

Background

The New Mexico Tech (NMT) Skeen Library holds a wide selection of disk media which they distribute amongst the New Mexico Tech community as well as the town of Socorro. The NMT Skeen Library is currently looking to update their current storage devices due to wear and tear.

Objective

Design and manufacture an electromechanical dvd storage system. The system must be able to be built with readily accessible mechanical and electrical parts.



Figure 1: NMT Skeen Library Ziotek Carousels

Design Specifications

The system must follow the following requirements:

- Must be expandable to store 3000 discs
- Must fit on the library shelves, (182 cm x 52 cm x 187 cm)
- Allow easy integration with Library's daily routine

Progress This Semester

This semester, the team improved upon the previous semester's prototype with a much heavier emphasis on 3D printing. The team has decided to move away from a database and use the libraries current database system. A keypad next to the currently existing computer will be used as a substitute

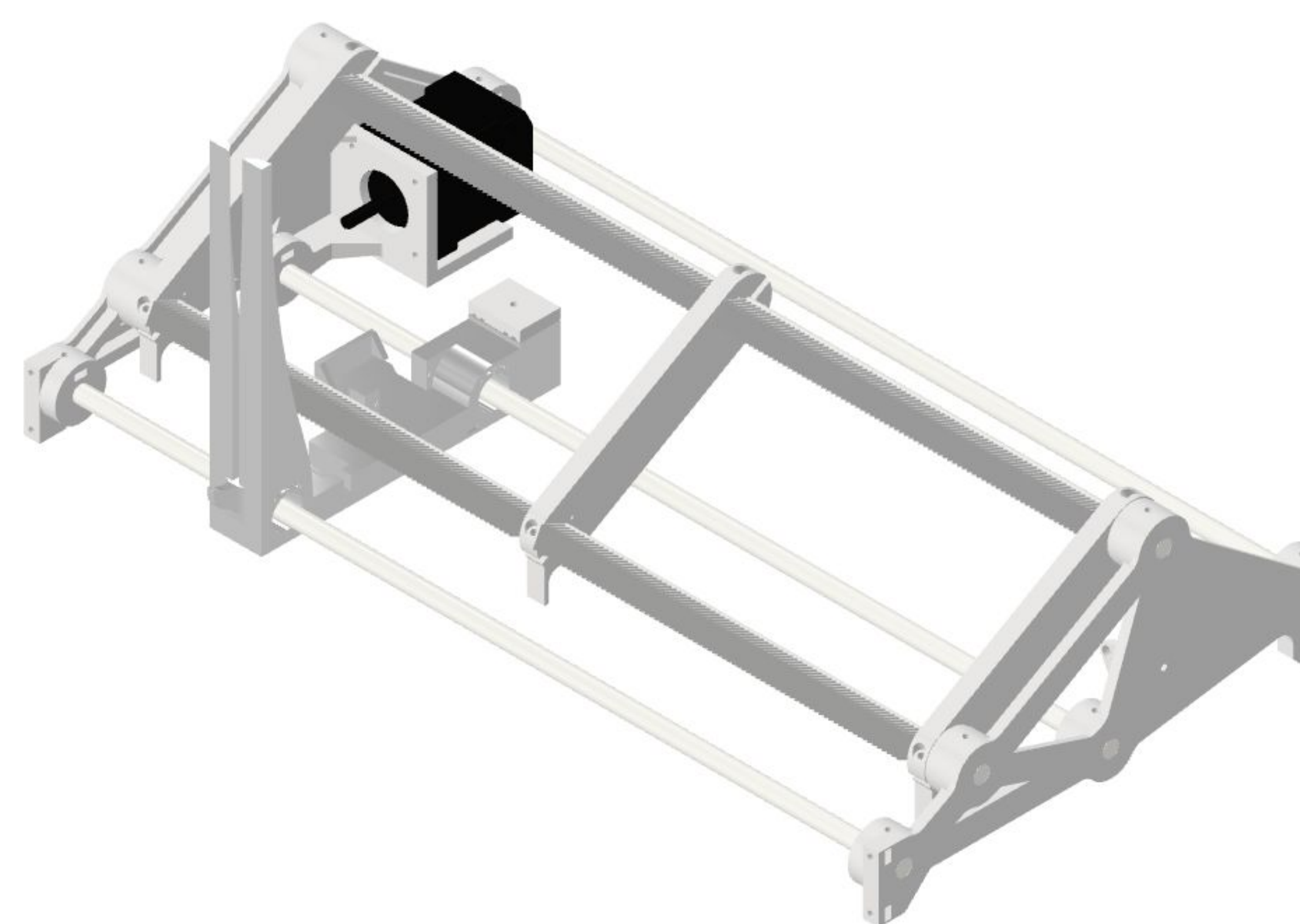


Figure 2: CAD of prototype

- Optimized 3D printed parts to a skeletal structure to decrease print time and material use.
- 3D printed CD holders have been designed to clip onto 8mm rails instead of being pushed through to decrease installation time.
- Added a photo interrupter to allow for contactless re-zeroing of the machine.
- Designed and integrated a belt tensioner with improved ergonomics

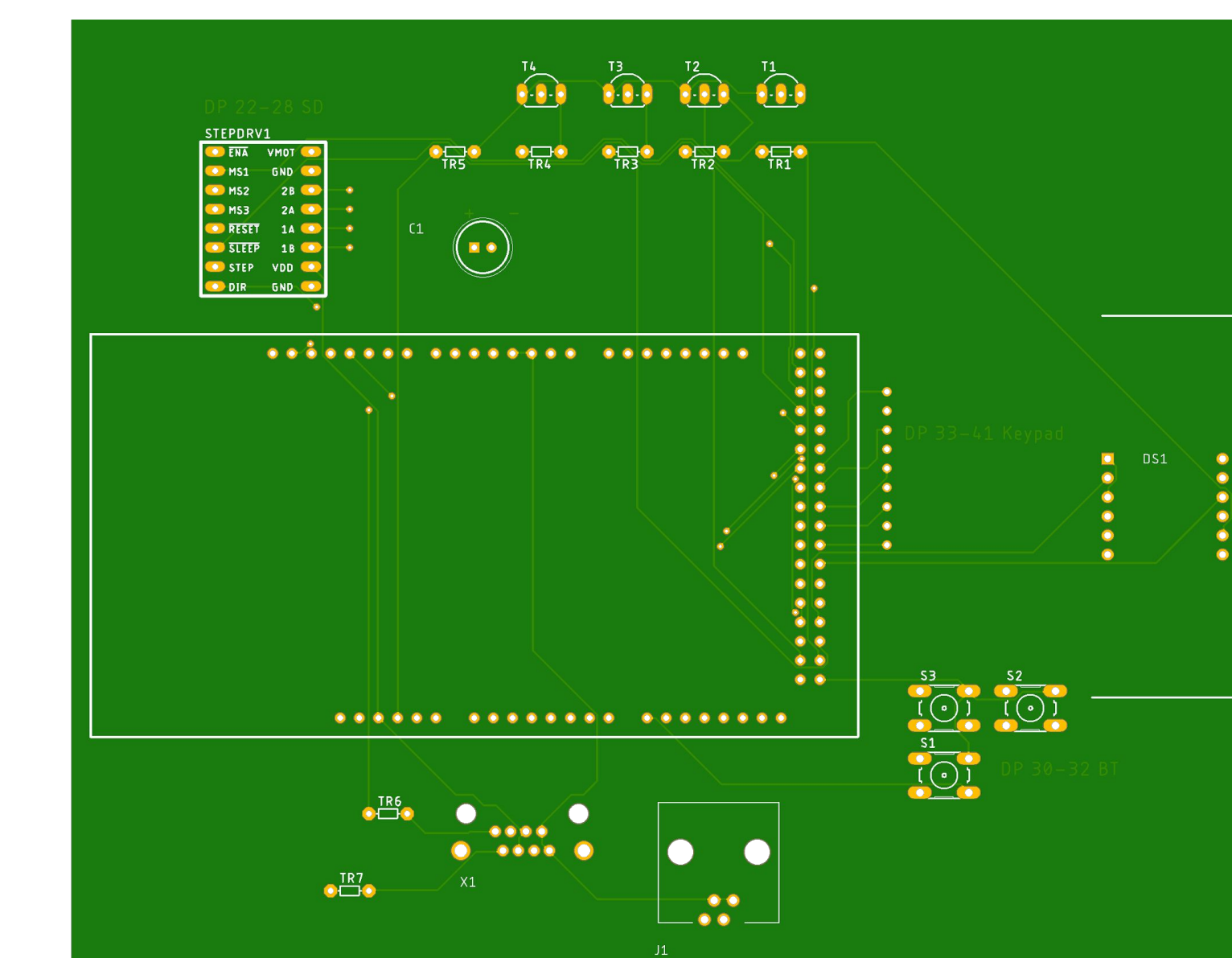


Figure 3: PCB board

- Redesigned electrical board to accommodate a keypad and digital display.
- Cleaned up wiring to allow for the use of modular jacks to be used to facilitate connection between the PCB and the carriage.

Future Work

- Improve 3D printed parts by removing minor issues of some fittings being too tight or too loose.
- Assemble PCB board with a 3D printed box housing the keypad and display.
- Create a manual explaining how to assemble a prototype together.
- Include in the manual the required settings for 3D printing each part.
- Demonstrate expandability by creating secondary prototype as well as remote wired keypad.

Acknowledgements

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