lighting	dim	angle°	90

Measuring different distances under dim light and a right angle

color	red											
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	36	21	22	33	18	19	21	15	15	21	12	15
10-20	39	18	21	36	18	19	21	12	15	21	12	15
20-30	42	18	19	39	18	18	27	12	13	21	12	13
30-40	42	15	18	36	15	18	27	12	13	21	15	15
40-50	42	15	16	36	15	18	24	12	13	21	12	15
50-60	33	15	16	33	12	16	21	12	15	18	12	15

color	blue											
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	24	30	27	21	24	22	15	21	16	15	18	16
10-20	24	30	25	21	27	24	15	24	18	15	18	16
20-30	24	30	25	21	30	22	18	24	18	15	21	16
30-40	18	30	25	18	30	22	15	24	18	15	18	15
40-50	15	30	24	15	27	22	15	24	18	15	18	16
50-60	15	24	21	18	24	21	15	21	16	15	18	16

color	green											
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	24	21	27	21	18	22	15	15	19	15	15	16
10-20	27	21	28	21	18	24	15	15	19	12	15	18
20-30	27	24	28	21	21	25	15	15	19	12	12	16
30-40	24	18	27	21	21	24	15	12	21	12	15	18
40-50	21	21	25	18	18	25	15	12	19	15	15	16
50-60	21	18	24	21	18	22	15	12	19	15	12	16

lighting	dim	angle°	90

Same measurements with color components in percentage

color	red											
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	0.456	0.266	0.278	0.471	0.257	0.271	0.412	0.294	0.294	0.438	0.25	0.313
10-20	0.5	0.231	0.269	0.493	0.247	0.26	0.438	0.25	0.313	0.438	0.25	0.313
20-30	0.532	0.228	0.241	0.52	0.24	0.24	0.519	0.231	0.25	0.457	0.261	0.283
30-40	0.56	0.2	0.24	0.522	0.217	0.261	0.519	0.231	0.25	0.412	0.294	0.294
40-50	0.575	0.205	0.219	0.522	0.217	0.261	0.49	0.245	0.265	0.438	0.25	0.313
50-60	0.516	0.234	0.25	0.541	0.197	0.262	0.438	0.25	0.313	0.4	0.267	0.333

color	blue											
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	0.296	0.37	0.333	0.313	0.358	0.328	0.288	0.404	0.308	0.306	0.367	0.327
10-20	0.304	0.38	0.316	0.292	0.375	0.333	0.263	0.421	0.316	0.306	0.367	0.327
20-30	0.304	0.38	0.316	0.288	0.411	0.301	0.3	0.4	0.3	0.288	0.404	0.308
30-40	0.247	0.411	0.342	0.257	0.429	0.314	0.263	0.421	0.316	0.313	0.375	0.313
40-50	0.217	0.435	0.348	0.234	0.422	0.344	0.263	0.421	0.316	0.306	0.367	0.327
50-60	0.25	0.4	0.35	0.286	0.381	0.333	0.288	0.404	0.308	0.306	0.367	0.327

color	green											
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	0.333	0.292	0.375	0.344	0.295	0.361	0.306	0.306	0.388	0.326	0.326	0.348
10-20	0.355	0.276	0.368	0.333	0.286	0.381	0.306	0.306	0.388	0.267	0.333	0.4
20-30	0.342	0.304	0.354	0.313	0.313	0.373	0.306	0.306	0.388	0.3	0.3	0.4
30-40	0.348	0.261	0.391	0.318	0.318	0.364	0.313	0.25	0.438	0.267	0.333	0.4
40-50	0.313	0.313	0.373	0.295	0.295	0.41	0.326	0.261	0.413	0.326	0.326	0.348
50-60	0.333	0.286	0.381	0.344	0.295	0.361	0.326	0.261	0.413	0.349	0.279	0.372

lighting	well	angle°	90

Measuring different distances under very good lighting and a right angle

color	red											
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	36	12	18	30	12	15	24	12	13	24	12	13
10-20	39	15	16	36	12	13	24	12	13	24	12	13
20-30	42	15	18	36	12	15	27	12	13	27	12	13
30-40	42	15	18	39	12	13	30	12	13	27	12	13
40-50	42	12	16	39	12	13	24	12	15	24	12	13
50-60	36	15	18	33	12	15	24	12	13	24	12	15

color	blue											
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	21	30	25	12	24	21	12	18	16	12	18	16
10-20	21	33	25	15	27	21	12	18	16	12	18	16
20-30	21	36	25	15	30	21	15	18	16	15	18	16
30-40	21	33	25	15	30	19	12	21	16	15	18	16
40-50	24	33	25	15	27	19	15	21	16	12	18	16
50-60	24	30	25	15	27	21	12	18	16	15	18	16

color	green											
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	18	15	25	15	12	21	15	12	16	12	12	18
10-20	21	15	24	15	15	24	15	15	16	15	12	16
20-30	21	15	27	18	12	22	15	15	18	15	12	18
30-40	21	15	28	15	12	24	12	12	19	12	12	18
40-50	21	15	27	18	15	22	15	12	19	15	12	16
50-60	21	15	27	15	12	22	15	12	18	15	12	16

lighting	well	angle°	90

Same measurements with color components in percentage

color	red											
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	0.545	0.182	0.273	0.526	0.211	0.263	0.49	0.245	0.265	0.49	0.245	0.265
10-20	0.557	0.214	0.229	0.59	0.197	0.213	0.49	0.245	0.265	0.49	0.245	0.265
20-30	0.56	0.2	0.24	0.571	0.19	0.238	0.519	0.231	0.25	0.519	0.231	0.25
30-40	0.56	0.2	0.24	0.609	0.188	0.203	0.545	0.218	0.236	0.519	0.231	0.25
40-50	0.6	0.171	0.229	0.609	0.188	0.203	0.471	0.235	0.294	0.49	0.245	0.265
50-60	0.522	0.217	0.261	0.55	0.2	0.25	0.49	0.245	0.265	0.471	0.235	0.294

color	blue											
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	0.276	0.395	0.329	0.211	0.421	0.368	0.261	0.391	0.348	0.261	0.391	0.348
10-20	0.266	0.418	0.316	0.238	0.429	0.333	0.261	0.391	0.348	0.261	0.391	0.348
20-30	0.256	0.439	0.305	0.227	0.455	0.318	0.306	0.367	0.327	0.306	0.367	0.327
30-40	0.266	0.418	0.316	0.234	0.469	0.297	0.245	0.429	0.327	0.306	0.367	0.327
40-50	0.293	0.402	0.305	0.246	0.443	0.311	0.288	0.404	0.308	0.261	0.391	0.348
50-60	0.304	0.38	0.316	0.238	0.429	0.333	0.261	0.391	0.348	0.306	0.367	0.327

color	green											
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	0.31	0.259	0.431	0.313	0.25	0.438	0.349	0.279	0.372	0.286	0.286	0.429
10-20	0.35	0.25	0.4	0.278	0.278	0.444	0.326	0.326	0.348	0.349	0.279	0.372
20-30	0.333	0.238	0.429	0.346	0.231	0.423	0.313	0.313	0.375	0.333	0.267	0.4
30-40	0.328	0.234	0.438	0.294	0.235	0.471	0.279	0.279	0.442	0.286	0.286	0.429
40-50	0.333	0.238	0.429	0.327	0.273	0.4	0.326	0.261	0.413	0.349	0.279	0.372
50-60	0.333	0.238	0.429	0.306	0.245	0.449	0.333	0.267	0.4	0.349	0.279	0.372

lighting	well	distance	10 cm

measuring different angles under very good lighting and a fixed distance of 10cm

color	red											
angle	80°			60°			45°			30°		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	30	12	15	27	12	13	24	12	13	18	12	15
10-20	33	12	15	27	12	13	27	12	13	18	12	15
20-30	39	12	15	30	12	13	30	12	13	21	12	15
30-40	39	9	15	30	12	13	27	12	15	21	12	16
40-50	36	12	15	30	12	15	27	15	13	21	12	15
50-60	33	12	16	30	12	15	27	15	15	18	12	16

lighting	well	angle°	90

measurements with a different e-puck under very good lighting and a right angle

color	red											
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	30	18	24	27	12	15	21	12	13	18	12	13
10-20	33	21	22	30	15	15	24	12	13	18	12	13
20-30	36	21	24	33	12	13	24	12	13	21	15	13
30-40	33	21	24	33	15	15	21	12	15	18	15	13
40-50	33	21	24	30	12	15	24	12	13	21	12	13
50-60	30	18	22	27	12	15	21	15	15	18	12	13

lighting	well	distance	10 cm

Same measurements with color components in percentage

color	red											
angle	80°			60°			45°			30°		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	0.526	0.211	0.263	0.519	0.231	0.25	0.49	0.245	0.265	0.4	0.267	0.333
10-20	0.55	0.2	0.25	0.519	0.231	0.25	0.519	0.231	0.25	0.4	0.267	0.333
20-30	0.591	0.182	0.227	0.545	0.218	0.236	0.545	0.218	0.236	0.438	0.25	0.313
30-40	0.619	0.143	0.238	0.545	0.218	0.236	0.5	0.222	0.278	0.429	0.245	0.327
40-50	0.571	0.19	0.238	0.526	0.211	0.263	0.491	0.273	0.236	0.438	0.25	0.313
50-60	0.541	0.197	0.262	0.526	0.211	0.263	0.474	0.263	0.263	0.391	0.261	0.348

color	red											
angle	80°			60°			45°			30°		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
Pixel-nr.												
0-10	0.417	0.25	0.333	0.5	0.222	0.278	0.457	0.261	0.283	0.419	0.279	0.302
10-20	0.434	0.276	0.289	0.5	0.25	0.25	0.49	0.245	0.265	0.419	0.279	0.302
20-30	0.444	0.259	0.296	0.569	0.207	0.224	0.49	0.245	0.265	0.429	0.306	0.265
30-40	0.423	0.269	0.308	0.524	0.238	0.238	0.438	0.25	0.313	0.391	0.326	0.283
40-50	0.423	0.269	0.308	0.526	0.211	0.263	0.49	0.245	0.265	0.457	0.261	0.283
50-60	0.429	0.257	0.314	0.5	0.222	0.278	0.412	0.294	0.294	0.419	0.279	0.302

Results (tables)

Camera values for different distances in dim light and a right angle (average over all 60 pixels)

distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
color												
red	39	17	18.667	35.5	16	18	23.5	12.5	14	20.5	12.5	14.667
blue	20	29	24.5	19	27	22.167	15.5	23	17.333	15	18.5	15.833
green	24	20.5	26.5	20.5	19	23.667	15	13.5	19.333	13.5	14	16.667

Camera values for different distances under very good lighting and a right angle (average over all 60 pixels)

distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
color												
red	39.5	14	17.333	35.5	12	14	25.5	12	13.333	25	12	13.333
blue	22	32.5	25	14.5	27.5	20.333	13	19	16	13.5	18	16
green	20.5	15	26.333	16	13	22.5	14.5	13	17.667	14	12	17

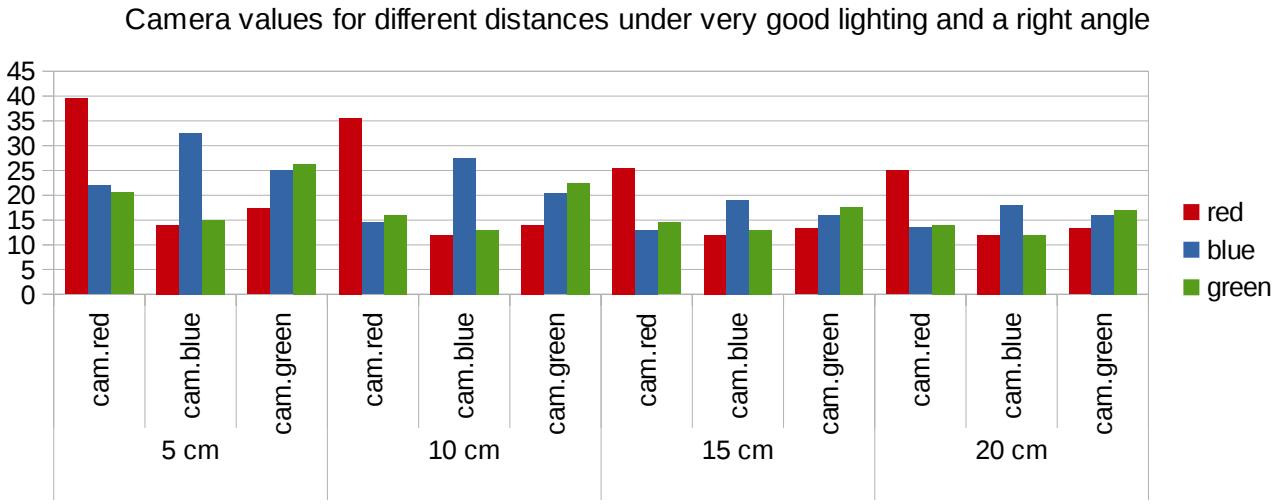
Camera values for different distances under very good lighting and a right angle with a different e-puck (average over all 60 pixels)

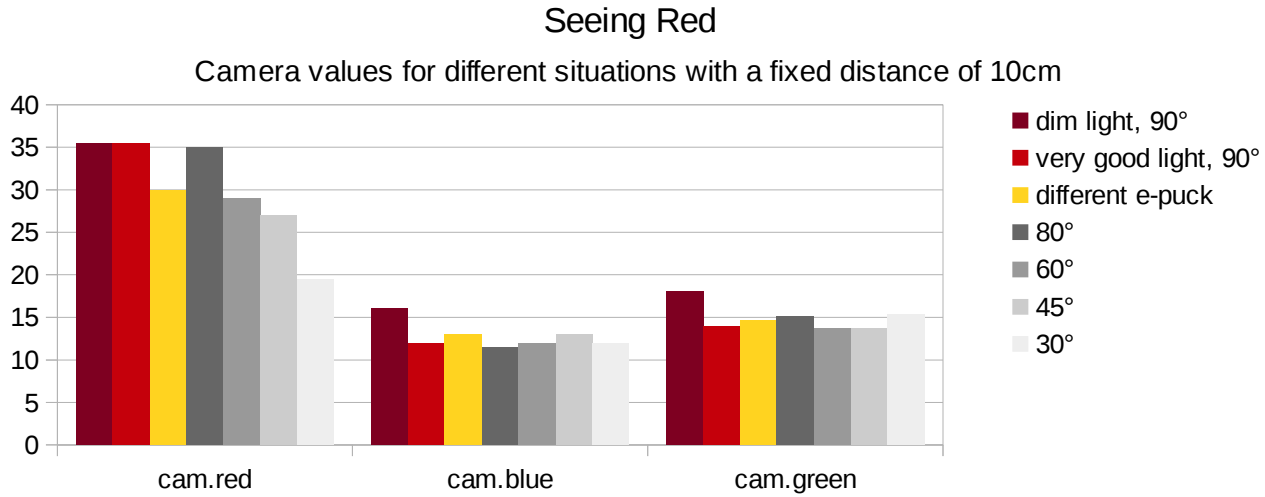
distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
color												
red	32.5	20	23.333	30	13	14.667	22.5	12.5	13.667	19	13	13

Camera values for different angles under very good light and a fixed distance over 10cm (average over all 60 pixels)

angle	80°			60°			45°			30°		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
color												
red	35	11.5	15.167	29	12	13.667	27	13	13.667	19.5	12	15.333

Results (charts)





Results (tables) in percentage

Camera values for different distances in dim light and a right angle (average over all 60 pixels)

distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
color												
red	0.522	0.228	0.25	0.511	0.23	0.259	0.47	0.25	0.28	0.43	0.262	0.308
blue	0.272	0.395	0.333	0.279	0.396	0.325	0.278	0.412	0.31	0.304	0.375	0.321
green	0.338	0.289	0.373	0.325	0.301	0.375	0.314	0.282	0.404	0.306	0.317	0.377

Camera values for different distances under very good lighting and a right angle (average over all 60 pixels)

distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
color												
red	0.558	0.198	0.245	0.577	0.195	0.228	0.502	0.236	0.262	0.497	0.238	0.265
blue	0.277	0.409	0.314	0.233	0.441	0.326	0.271	0.396	0.333	0.284	0.379	0.337
green	0.332	0.243	0.426	0.311	0.252	0.437	0.321	0.288	0.391	0.326	0.279	0.395

Camera values for different distances under very good lighting and a right angle with a different e-puck (average over all 60 pixels)

distance	5 cm			10 cm			15 cm			20 cm		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
color												
red	0.429	0.264	0.308	0.52	0.225	0.254	0.462	0.257	0.281	0.422	0.289	0.289

Camera values for different angles under very good light and a fixed distance over 10cm (average over all 60 pixels)

angle	80°			60°			45°			30°		
camera	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green	cam.red	cam.blue	cam.green
color												
red	0.568	0.186	0.246	0.53	0.22	0.25	0.503	0.242	0.255	0.416	0.256	0.327

Results (charts) in percentage