

Using High Density Conductive Polyethylene Black Foam as a resistive sensor to build spatial object awareness in robotic grippers

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Introduction

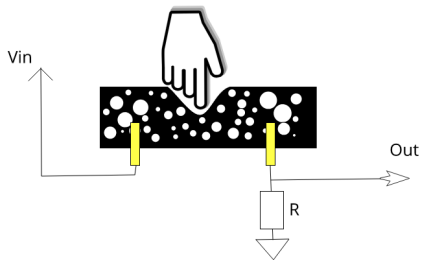
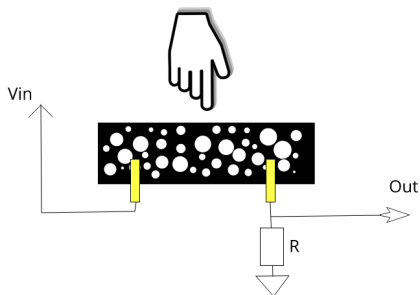


High Density Conductive Polyethylene Black Foam

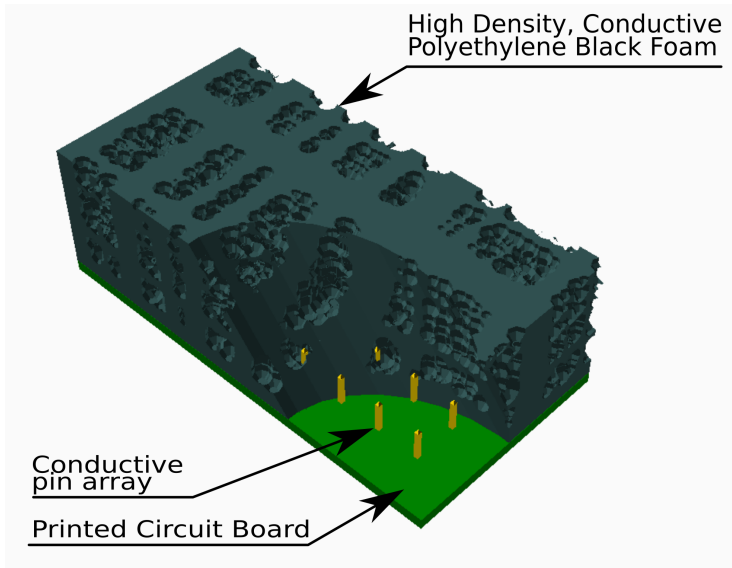
What is High Density Conductive Polyethylene Black Foam?



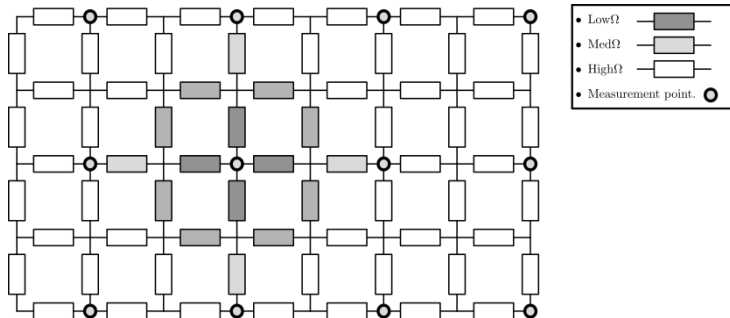
How does it work?



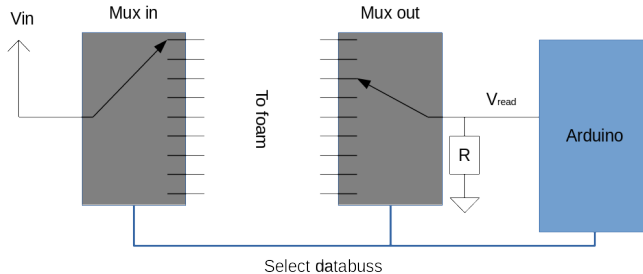
What was done



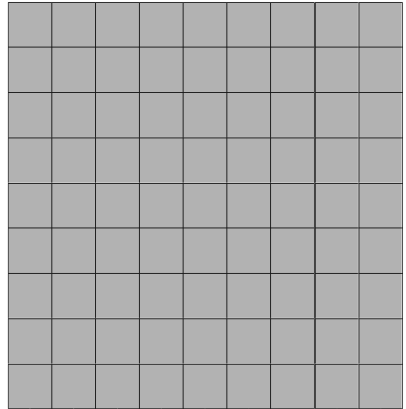
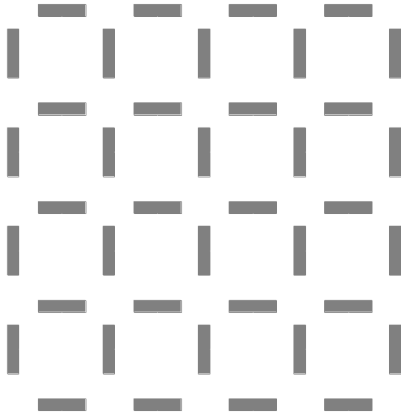
What was done



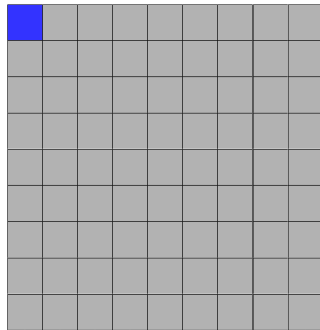
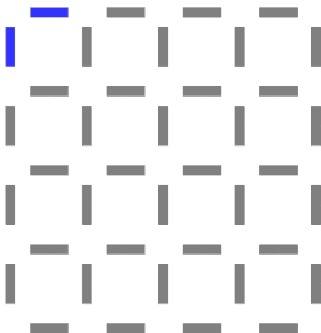
How the measurements was done



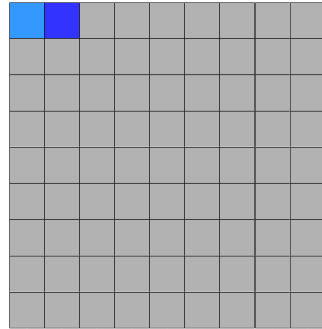
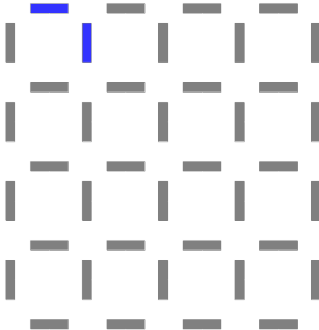
The algorithm



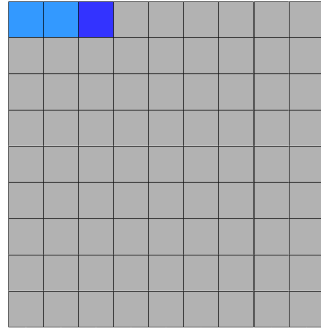
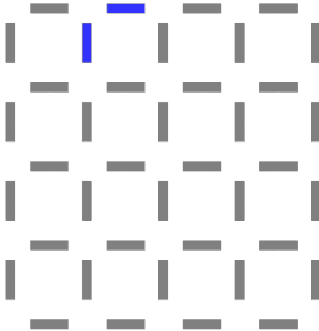
The algorithm



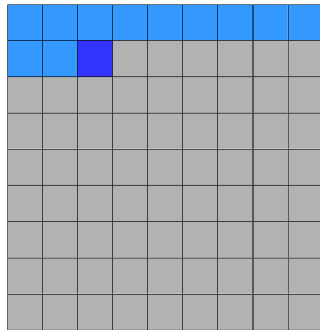
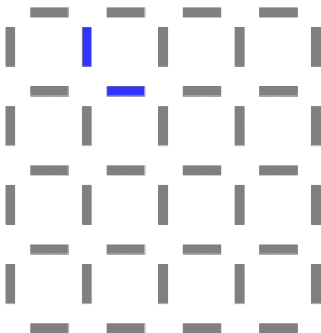
The algorithm



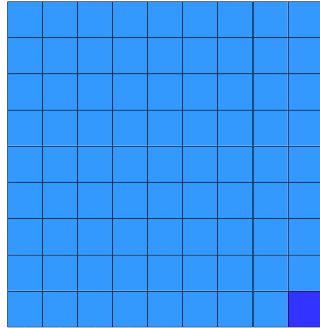
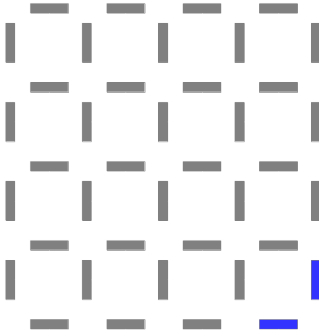
The algorithm



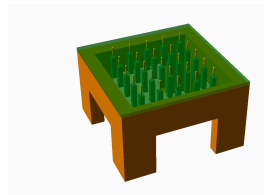
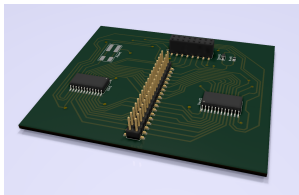
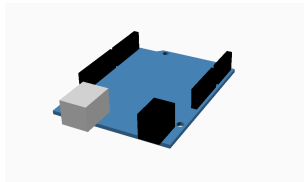
The algorithm



The algorithm



Hardware implementation



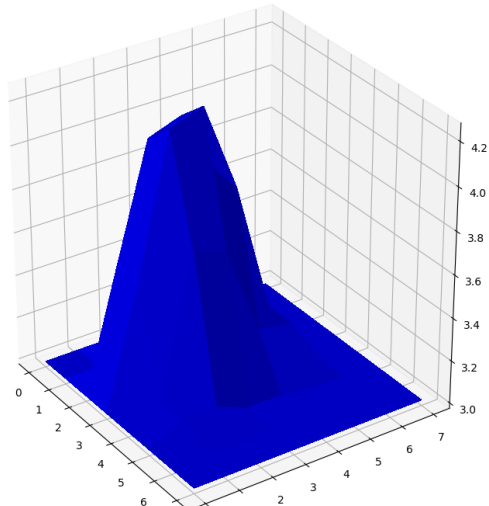
Results

Due to project complexity, the electronics of the project could not be completed within time scope.

Proof of concept measurements of the foam resistance drop when exposed to pressure.

Result from program with dummy text string as input is shown on the next slide. This corresponds somewhat to Proof of concept measurements.

Results



Results

	A	B	C	D	E	F	G	H	I
1	Array2Matrix	+	GND	Values	Shifted V_INDX Map	ARRAY INDX	V_INDX1	V_INDX2	
2	3	1	1	3	2	8	0	0	6
3	3	1	2	3	2	4	1	0	2
4	3	1	4	3	3	4	2	1	2
5	3	2	2	3	3	11	3	1	9
6	3	2	3	3	5	11	4	3	9
7	3	2	5	3	5	7	5	3	5
8	3	3	1	3	6	7	6	4	5
9	3	3	4	3	6	15	7	4	13
10	3	3	6	3	8	9	8	6	7
11	3	4	2	3	4	9	9	2	7
12	3.55	4	4	4.1	4	12	10	2	10
13	3.55	4	5	3.18	11	12	11	9	10
14	3.09	4	7	4.3	11	13	12	9	11
15	3.09	5	3	3	7	13	13	5	11
16	3	5	5	3	6	16	14	4	14
17	3	5	8	3	15	16	15	13	14
18	3	6	4	4.08	9	10	16	7	8
19	3.54	6	6	3	9	18	17	7	16
20	4.09	6	7	4.21	12	18	18	10	16
21	4.2	6	9	3.5	12	14	19	10	12
22	3.74	7	5	3	13	14	20	11	12
23	3.09	7	7	3.05	13	22	21	11	20
24	3	7	8	3	16	22	22	14	20
25	3	7	10	3	16	17	23	14	15
26	3	8	6	3	10	19	24	8	17
27	3.54	8	9	3	18	19	25	16	17
28	4.145	8	11	3	18	20	26	16	18