CNC Router Table A

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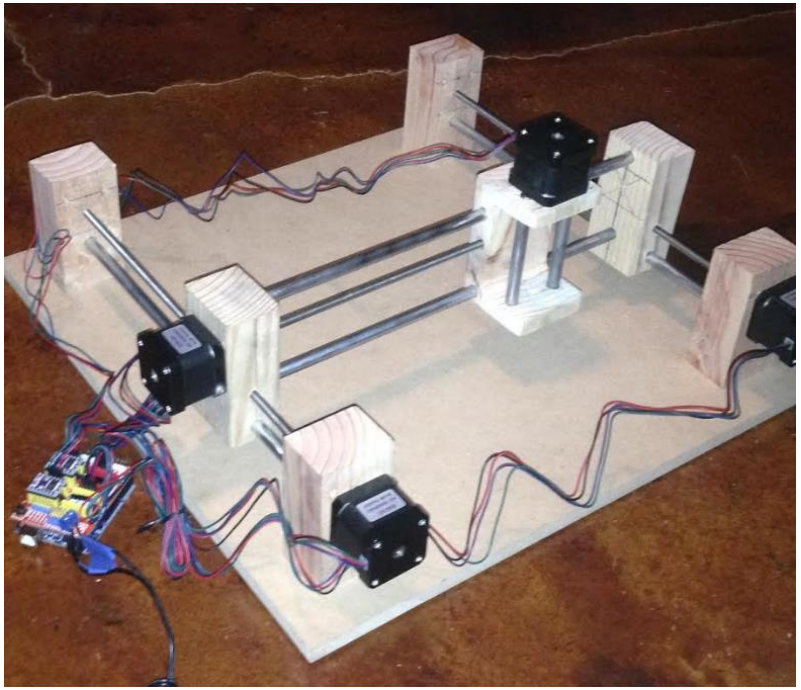
Project Description

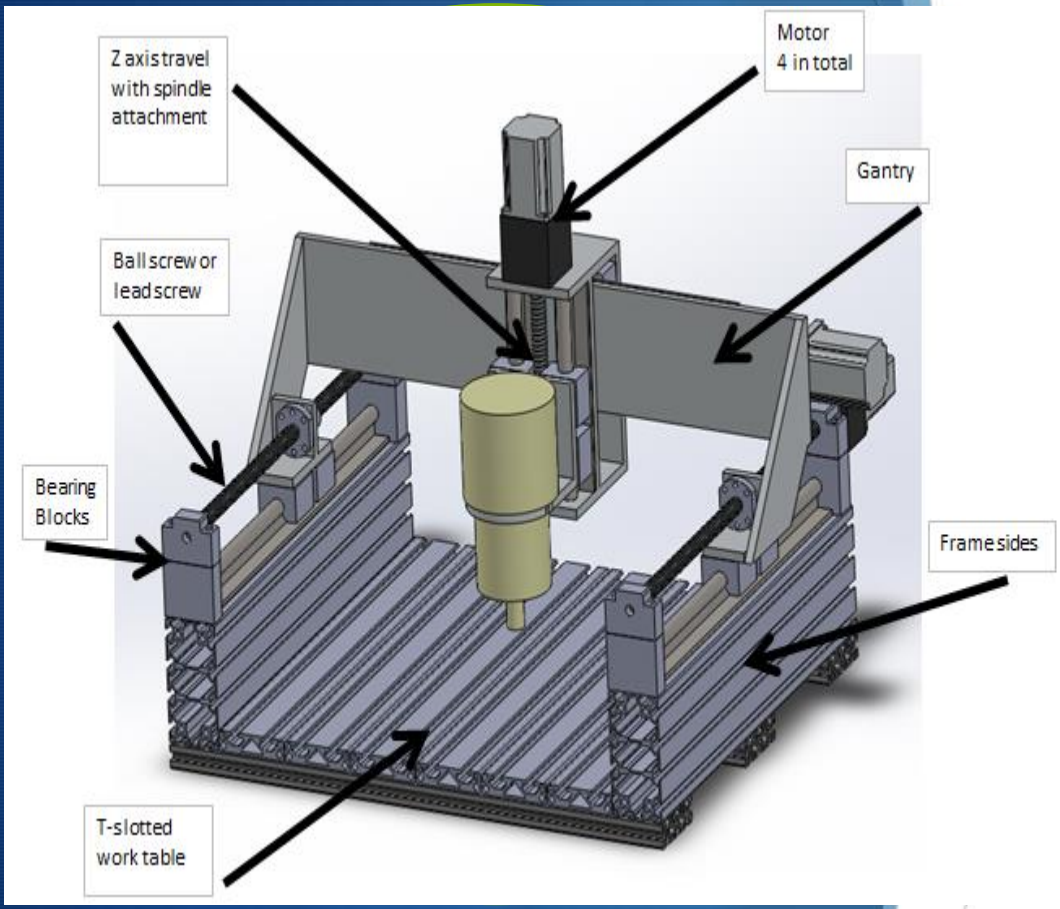
Multi-Use CNC Table

- Open source software
- 12x12x3 inches
- Uses standard 120V 60Hz
- Making aluminum and wooden parts

Prototype

- Testing:
  - Open Source software GRBL
  - Stepper Motor Control
- Taught Us:
  - Simultaneous X axis motor control
  - No Wood for Final Design





Design Description

Implementation

- Machine parts
- Assemble the machine
- Testing procedure

Design Requirements

CNC Router Team A	Weighting		Engineering Requirement											
Customer Requirement	Initial Customer scoring	Weight out of 100%	Spindle power (W)	Tooling deflection (mm)	X Y Dimensions (mm)	Frame and Bearing deflection (mm)	Z Axis Travel (mm)	Stepper Motor Torque (N/cm)	Sheilding material thickness (mm)	G-Code Software	Controller	Set up time (min)	Weight (kg)	Power requirements (V)
1. Safety	25	16%	3	1	1	1	1	1	5	1	1	1	3	1
2. Cutting Ability (wood/ Al)	25	16%	5	3	1	3	1	5	1	1	1	1	3	1
3. Cost	25	16%	5	5	3	5	3	3	1	1	5	1	3	1
4. Tolerance	20	13%	1	5	1	5	1	1	1	1	1	1	3	1
5. Open Source	10	6%	1	1	1	1	1	1	1	5	5	1	1	1
6. Multiple Usage	15	10%	1	1	1	1	1	1	1	1	3	5	1	1
7. Size	7	5%	1	1	5	1	5	1	1	1	1	1	5	1
8. Portable	3	2%	1	1	3	1	3	1	1	1	1	3	3	1
9. Typical house hold elec service	25	16%	3	1	1	1	1	1	1	1	1	1	1	5

Schedule

Task #	Work to be done	Time
1	Make CAD drawing of the whole assembly with all the parts present using the proposed CAD software.	Nov 8 – Nov 15
2	Make prototypes to check if the machine will be functional only considering where parts are located and that they do not interfere with other parts.	Nov 8 – Nov 9
3	Choose a method to fasten parts together.	Nov 15- Nov 16
4	Create an engineering drawing with all the parts available and create the bill of materials.	Nov 20 – Nov 22
5	Buy the parts seen in the bill of materials.	Dec 19 – Dec 26
6	Conduct the inspection of these parts. The inspection will include checking if the correct parts arrived and if so, they are without defects.	Jan 17 – Jan 20
7	Send back parts if they are either wrong or defective	Jan 21 – Jan 24
8	Machining of parts	Jan 25 – Feb 22
9	Assembly of the machine.	Feb 23 – Feb 28
10	All the electrical wires should then be shielded and bundled together to get them out of the way of moving parts.	Mar 1 – Mar 3
11	Testing procedures	Mar 3 – Mar 10
12	Eventual troubleshooting (repeat steps 11 and 12 as needed)	Mar 10 – Mar 13
13	Start cutting materials	Mar 14 – Mar 17
14	Finish the user manual (continuously over the entire implementation phase)	Mar 18 –Mar 31
15	Present the machine	Apr 1

Budget

- Projected Project Cost
  - Total Cost of $1750
  - Discounts offered by Openbuilds.com and eBay sellers
    - Total projected cost for initial design $1550
  - Altered design (smaller router/lead screws)
    - Total projected cost for altered design $1340

Questions?