# Mobile Robotics
Test results - part 1 (and 2 - cube position sensor model)

Motion Model and Driving

1. Setting the motion model's parameters

Tracks distance (mm)	Real x (mm)	Estimated x (mm)	Real y (mm)	Estimated y (mm)	Real θ (mm)	Estimated θ (mm)	Δx (mm)	Δy (mm)	Δθ (mm)
20	309	81	700	482	-0.0430	2.039	228	218	2.082
30	282	198	700	448	0.0927	-2.5925	84	252	2.6852
40	303	275	699	495	-0.0137	-1.5842	28	204	1.5708
50	296	291	700	584	0.0224	-0.8712	5	116	0.8936
60	307	316	700	590	-0.0348	-0.6625	9	110	0.6973
70	298	295	700	645	0.00142	-0.3349	3	55	0.33632
80	303	281	700	681	-0.0151	0.0058	22	19	0.0209
90	309	275	700	702	-0.0432	0.1486	34	2	0.1918
100	306	258	700	714	-0.0268	0.3198	48	14	0.3466

Tracks distance (mm)	Real x (mm)	Estimated x (mm)	Real y (mm)	Estimated y (mm)	Real θ (mm)	Estimated θ (mm)	Δx (mm)	Δy (mm)	Δθ (mm)
76	303	283	700	665	-0.01474	-0.1292	30	35	0.1145
77	304	286	700	668	-0.0182	-0.1941	18	32	0.1759
78	304	275	700	686	-0.0183	0.0029	29	14	0.0212
79	301	287	700	667	-0.0027	-0.1229	14	33	0.1202
80	303	290	700	671	-0.0104	-0.0292	13	29	0.0188
81	298	277	700	684	0.0096	0.0399	21	16	0.0303
82	306	284	700	676	-0.0267	0.0208	22	24	0.0475
83	307	280	700	687	-0.0349	0.0551	27	13	0.09
84	298	277	700	678	0.0098	-0.0184	21	22	0.0282
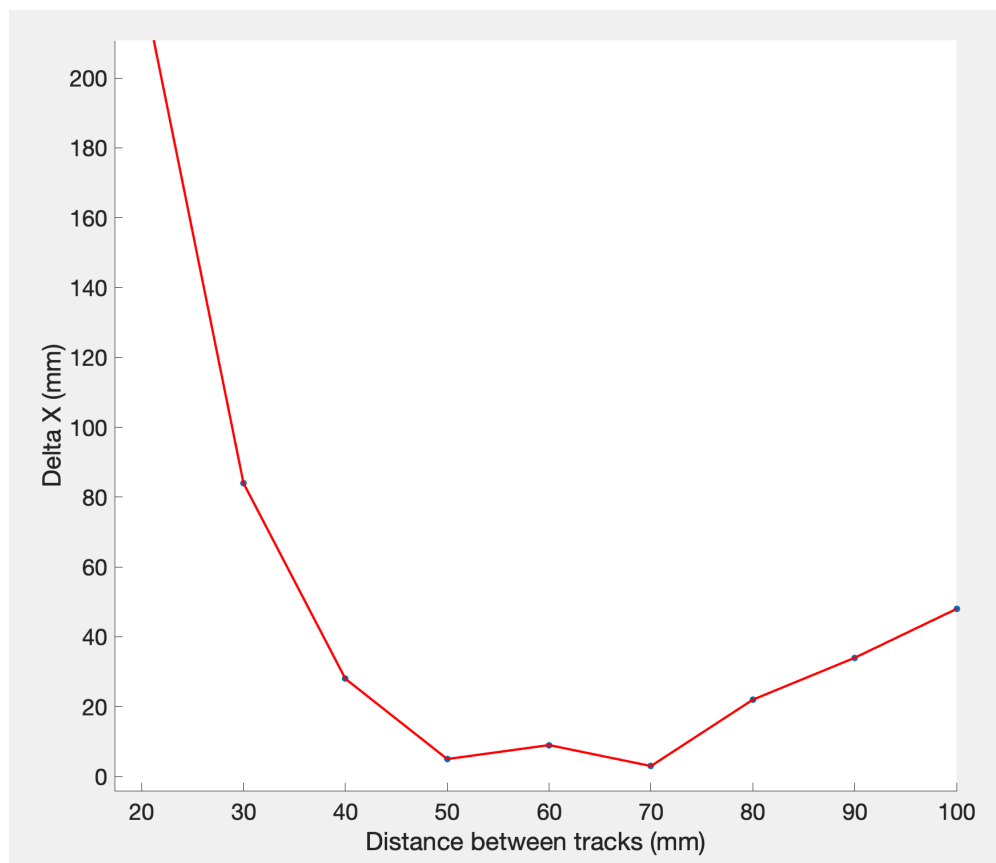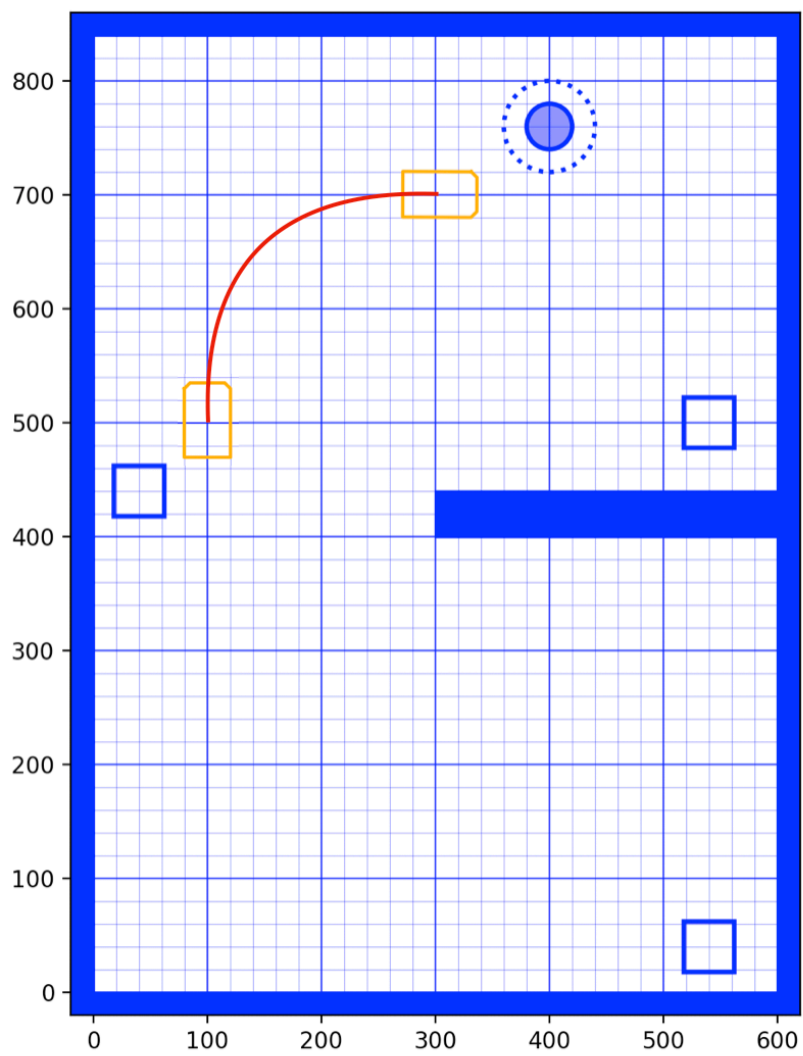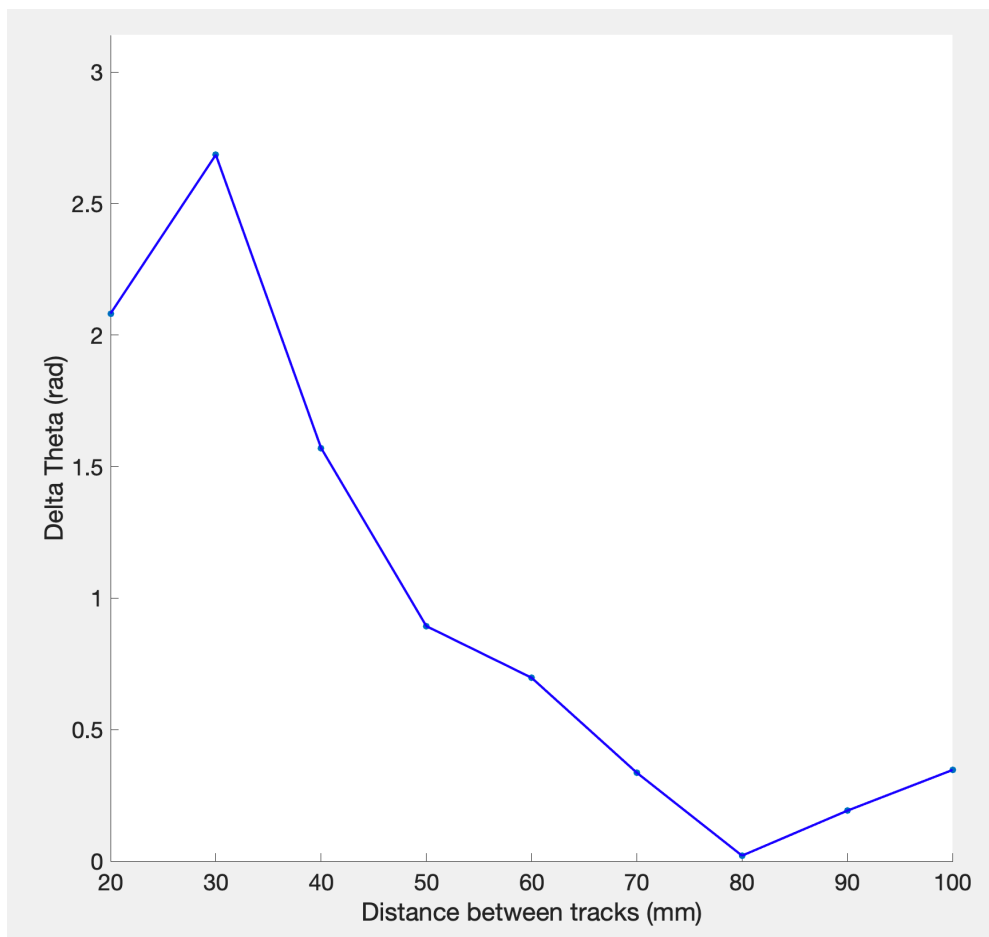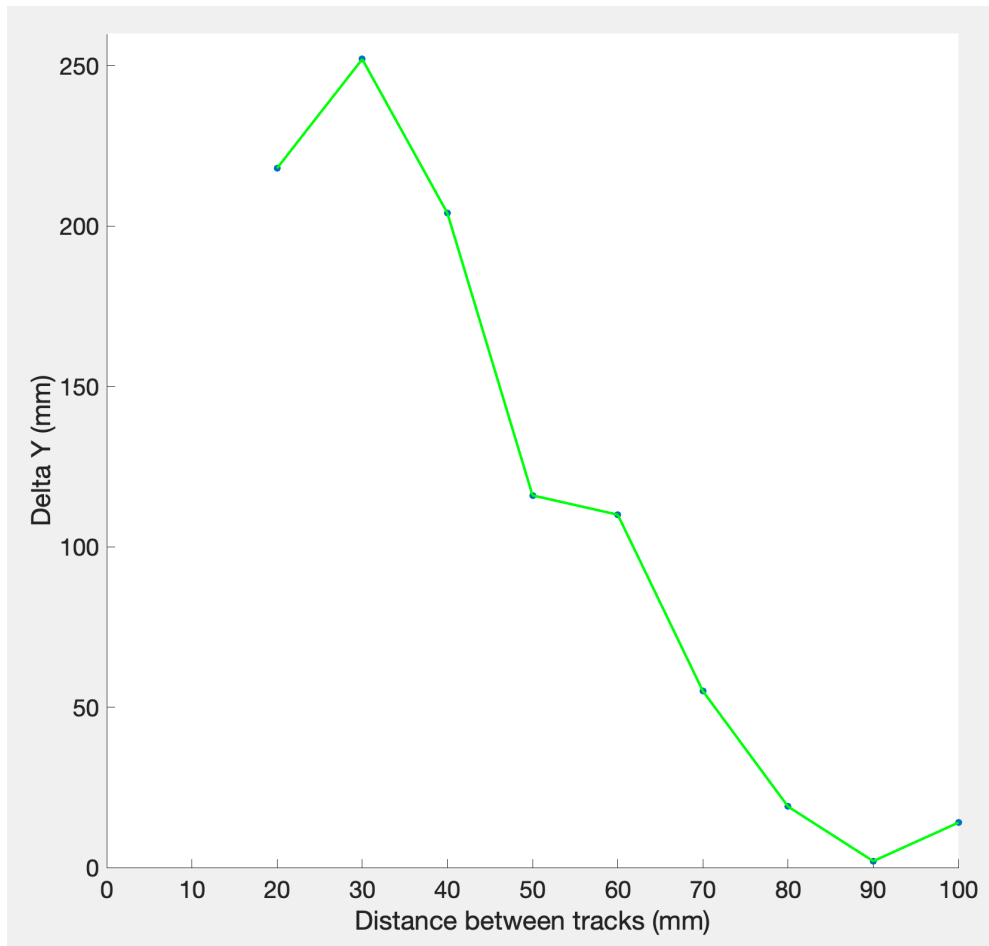
Real x	Real y	Real theta	Measured x	Measured y	Measured theta	x deviation	y deviation	theta deviation
432	6	-0.0055	443	-2	0.0670	11	8	0.0725
451	-184	0.0317	434	-197	0.0501	17	13	0.0184
498	-182	0.2634	513	-165	0.3261	15	17	0.0627
407	-198	0.3083	428	-203	0.2963	21	5	0.0120
342	-198	-0.0620	339	-198	-0.1231	3	0	0.0611
311	-158	-0.3147	325	-163	-0.2567	14	5	0.0580
328	-169	-0.1649	322	-160	-0.1567	6	9	0.0082
302	-112	-0.2713	297	-117	-0.3304	5	5	0.0591
344	-167	0.3775	331	-165	0.4944	13	2	0.1169
256	34	0.5524	254	35	0.4485	2	1	0.1039
192	-120	-0.4618	202	-125	-0.5341	10	5	0.0723
303	-81	0.8354	327	-80	0.8360	24	1	0.0006
227	-82	0.6416	235	-87	0.6293	12	5	0.0123
170	-25	0.4315	173	-35	0.4070	3	10	0.0245
129	61	0.3415	128	62	0.3268	1	1	0.0147
291	-95	1.1464	297	-80	1.1725	6	15	0.0261
186	21	1.3268	207	23	1.5859	21	2	0.2591
103	-15	1.0913	111	-15	1.0990	8	0	0.0077
447	107	-0.0398	457	114	-0.0376	10	7	0.0022
535	38	-0.5520	540	51	-0.5701	5	13	0.0181
595	-78	-0.9588	552	-89	-0.8040	43	11	0.1548
444	191	-0.5380	424	194	-0.6978	20	3	0.1598
264	125	-0.2521	285	136	-0.2986	31	11	0.0465
414	-30	-1.3015	429	-30	-1.2636	15	0	0.0379
332	-60	-1.3022	319	-54	-1.2570	13	6	0.0452
234	-81	-1.3559	218	-80	-1.2394	16	1	0.1165
197	-37	-1.5472	199	-39	-1.5710	2	2	0.0238
297	-85	-1.7169	280	-96	-1.8455	17	11	0.1286
401	95	-1.1837	399	92	-1.2474	2	3	0.0637
306	-37	-0.8414	300	-43	-0.7749	6	6	0.0665

Position coordinates and angle	Average Deviations	Sigma
x	372/30 = 12.4	43 -1 = 42
y	178/30 = 5.9	17 - 0 = 17
theta	1.8537/30 = 0.06180	0.2591 - 0.0006 = 0.2585