

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?



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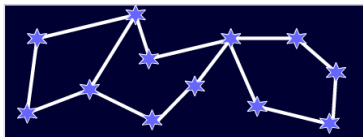
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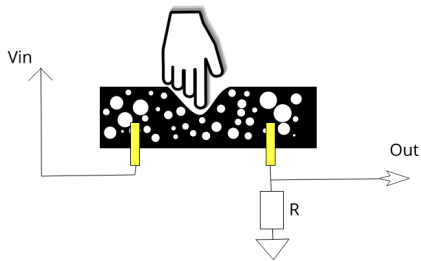
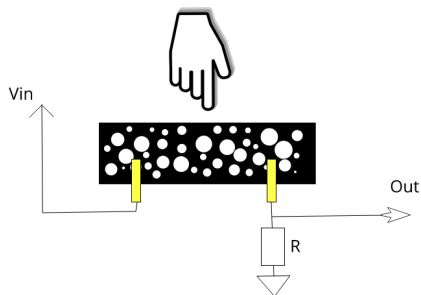
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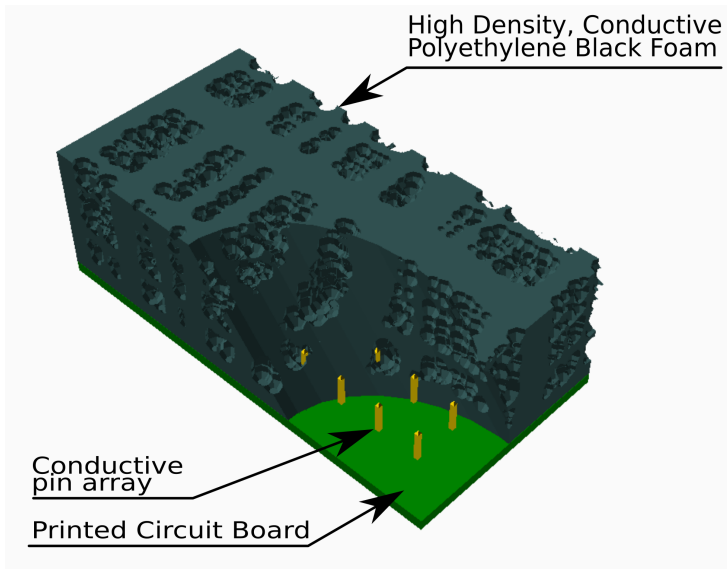
How does it work?



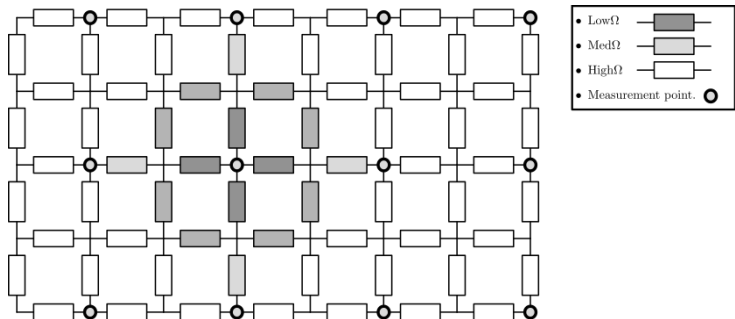
How does it work?



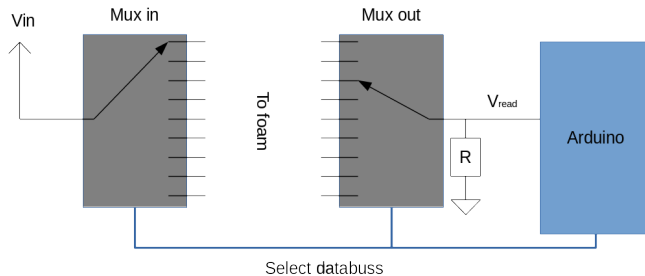
What was done



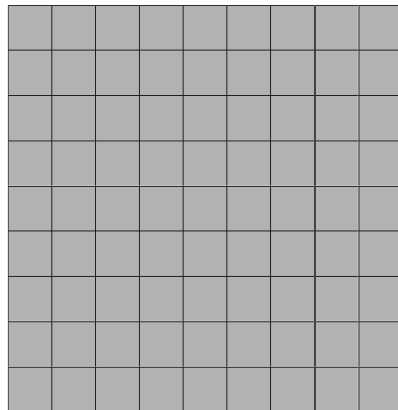
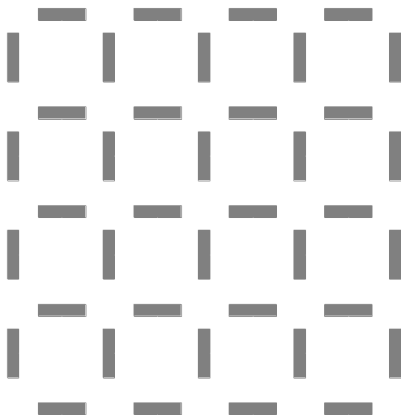
What was done



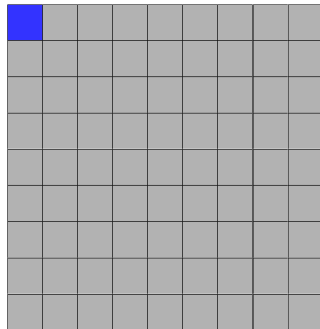
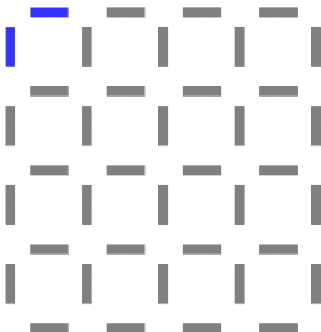
How the measurements was done



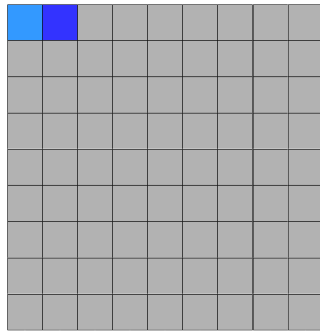
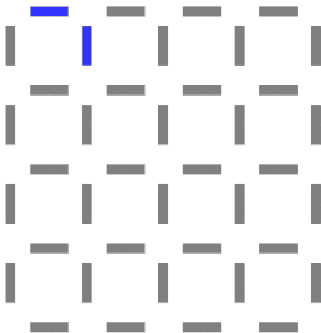
The algorithm



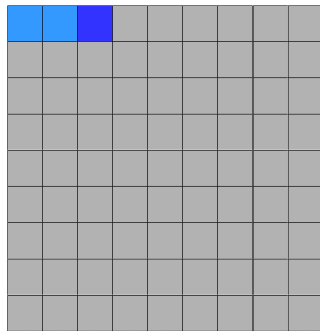
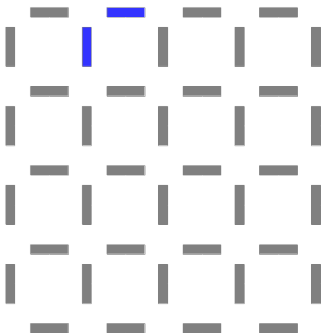
The algorithm



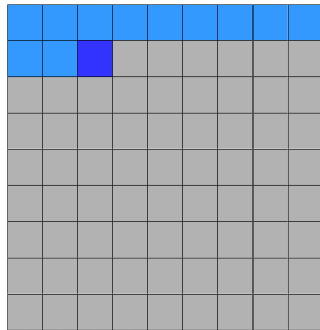
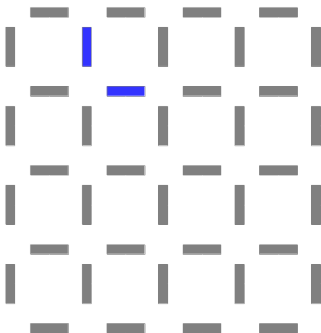
The algorithm



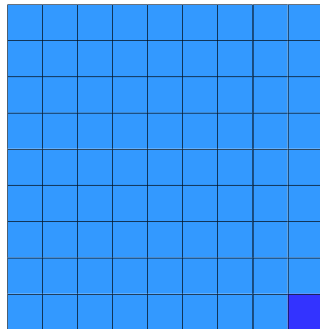
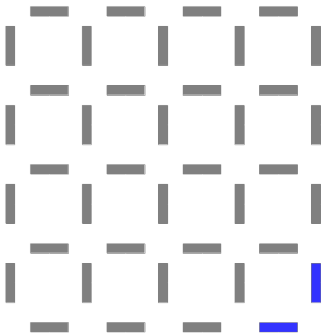
The algorithm



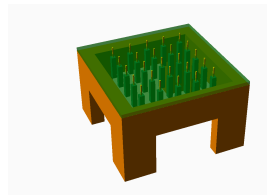
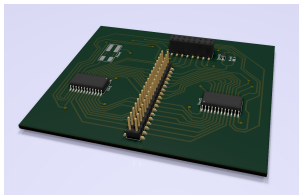
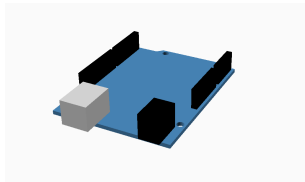
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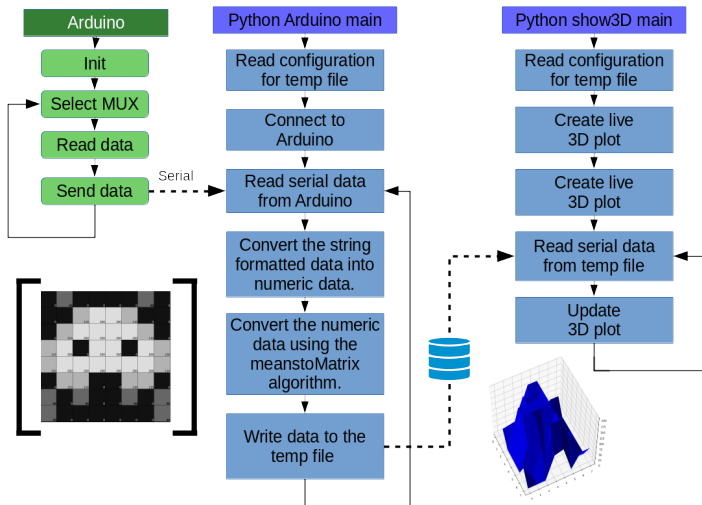
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Hardware implementation



Software design



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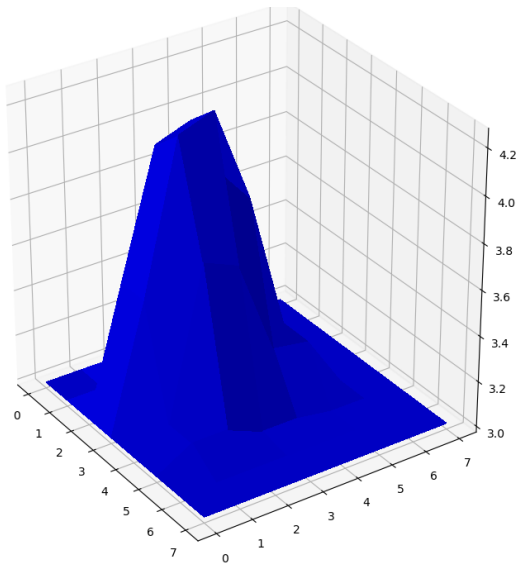
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Results

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

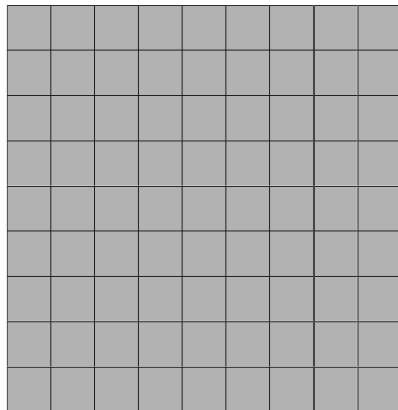
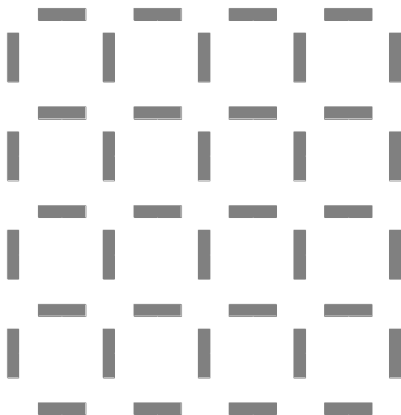


Results

	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



The algorithm



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The end
Questions?