

-MAKE AN SCANN FILMING THE SCREEN, MAKE AN SCANN FILMING THE SCANNED PERSON AND THE SCANNER UP & DOWN.

-FILM THE COMPONENTS

We made a multidevice modular scanning system, with the goal to make a full body scanner, in this case using a Kinect.

The scanner is comprised by 3 parts

- The base on which the person rotates
- The scanner carry that moves up & down
- The control interface made with processing.

The system is controlled with an Arduino Mega through a RAMPS board, and is powered by two power supplies, 12 for the carry motor and 24 for the base motor.

The base supports the weight of the person on a laser cut MDA gear base(for lightweight and sturdiness) on lazy susan bearing mounted on a wooden encasing cut with CNC which also encases the reduction gear system (from 40 to 1) which multiplies the motor par from 1N to 60N. As a heavyweight had to be moved, a NEMA 26 motor with an integrated driver moves the base, connected to the X axis of the RAMPS.

The scanning device carry is made with a laser cut methacrylate piece and aluminium to obtain maximum sturdiness and lightweight. It moves along a rail made out of two 20/40 aluminium profiles which provide the much desired modularity, light weight and stiffness.

We have two configurations, with the motor mounted on the carry or the motor on the base in case when the height is increased the weight of the motor hinders the carry's movement.

In the mounter motor config.

As the motor had to pull its own weight the motor had to be light, yet strong and precise, we choose the NEMA 17 connected to the RAMPS' Z axis. Moves the carry thanks to a system made of a timing belt and two 3d printed pieces in HIPS for strength, that hold the profiles together as well. The system has also two endstop sensors to help the system to know where to stop.

In the motor at the bottom config. a pulley is used and the belt is fixed at the carry. This was implemented to minimize the weight at the top of the rails, that can perhaps tilt the whole thing. The weight of the motor can also provide stability to the rail system.