



Internship Report

Goal:

To develop a concept of experimental stand, which are:

1. Portable (can be transported and installed on any ground). Installation pillars should have a possibility to be fixed on a ground.
2. Different legs can be installed, even more electricity should be provided for the base of a leg
3. Base of a stand should have a container, where dirt, grass etc can be installed. 1 Strong guy should pick it up.
4. The possibility to install extra load on a leg shaft
5. Leg should have a possibility to turn on a shaft and move up and down (can be done by linear guideway)
6. A place for install microcomputer (Jetson TX2 or Nano), batteries, some other sensors

Device should be as small as possible without losing the functionality. Any improvements are welcome.

Precise:

1. Container for dirt, dull
2. Base foot which can be fix on a container
3. Core part, consist of bearings, slip rings, linear guideway
4. Top of a stand, which has a place for batteries, microcomputer etc.
5. Installation pillars.

Numbers:

1. Load on the leg is 300 N at max

2. Leg size - 50-200 mm

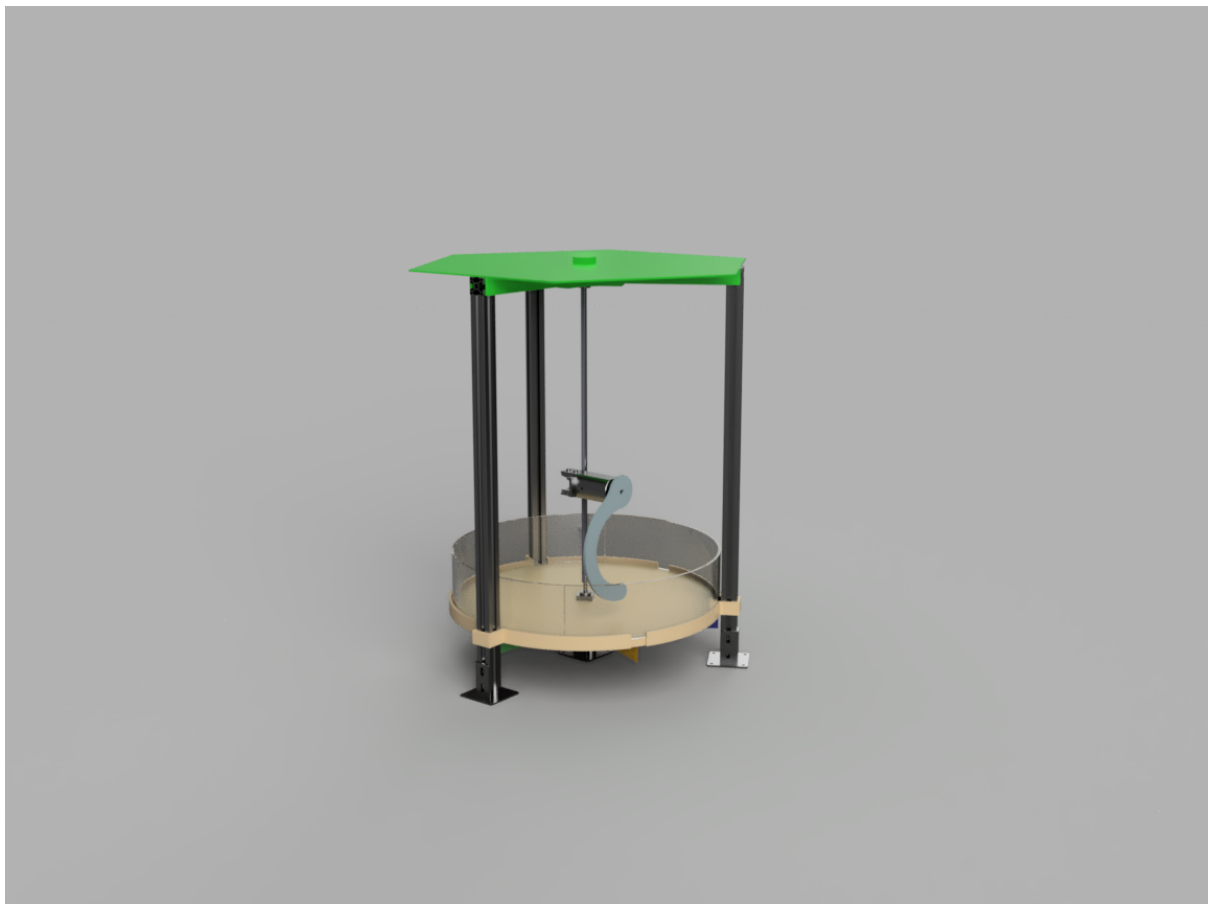
Internship report:

Result:

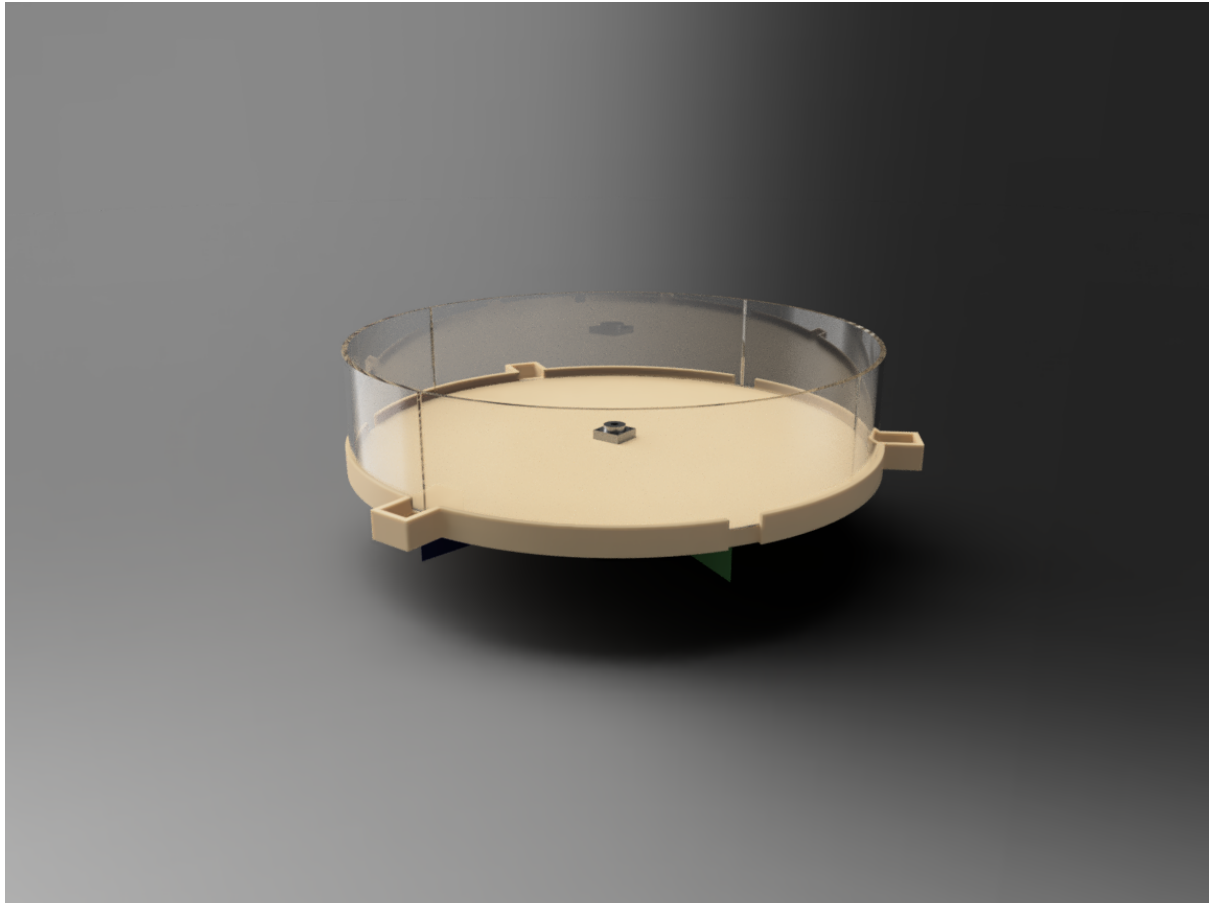
1. CAD models of Experimental Stand (*Undownloadable link*):

1. MK0 (Concepts), [here](#).
2. MK1 (Failed attempt), [here](#).
3. MK2 (~500mm in height), [here](#) and [here](#).
4. MK3 (~700mm in height, improved base), [here](#).

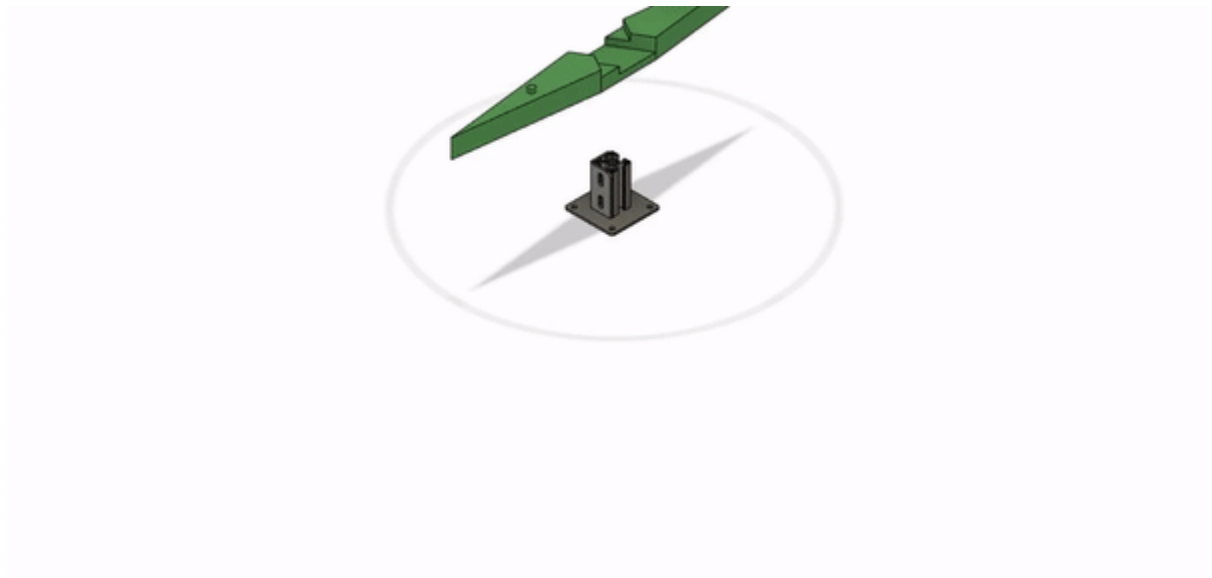
The Design itself:



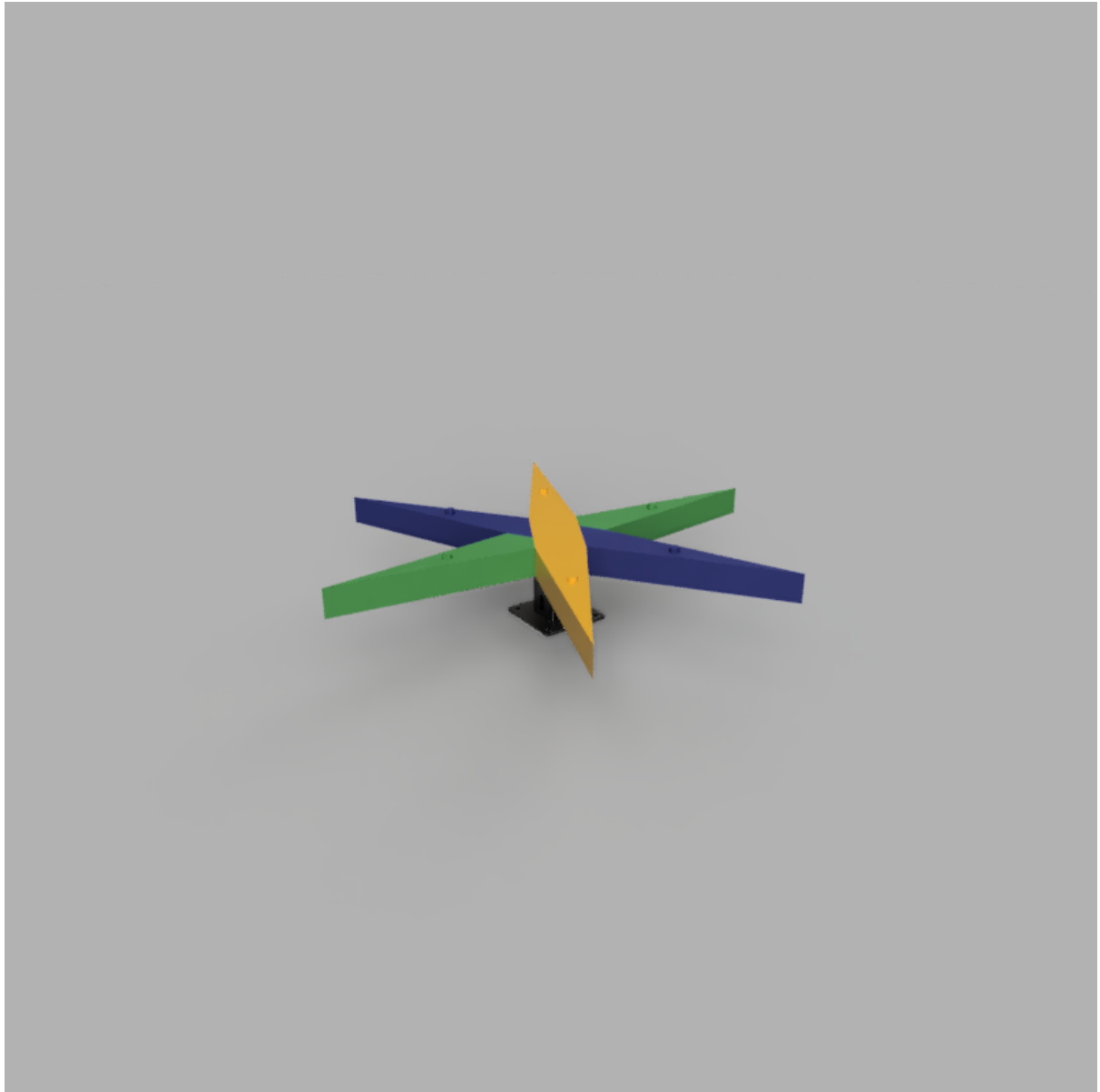
1. The Base

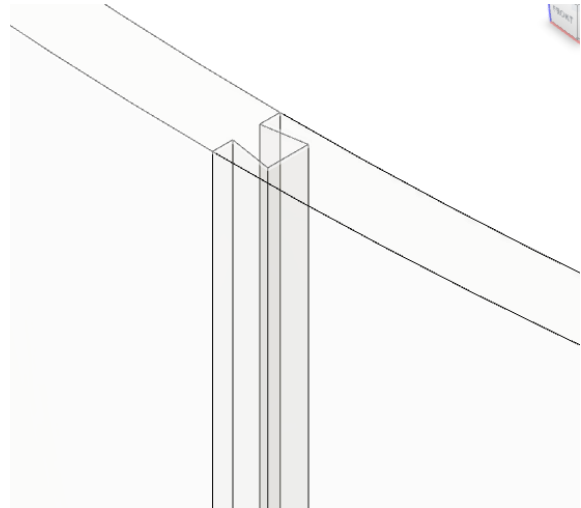
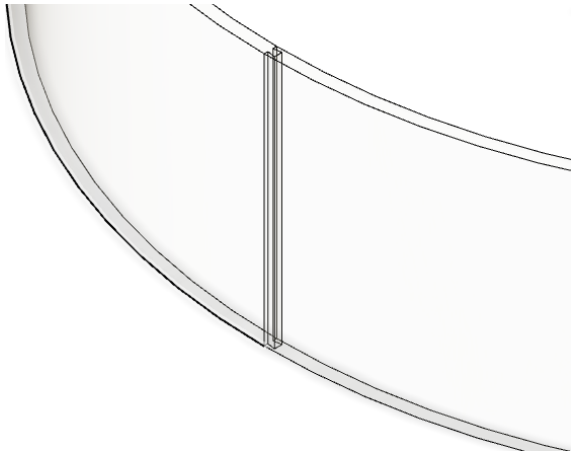


Elevated base for ease of cleaning, I intended the design to be modular so that it can be clean, disassemble, and reassemble easily. 3 gaps in the holding area for ease of cleaning.

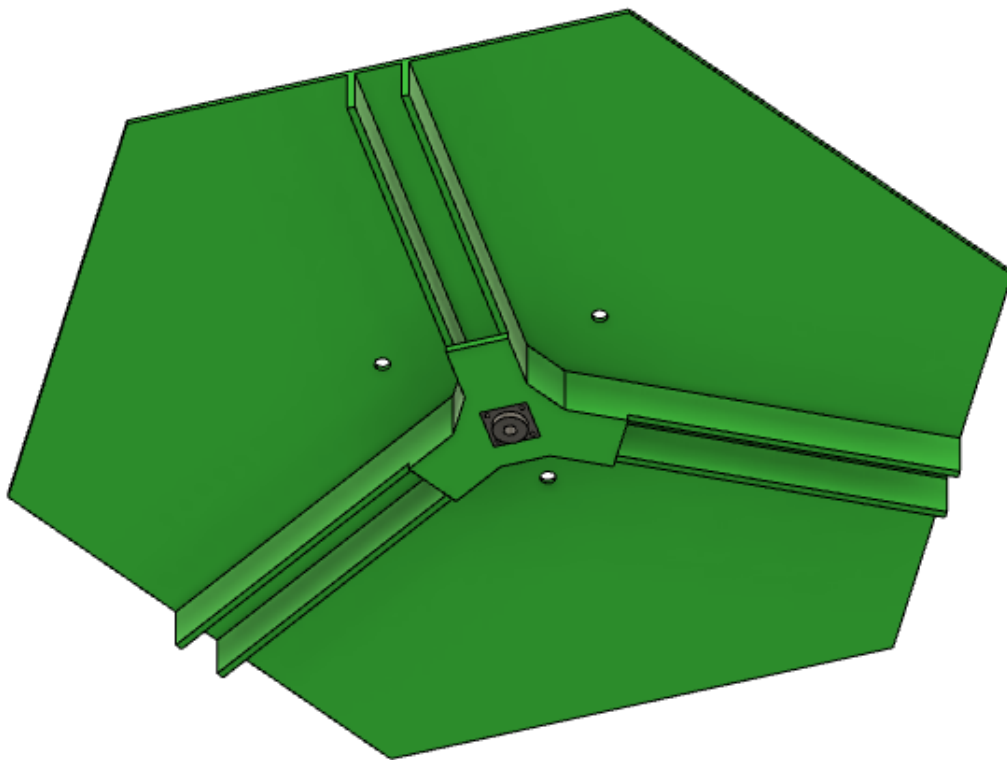


The base consist of the shield and the support, inspired by wood working techniques, I designed them with interlocking parts like lego, that can be assembled without any screws or hinges.





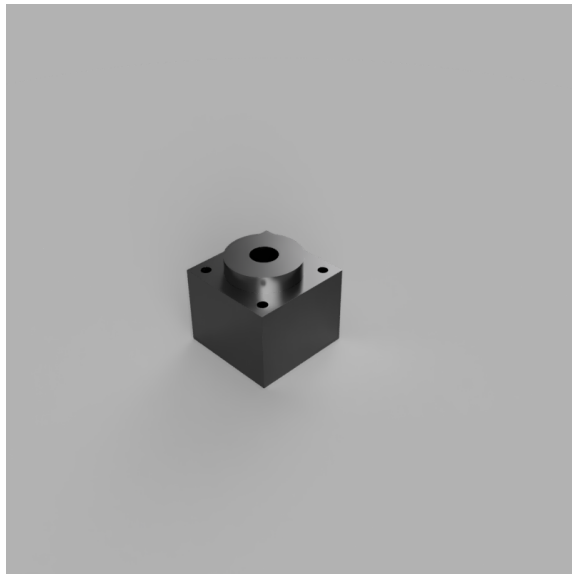
2. The Lid:



The lid has enough area to install battery pack and electronics with holes to pass slip rings through.

3. Minor details:

Weight holder and 8mm rod holder with double bearings inside.



4. For the linear Guide Way, I chose the serie. EG

MG Series



[Configure Series](#)

Basic Dynamic Load Range: 0.68 kN - 8.93 kN

The MG series is a miniature linear guideway that comes in a compact size with a Gothic arch contact design that offers high stiffness and high rigidity against moment loads in all directions. The MG series also offers anti-corrosion protection which all material is in a special grade of stainless steel for compatibility in various working environments. The MG series is available in a narrow block type (MGN) and also with an enlarged width (MGW).

EG Series



[Configure Series](#)

Basic Dynamic Load Range: 5.35 kN - 33.35 kN

The EG series is a low profile, high load capacity, and high rigidity guideway block. It also features an equal load rating in all four directions and self-aligning capability to absorb installation-error, allowing for higher accuracies. Additionally, the lower assembly height and the shorter length make the EG series more suitable for high-speed, automation machines and applications where space is limited.

