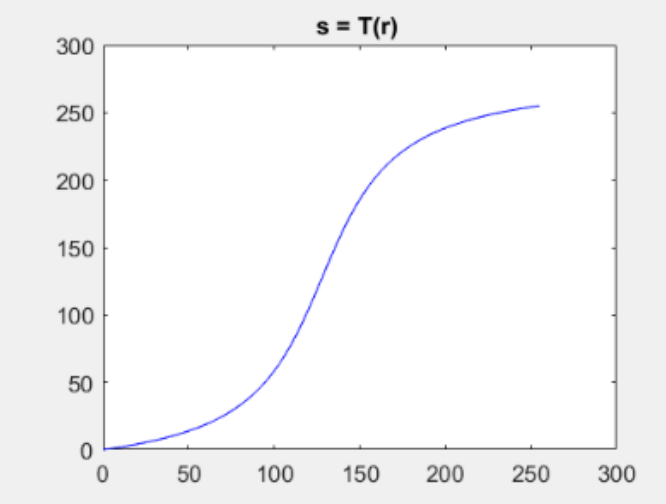
- Source codes

```
%%  Figure of s = T(r)
r = [0:255];
sori = atan(double((r-128)/32));
s = ((sori-sori(1)) * 255) / (sori(256)-sori(1));
subplot(2,2,1);
plot(r,s,'b');
title('s = T(r) ');
%%  Table of transformation function
table = [r;s];
T = array2table(table.','VariableNames',{'r','s'})
fig = uifigure;
uit = uitable(fig,'Data',T);
%writetable(T,'Table of transformation function .xlsx')
%%   output image
I = imread('Bird feeding 3 low contrast.tif');
out = (atan((double(I)-128)/32)-sori(1))*(255/(sori(256)-
sori(1)));
%1.3258
subplot(2,2,2);
imshow(out,[0 255]);
title('output image');
%%    original and output histograms
subplot(2,2,3);
histogram(I);
title('original histogram');
subplot(2,2,4);
histogram(out);
title('output histogram');
```

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

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	r	s	r	s	r	s	r	s	r	s	r	s	r	s	r	s
2	0	0	32	7.388	64	21.043	96	52.007	128	127.589	160	203.171	192	234.135	224	247.79
3	1	0.1782	33	7.692	65	21.653	97	53.534	129	130.595	161	204.652	193	234.729	225	248.088
4	2	0.3591	34	8.001	66	22.277	98	55.11	130	133.596	162	206.087	194	235.308	226	248.381
5	3	0.5427	35	8.316	67	22.918	99	56.736	131	136.585	163	207.477	195	235.874	227	248.668
6	4	0.729	36	8.638	68	23.575	100	58.413	132	139.556	164	208.826	196	236.426	228	248.95
7	5	0.9182	37	8.966	69	24.25	101	60.143	133	142.505	165	210.133	197	236.964	229	249.226
8	6	1.1103	38	9.3	70	24.943	102	61.927	134	145.426	166	211.4	198	237.49	230	249.498
9	7	1.3054	39	9.641	71	25.654	103	63.766	135	148.314	167	212.629	199	238.004	231	249.765
10	8	1.5035	40	9.988	72	26.384	104	65.662	136	151.164	168	213.82	200	238.506	232	250.028
11	9	1.7048	41	10.34	73	27.135	105	67.616	137	153.973	169	214.976	201	238.996	233	250.286
12	10	1.9092	42	10.71	74	27.906	106	69.628	138	156.737	170	216.098	202	239.476	234	250.539
13	11	2.1168	43	11.07	75	28.698	107	71.7	139	159.452	171	217.186	203	239.944	235	250.788
14	12	2.3278	44	11.45	76	29.513	108	73.833	140	162.115	172	218.242	204	240.402	236	251.033
15	13	2.5422	45	11.84	77	30.35	109	76.026	141	164.724	173	219.267	205	240.85	237	251.273
16	14	2.7601	46	12.23	78	31.212	110	78.28	142	167.277	174	220.262	206	241.288	238	251.51
17	15	2.9815	47	12.63	79	32.099	111	80.595	143	169.772	175	221.229	207	241.716	239	251.743
18	16	3.2066	48	13.04	80	33.011	112	82.97	144	172.208	176	222.168	208	242.136	240	251.972
19	17	3.4355	49	13.46	81	33.95	113	85.406	145	174.584	177	223.08	209	242.546	241	252.197
20	18	3.6682	50	13.89	82	34.916	114	87.901	146	176.899	178	223.966	210	242.948	242	252.418
21	19	3.9048	51	14.33	83	35.911	115	90.454	147	179.153	179	224.828	211	243.341	243	252.636
22	20	4.1455	52	14.78	84	36.936	116	93.063	148	181.346	180	225.665	212	243.726	244	252.85
23	21	4.3903	53	15.23	85	37.992	117	95.726	149	183.478	181	226.48	213	244.104	245	253.061
24	22	4.6393	54	15.7	86	39.081	118	98.441	150	185.55	182	227.273	214	244.473	246	253.269
25	23	4.8927	55	16.18	87	40.202	119	101.2	151	187.562	183	228.044	215	244.835	247	253.473
26	24	5.1505	56	16.67	88	41.358	120	104.01	152	189.516	184	228.794	216	245.19	248	253.675
27	25	5.4129	57	17.17	89	42.55	121	106.86	153	191.412	185	229.524	217	245.538	249	253.873
28	26	5.68	58	17.69	90	43.778	122	109.75	154	193.251	186	230.236	218	245.878	250	254.068
29	27	5.9519	59	18.21	91	45.046	123	112.67	155	195.035	187	230.928	219	246.213	251	254.26
30	28	6.2287	60	18.75	92	46.353	124	115.62	156	196.765	188	231.603	220	246.54	252	254.449
31	29	6.5106	61	19.3	93	47.701	125	118.59	157	198.442	189	232.26	221	246.862	253	254.636
32	30	6.7977	62	19.87	94	49.092	126	121.58	158	200.068	190	232.901	222	247.177	254	254.819
33	31	7.0901	63	20.45	95	50.526	127	124.58	159	201.644	191	233.526	223	247.487	255	255

- Figure of s = T(r)



- Figure of the output image after applying the intensity transformation function

- Figures of the original and output histograms