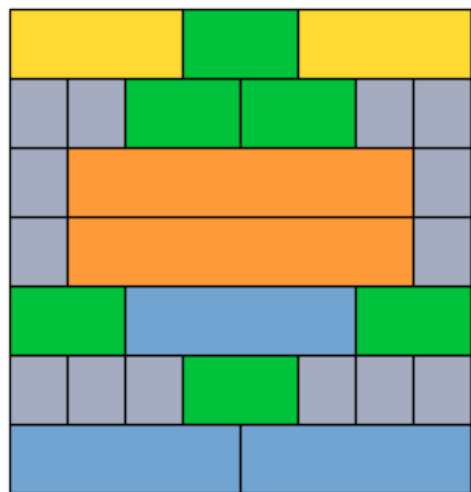
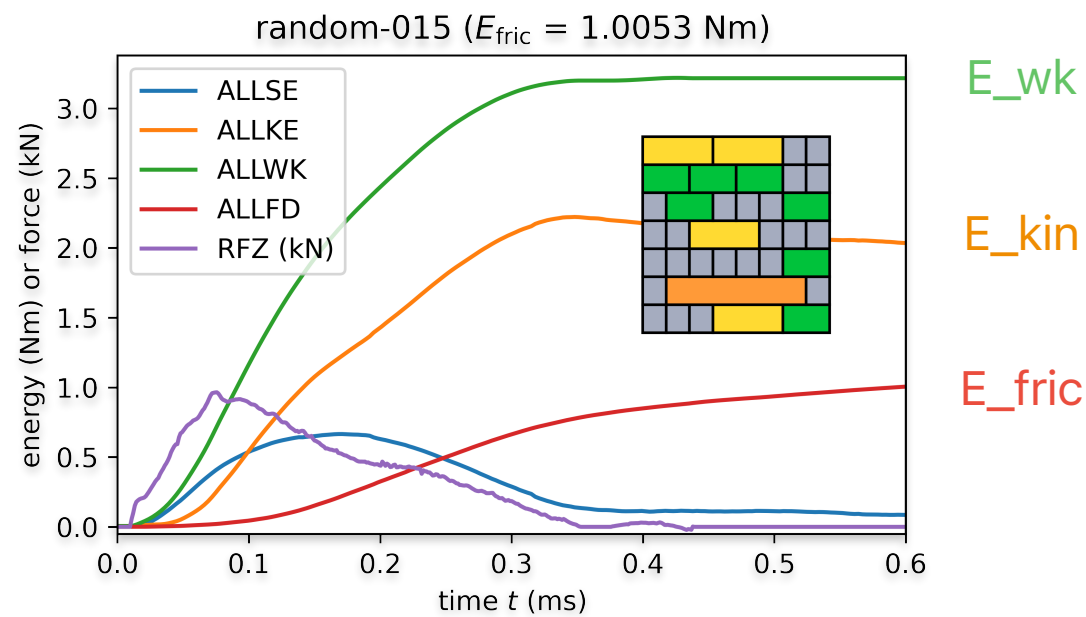
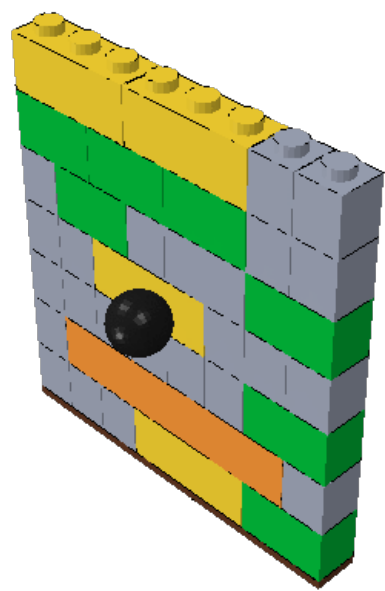


Lego wall impact models



```
wall_des =  
[[1, 1, 0, 1, 0, 1, 1],  
 [0, 0, 1, 0, 1, 0, 0],  
 [0, 1, 1, 1, 1, 1, 0],  
 [0, 1, 1, 1, 1, 1, 0],  
 [1, 0, 1, 1, 1, 0, 1],  
 [0, 0, 0, 1, 0, 0, 0],  
 [1, 1, 1, 0, 1, 1, 1]]  
  
wall_right=  
[[1, 0, 1, 1],  
 [0, 1, 0, 0],  
 [1, 1, 1, 0],  
 [1, 1, 1, 0],  
 [1, 1, 0, 1],  
 [1, 0, 0, 0],  
 [0, 1, 1, 1]]
```

```
plot_wall(wall_des,out_name='wall_design',if_plot=1)
```

lego_wall_res.json

```
{  
  "1": {"inp": [[1, 0, 1, 1], [1, 0, 1, 0], [0, 1, 0, 1], [0, 0, 0, 1], [0, 0, 1, 0], [1, 0, 1, 0], [1, 0, 1, 1]],  
        "E_fric": 990.3816, "E_kin": 1202.9989, "E_wk": 2451.2402},  
  "2": {"inp": [[1, 0, 1, 1], [1, 0, 1, 0], [0, 1, 0, 1], [0, 0, 0, 1], [0, 0, 1, 0], [1, 1, 1, 0], [1, 0, 1, 1]],  
        "E_fric": 1433.4294, "E_kin": 1975.3521, "E_wk": 3762.1001},  
  "3": {"inp": [[1, 0, 1, 1], [1, 0, 1, 0], [0, 1, 0, 1], [0, 0, 0, 1], [0, 0, 1, 0], [1, 1, 1, 0], [1, 0, 1, 0]],  
        "E_fric": 1410.8964, "E_kin": 1943.9581, "E_wk": 3710.99},  
  "4": {"inp": [[1, 0, 1, 1], [1, 1, 1, 0], [0, 1, 0, 1], [0, 0, 0, 1], [0, 0, 1, 0], [1, 1, 1, 0], [1, 0, 1, 1]],  
        "E_fric": 1494.3778, "E_kin": 2122.7964, "E_wk": 3942.7791},  
  "5": {"inp": [[1, 0, 1, 1], [1, 1, 1, 0], [0, 1, 0, 0], [0, 0, 0, 1], [0, 0, 1, 0], [1, 1, 1, 0], [1, 0, 1, 1]],  
        "E_fric": 1476.8876, "E_kin": 2066.0671, "E_wk": 3822.3005},  
  ...  
}
```

Aim: Develop a model that can predict E_{wk} , E_{kin} , E_{fric} from a new wall_right list