



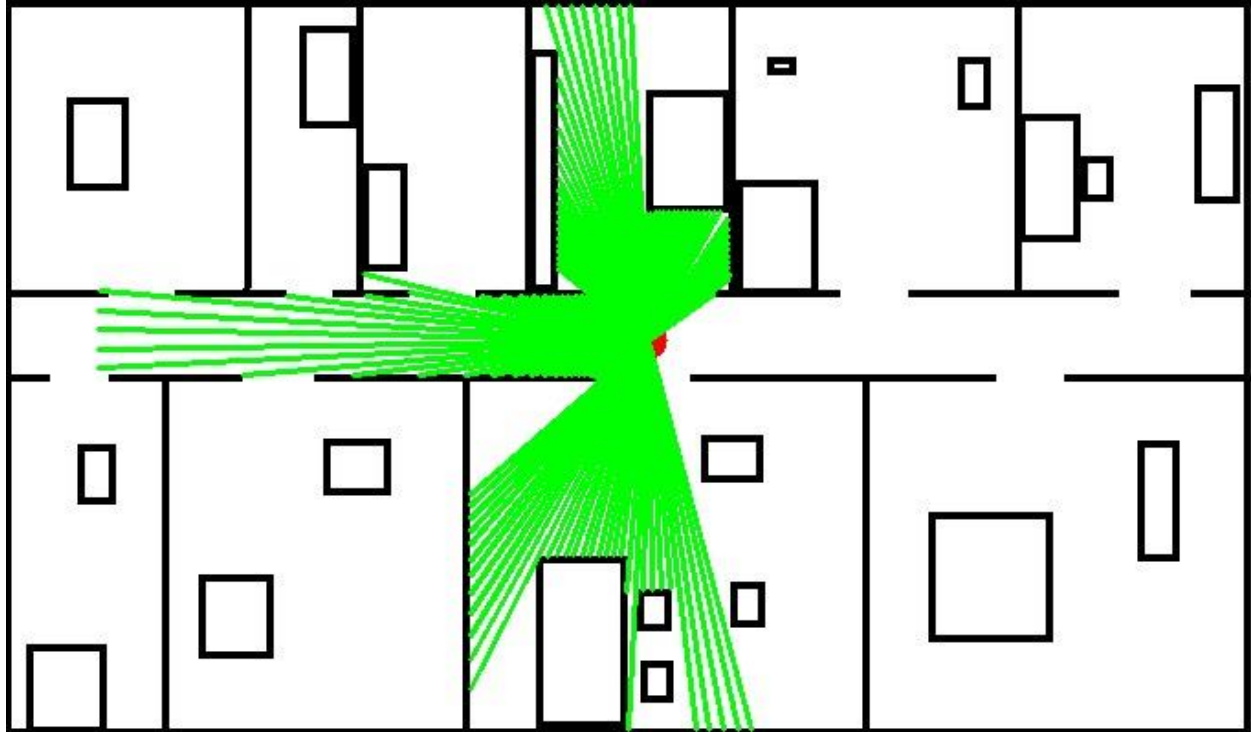
جامعة القاهرة

Robotics Assignment

Name	ID	SEC	BN
Peter Atef Fathi	9202395	1	18

First Requirement Results:

Initial pose: $\langle x, y, \theta \rangle = \langle 350, 185, 200 \rangle$



Observations:

Angle	Distance(cm)	Endpoint
75	877.0860847146078	(406, 397)
77	870.3562489004144	(399, 397)
79	863.7129152675674	(391, 397)
81	858.2120949975011	(383, 397)
83	854.3535567901616	(376, 397)
85	542.1291359076728	(362, 320)
87	540.7254386470087	(357, 320)
89	544.0588203494177	(352, 321)
91	544.1323368446319	(347, 321)
93	849.1407421623344	(339, 397)

95	550.09817305641	(338, 322)
97	471.8304780321	(335, 302)
99	474.13078364518793	(331, 302)
101	476.95702112454535	(327, 302)
103	480.29990630854803	(323, 302)
105	485.18862311476346	(318, 302)
107	489.65293831447593	(314, 302)
109	495.90321636383845	(309, 302)
111	501.4219779786283	(305, 302)
113	508.9440047785218	(300, 302)
115	520.7533005176251	(295, 303)
117	853.3135414371437	(253, 375)
119	796.8437738979957	(253, 359)
121	751.8510490782068	(253, 346)
123	711.1680532757359	(253, 334)
125	674.7206829496188	(253, 323)
127	642.4079700626386	(253, 313)
129	617.2066104636275	(253, 305)
131	589.6439603693062	(253, 296)
133	568.8585061331157	(253, 289)
135	548.7148622007609	(253, 282)
137	529.286311933343	(253, 275)
139	513.264064590538	(253, 269)
141	139.31259813814398	(323, 207)
143	140.0	(322, 206)
145	140.91131963046828	(321, 205)
147	142.04224723651762	(320, 204)
149	148.86235252742716	(318, 204)
151	159.29846201391902	(315, 204)

153	169.941166289984	(312, 204)
155	184.39088914585776	(308, 204)
157	199.07787421006887	(304, 204)
159	217.69703718700444	(299, 204)
161	240.33310217279683	(293, 204)
163	267.04306768759227	(286, 204)
165	301.72835465033774	(277, 204)
167	348.3905854066668	(265, 204)
169	407.15598976313737	(250, 204)
171	505.7430177471559	(225, 204)
173	648.4689661040072	(189, 204)
175	887.2609537221842	(129, 204)
177	1200.0	(50, 200)
179	1200.0	(50, 190)
181	1200.0	(50, 179)
183	1200.0	(50, 169)
185	1200.0	(51, 158)
187	793.826177446927	(153, 161)
189	623.4356422278084	(196, 161)
191	530.2980294136496	(220, 159)
193	636.5029457905124	(195, 149)
195	376.4465433497829	(259, 161)
197	330.26050323948823	(271, 161)
199	296.0	(280, 161)
201	269.6664606509308	(287, 161)
203	247.38633753705963	(293, 161)
205	229.08513701242165	(298, 161)
207	211.09239683134018	(303, 161)
209	200.47942537826668	(306, 161)

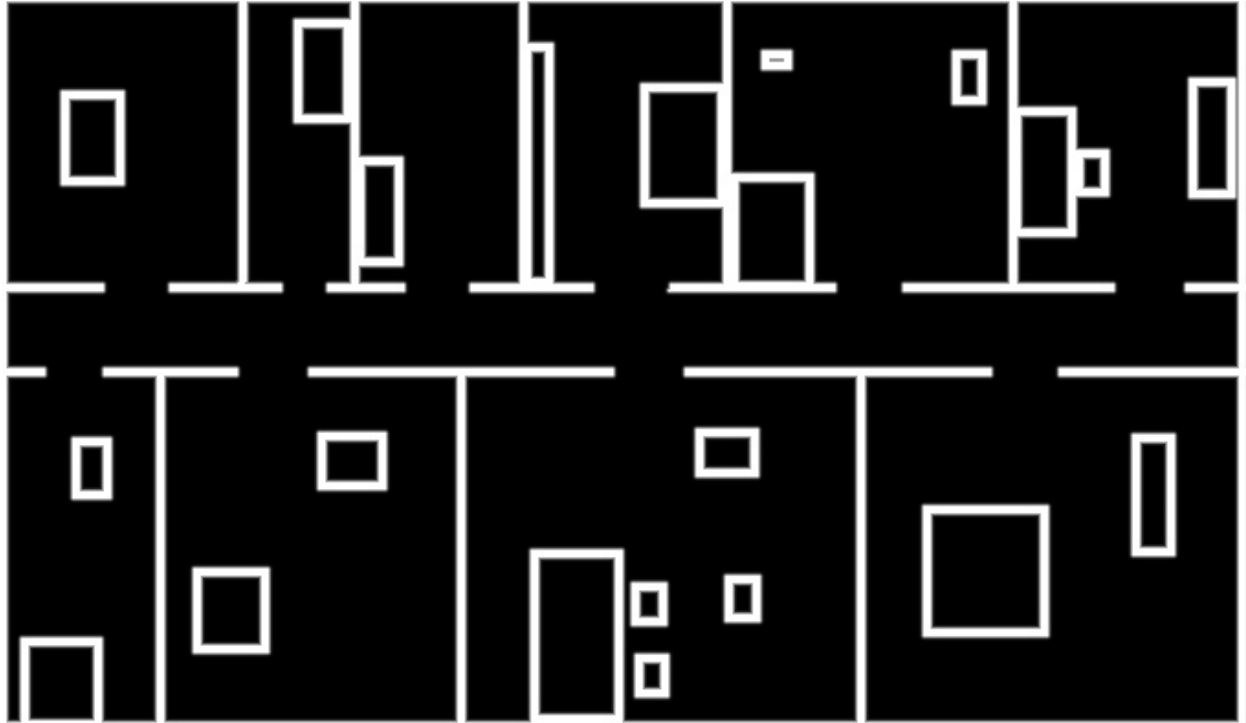
211	186.59046063504962	(310, 161)
213	176.40861656959956	(313, 161)
215	166.4692163734785	(316, 161)
217	165.60193235587562	(317, 160)
219	250.50349298961882	(301, 146)
221	258.14724480420085	(301, 143)
223	266.11275805567834	(301, 140)
225	277.18585822512665	(301, 136)
227	285.79713084634	(301, 133)
229	297.6440827565702	(301, 129)
231	312.9728422722969	(301, 124)
233	325.60098279949955	(301, 120)
235	341.7835572405437	(301, 115)
237	358.35178247080063	(301, 110)
239	382.099463490856	(301, 103)
241	402.88956303185614	(301, 97)
243	431.1287510709533	(301, 89)
245	463.4824700029118	(301, 80)
247	500.0159997440082	(301, 70)
249	548.2335268843013	(301, 57)
251	600.8660416432268	(301, 43)
253	761.6823484891848	(294, 3)
255	753.9230729988305	(301, 3)
257	747.1331875910747	(308, 3)
259	742.1051138484358	(314, 3)
261	737.1838305334701	(321, 3)
263	733.7901607407938	(327, 3)
265	730.8077722629939	(334, 3)
267	729.0980729641246	(340, 3)

269	276.02898398537786	(349, 116)
271	276.02898398537786	(351, 116)
273	280.4567702873297	(354, 115)
275	281.02668912400475	(356, 115)
277	281.82263926093657	(358, 115)
279	283.43605980891	(361, 115)
281	285.545092761196	(364, 115)
283	287.22116913625985	(366, 115)
285	290.13100489261745	(369, 115)
287	292.3285822494954	(371, 115)
289	296.0	(374, 115)
291	300.1066477104431	(377, 115)
293	304.63092423455635	(380, 115)
295	309.5545186231337	(383, 115)
297	314.85869846647086	(386, 115)
299	320.52457004105	(389, 115)
301	116.61903789690601	(365, 160)
303	315.08728949292765	(393, 119)
305	298.52973051272465	(393, 124)
307	285.60112044598145	(393, 128)
309	272.9981684920249	(393, 132)
311	263.78779350076076	(393, 135)
313	251.87298386289865	(393, 139)
315	243.24473272817235	(393, 142)
317	234.91274976041638	(393, 145)
319	226.90967365892536	(393, 148)
321	227.40272645683032	(394, 149)
323	216.81328372588243	(393, 152)
325	172.04650534085255	(385, 160)

Second Requirement Results:

likelihood field for different standard deviations:

1. std = 1



2. std = 5



3. std = 10



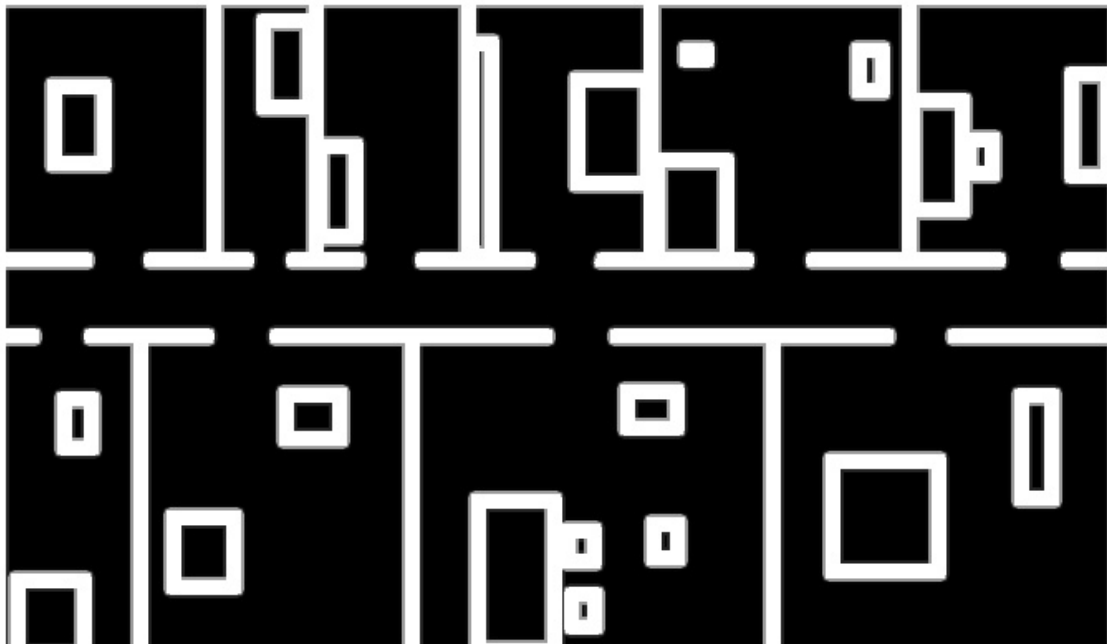
4. std = 20



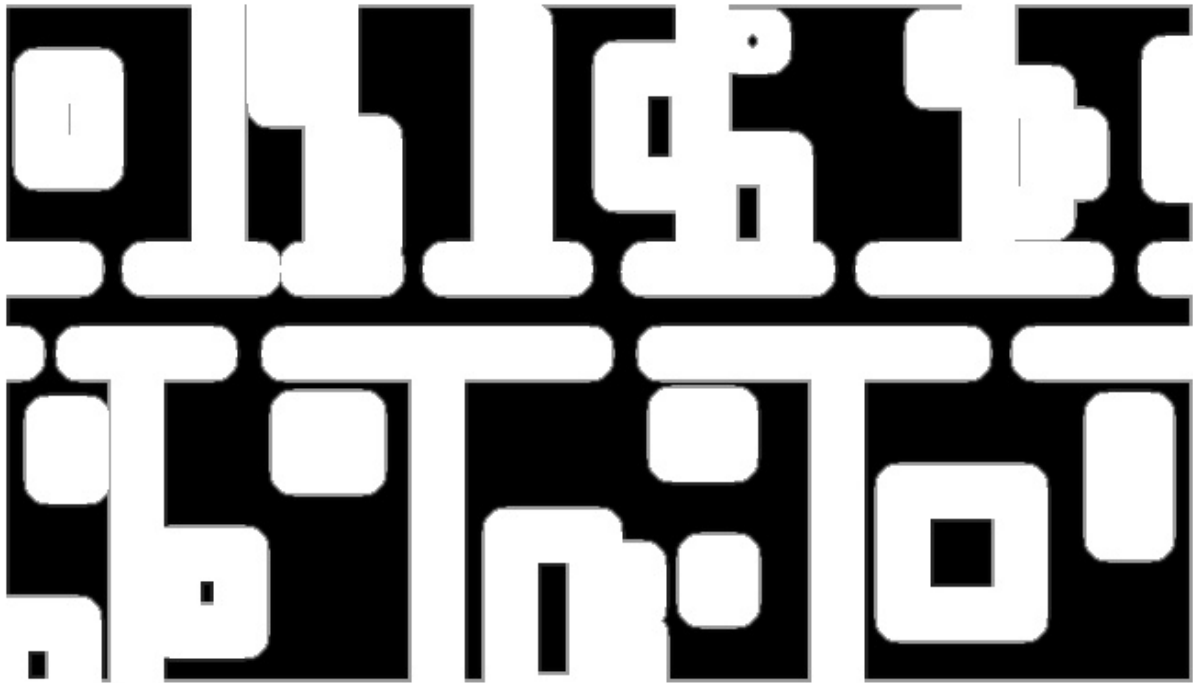
Probability map for different sensor ranges and different standard deviations:

1. std = 1

- Sensor range = 0.1m



- Sensor range = 0.5m



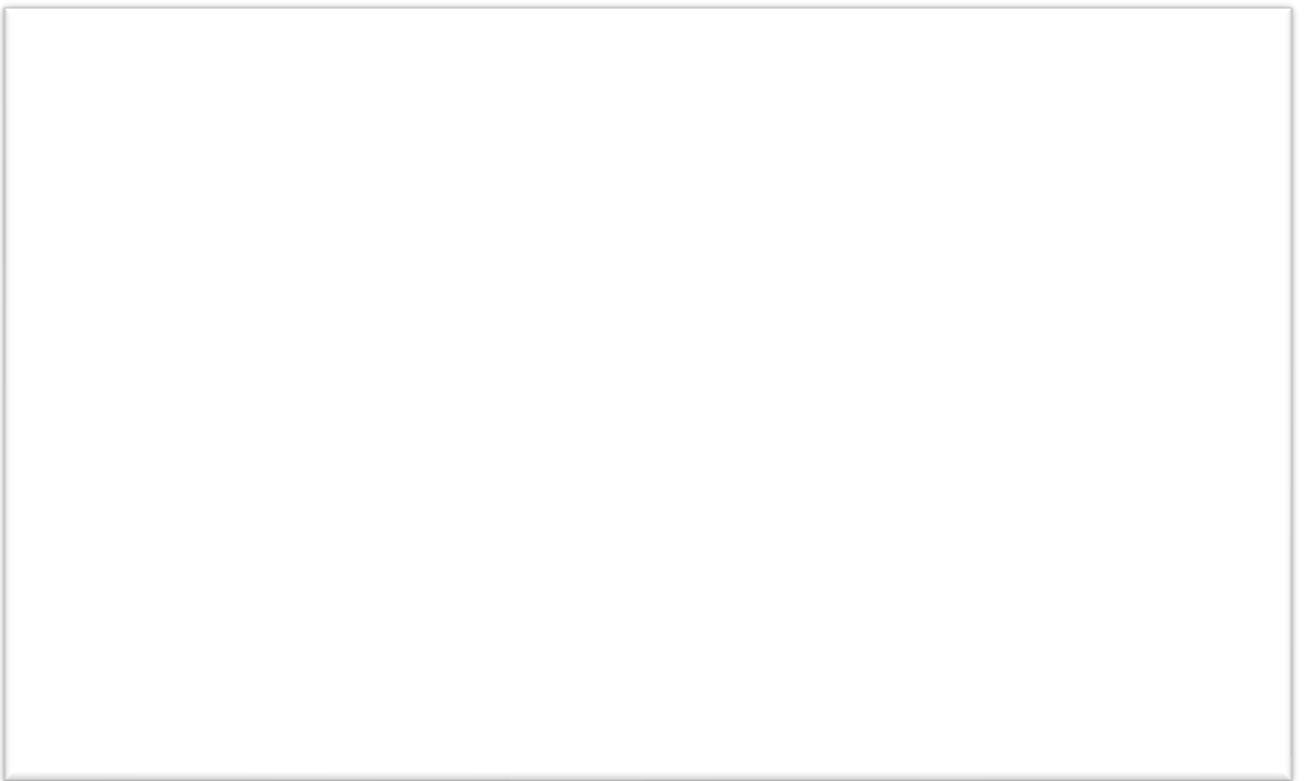
- Sensor range = 1m



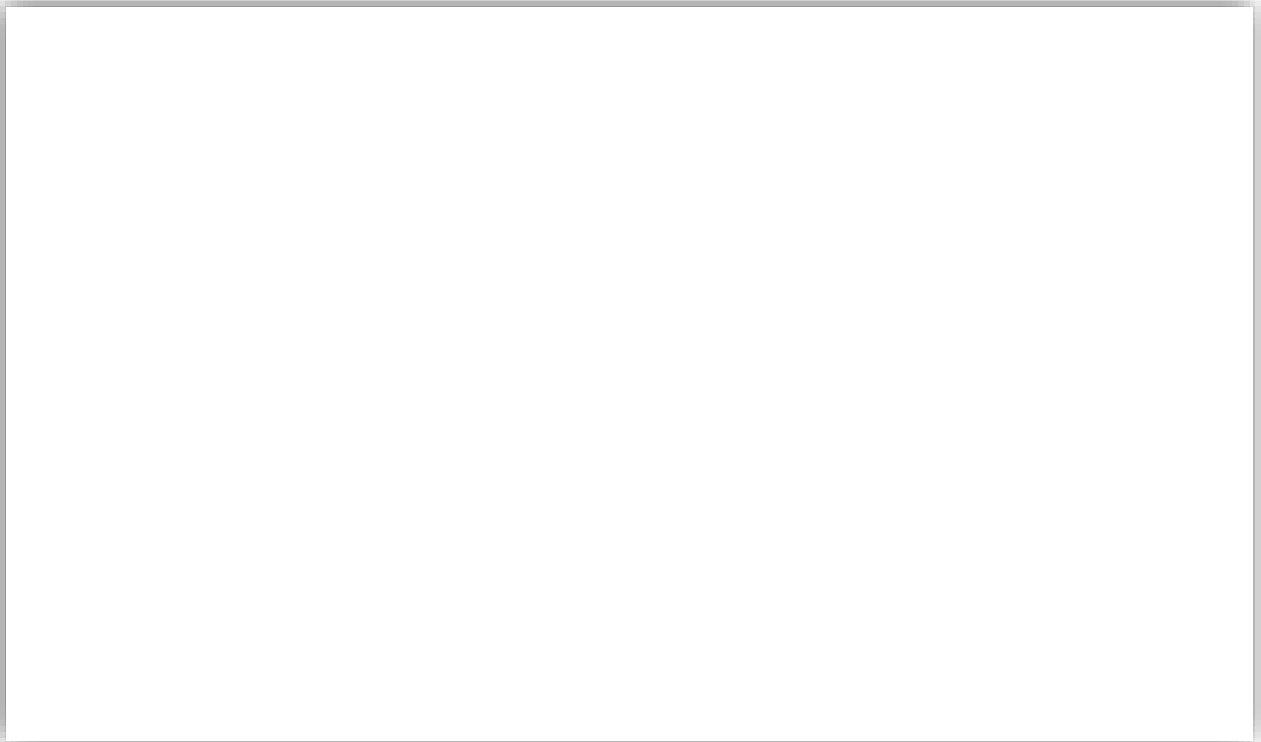
- Sensor range = 2m



- Sensor range = 3m



- Sensor range = 4m



2. std = 5

- Sensor range = 0.1m



- Sensor range = 0.5m



- Sensor range = 1m



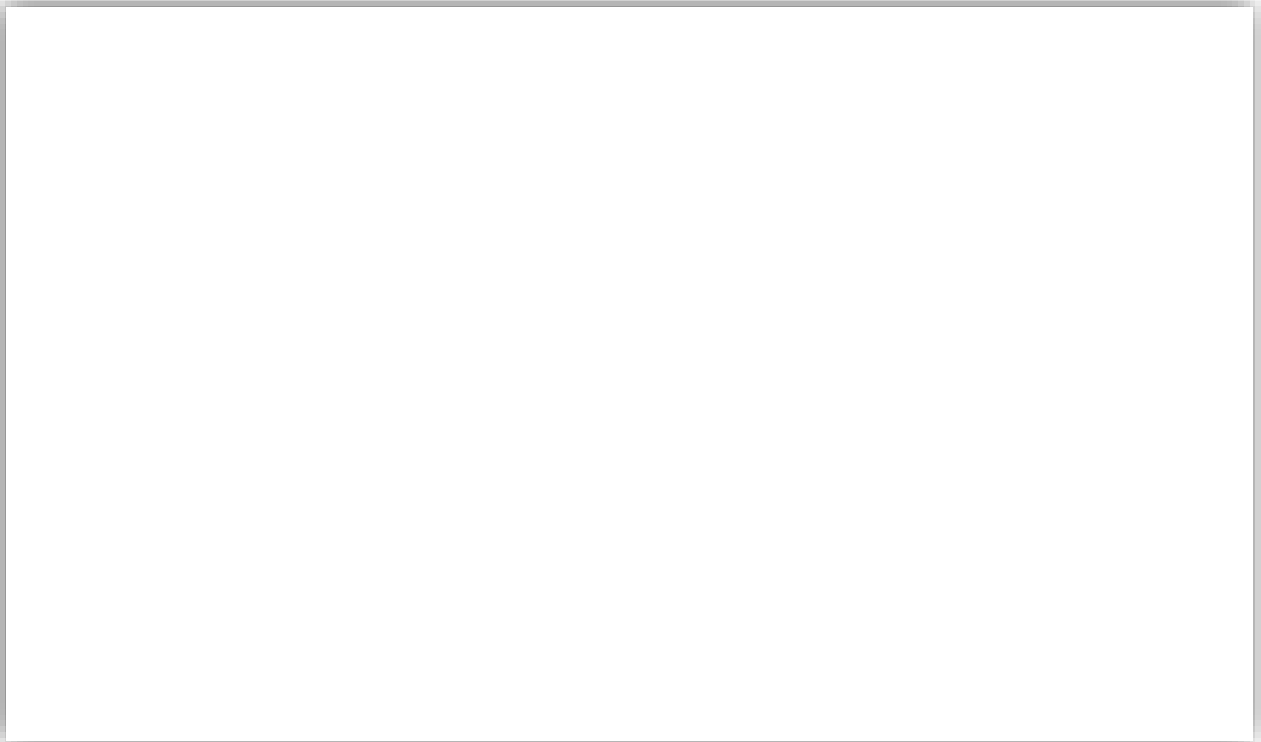
- Sensor range = 2m



- Sensor range = 3m



- Sensor range = 4m



3. std = 10

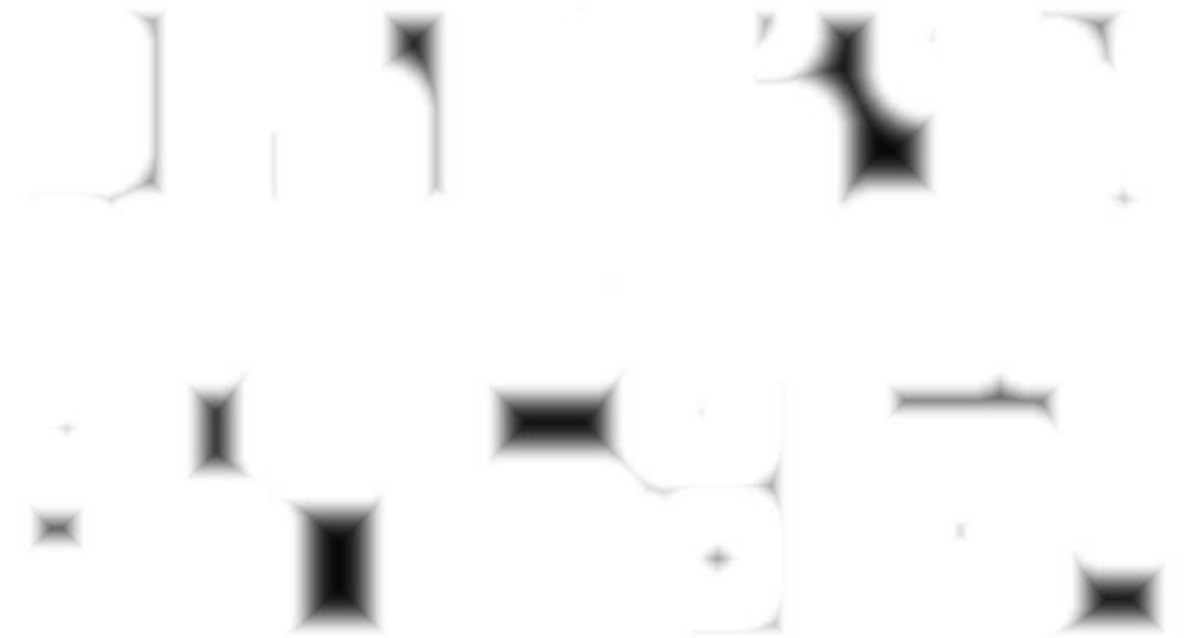
- Sensor range = 0.1m



-
- Sensor range = 0.5m



-
- Sensor range = 1m

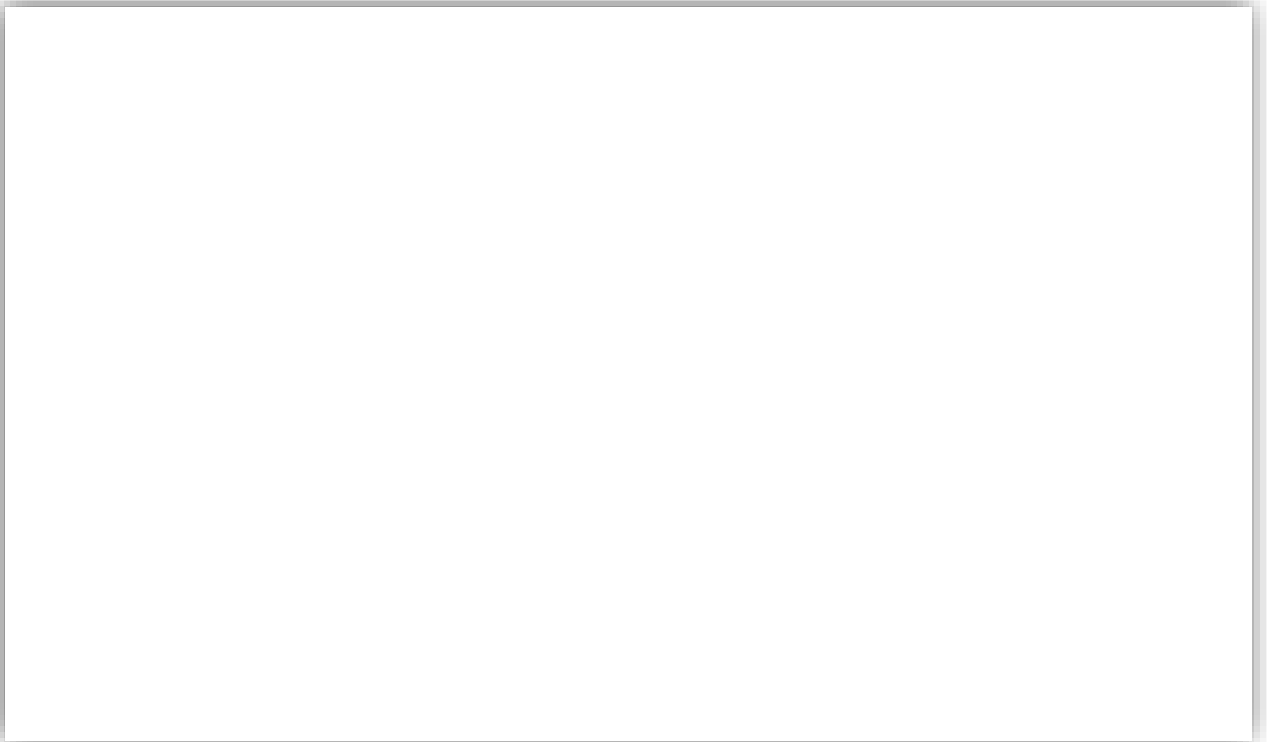


-
- Sensor range = 2m

-
- Sensor range = 3m



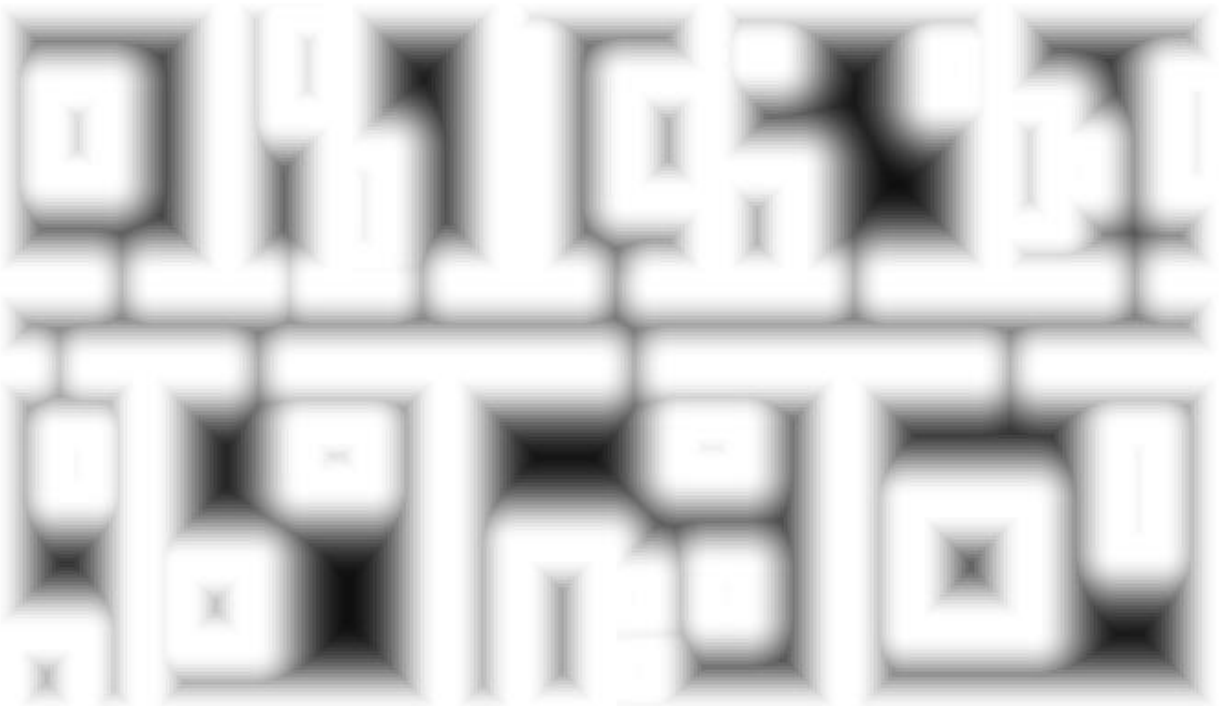
-
- Sensor range = 4m



-

4. std = 20

- Sensor range = 0.1m

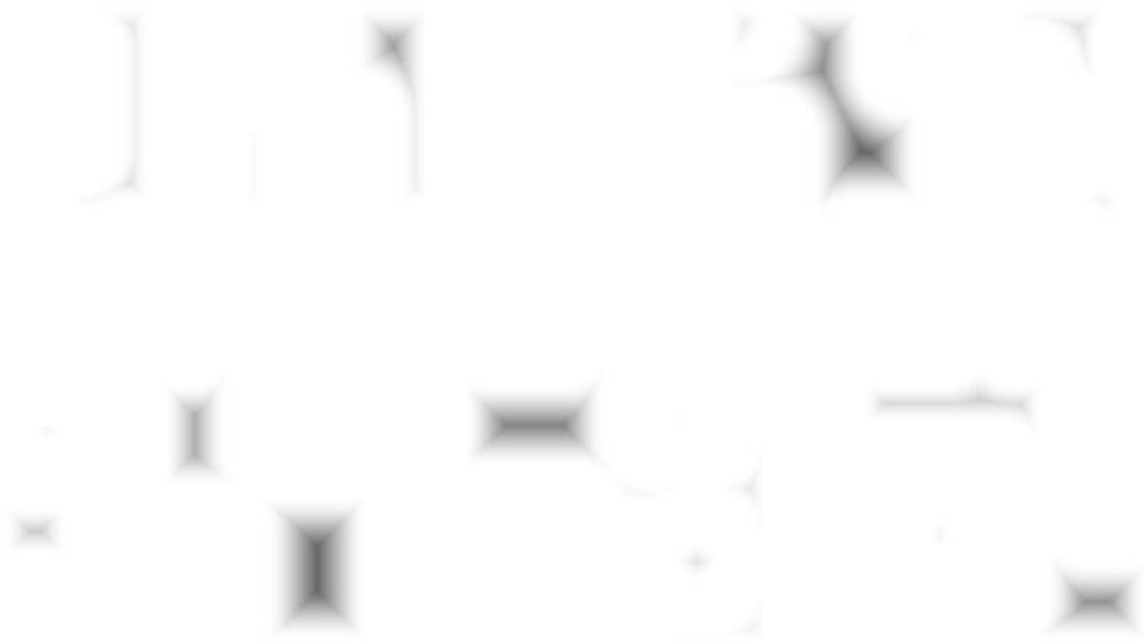


-

- Sensor range = 0.5m



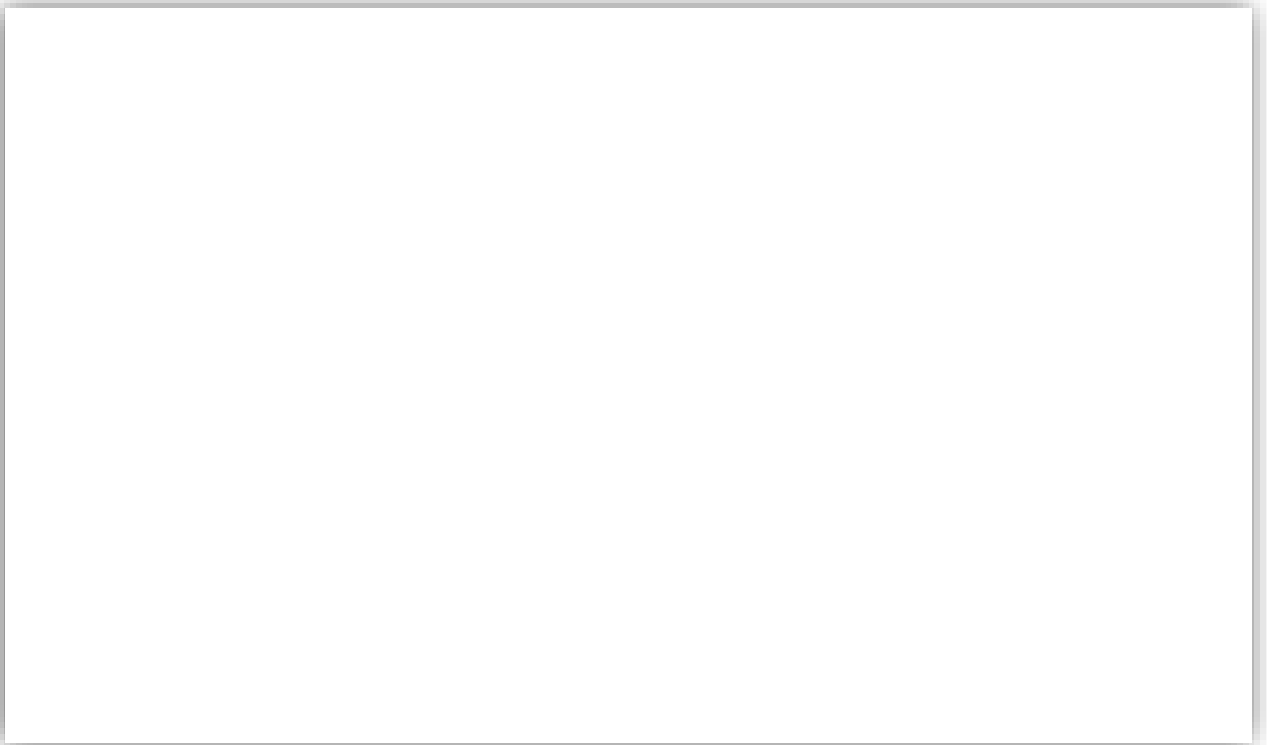
-
- Sensor range = 1m



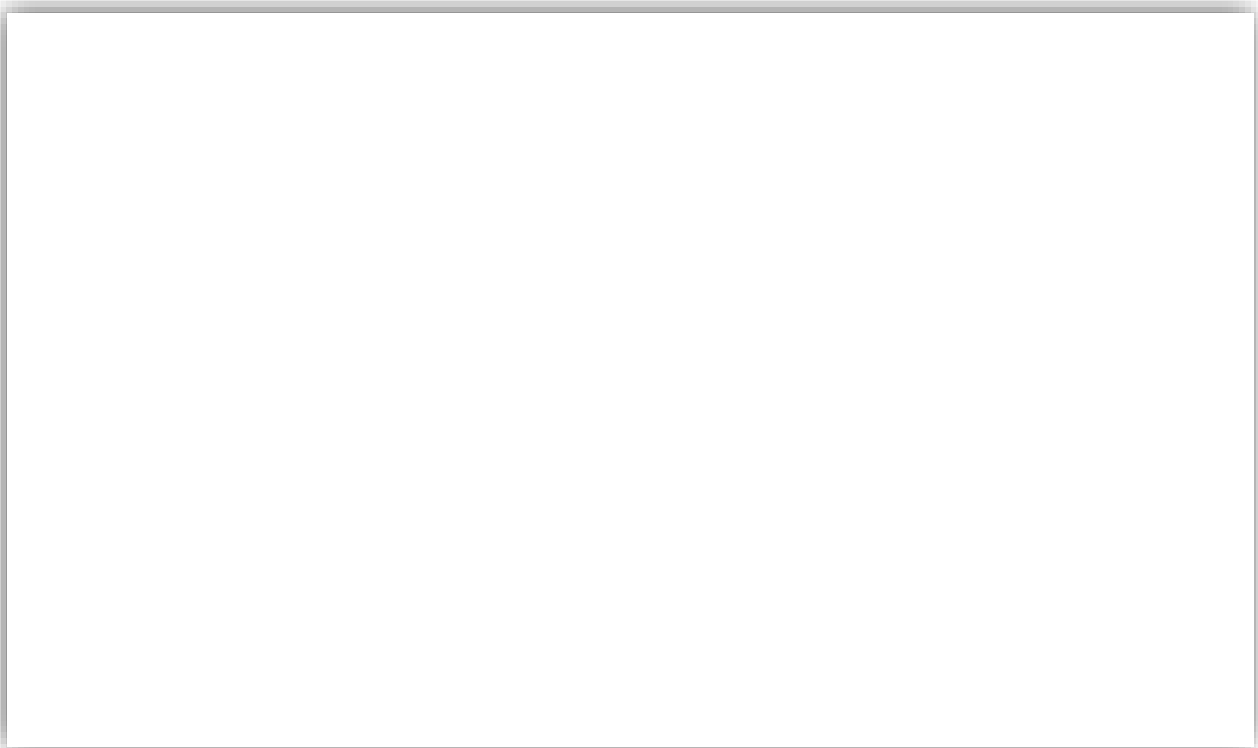
-

- Sensor range = 2m

-
- Sensor range = 3m



-
- Sensor range = 4m



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