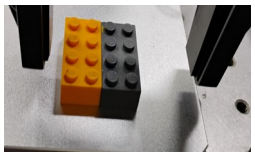
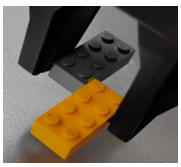
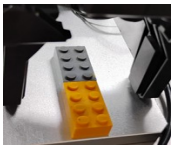
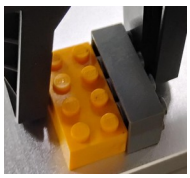
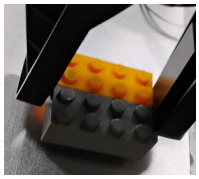
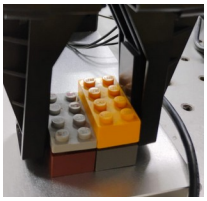
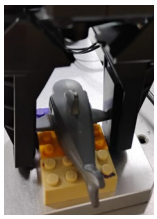
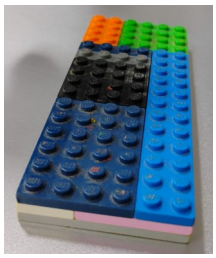
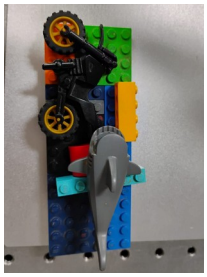
REPORT ON PICK AND PLACE OF LEGO PIECES USING open-MANIPULATOR-X (multiple blocks)

Number of trials for each piece = 10

S.NO.	Object	Success	Fail
1.		10	0
2.		8	2 (more prone to sudden movements)
3.		0	10
4.		10	0
5.		9	1
6.	 (unjoined)	5	5 (some blocks were left behind)
7.	 (unjoined)	3	7 (some blocks were left behind)

S.NO.	Object	Success	Fail
8.		10	0
9.		0	10 (only the whale was picked up)
10.	 (joined)	10	0
11.		6	4 (sometimes some pieces fall off from the platform during the pick and place)

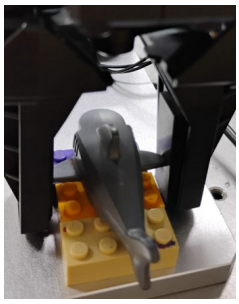
IMPORTANT REMARKS

1) The Lego pieces have a solid geometry, and if not placed properly between the gripper, they are prone to slipping, breaking, or causing sudden movements, such as pieces jumping out unexpectedly.

2) If you place a bigger piece above a smaller dimension piece, then only the bigger piece will be picked whereas, if you place a smaller piece on the bigger piece then the entire object will be picked and placed.

E.g)

(only whale is picked)



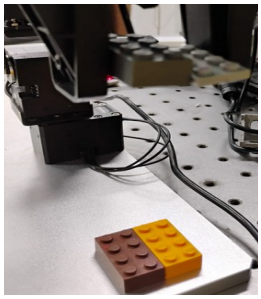
(whale breadth>block breadth)

(entire object is picked)

(block breadth>whale breadth)

3) When the blocks are joined ,it is picked and place more succesfully as compared to when they are not joined, as some blocks are left behind.

E.g)



4) we can provide a tray/platform kind of piece to pick and place multiple miscellaneous pieces.(the platform should be bigger than the objects place over it)

5) Use of pads on gripper to make it safer and avoid any kind of breakage.