AUTOMATED LITTER BOX

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Motivation

Toxoplasmosis is a parasitic infection that can present a possible danger to a developing fetus if transferred during early stage development. Serious and significant birth defects can occur, including, but not limited to, impaired eyesight, seizures, and intellectual disabilities.

Because cats are the primary known carriers of toxoplasmosis, our project looks to improve current generation automated cat litter boxes in order to limit possible exposure to the parasite.

System Diagram
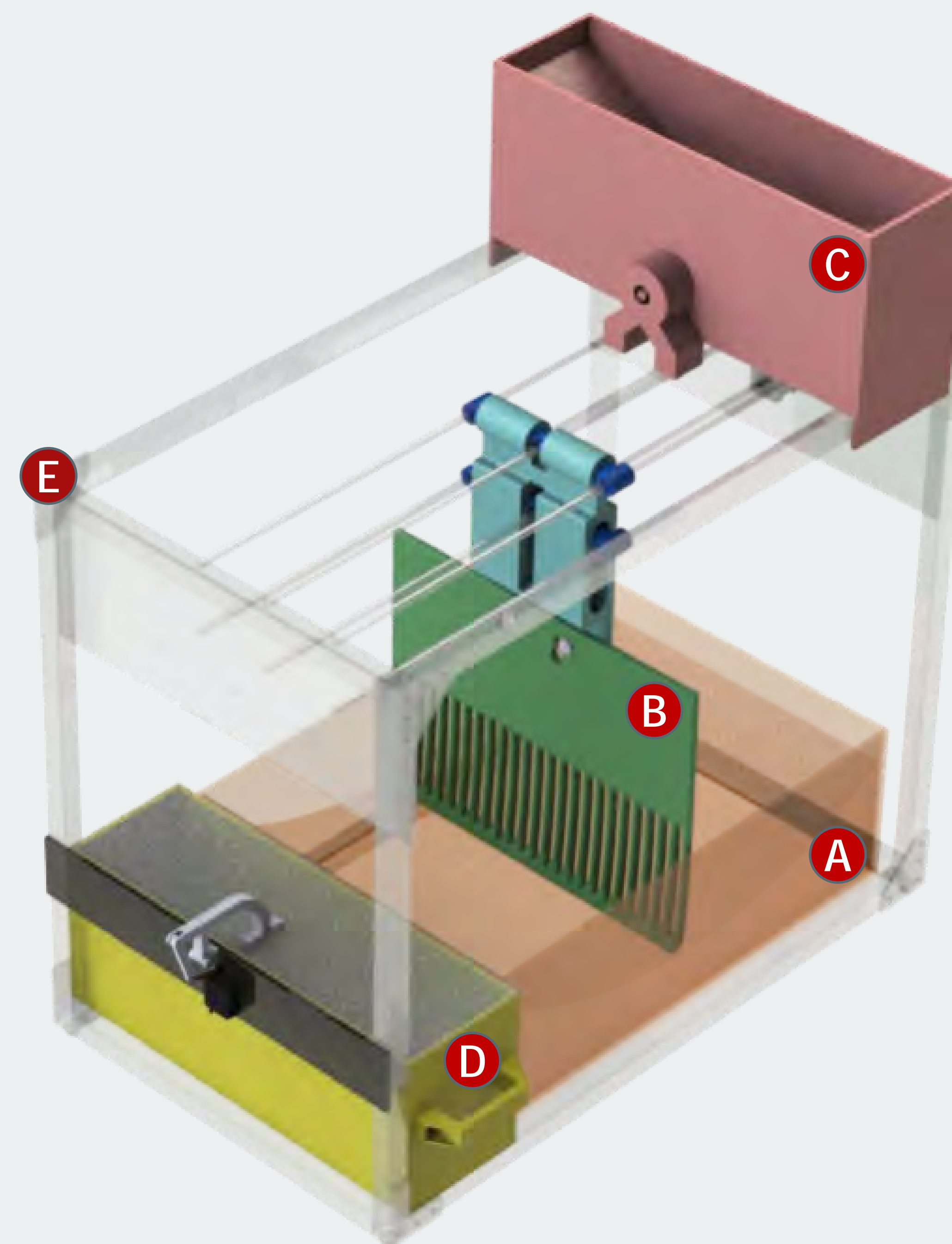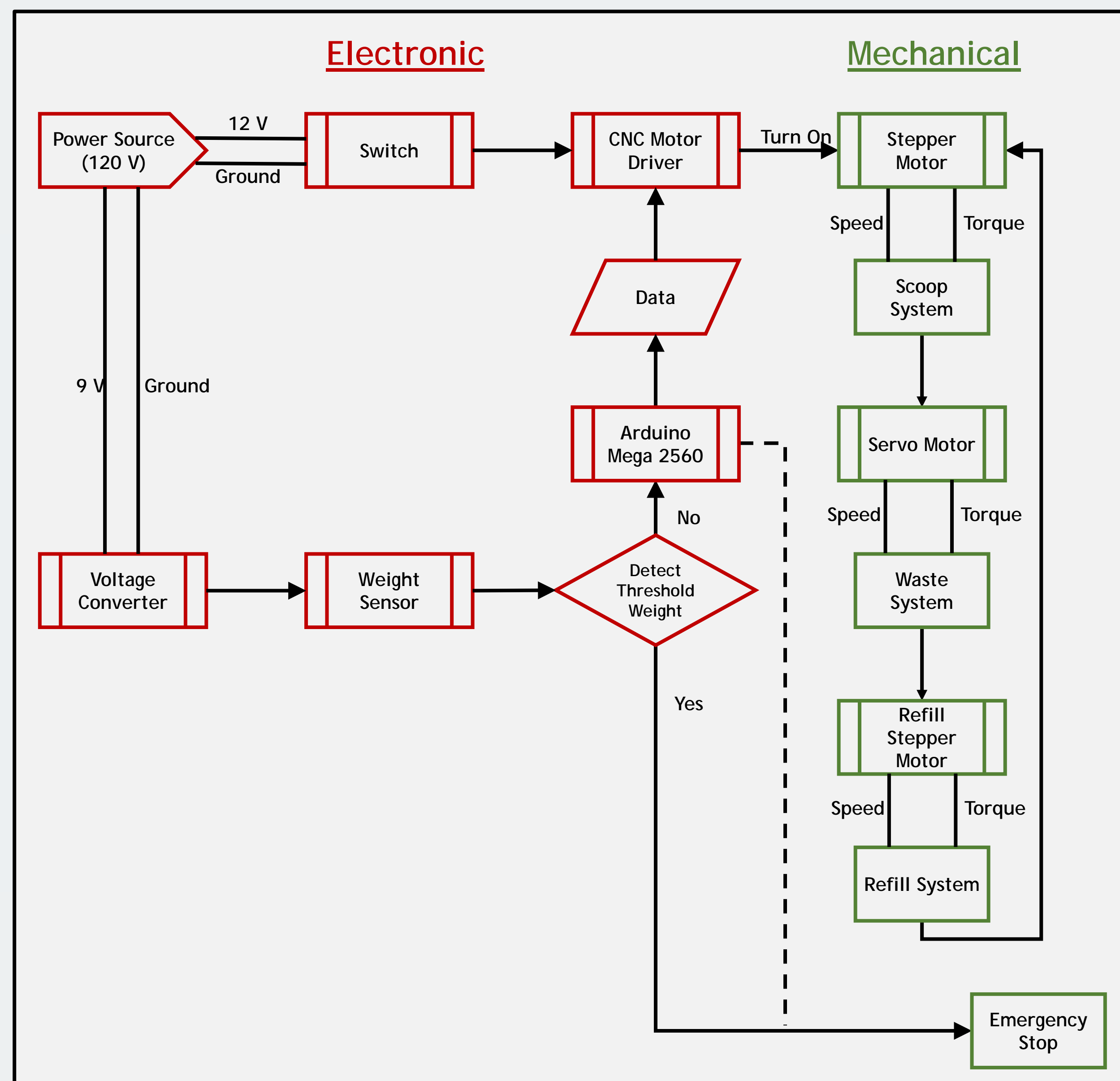
Specifications

Metric	Target Value	Actual Value
Contact with Waste	0 seconds	0 seconds
Waste Reservoir Volume	> 7500 cm^3	9200 cm^3
Ease of Disassembly	< 5 minutes	< 5 minutes
Self-Refilling	binary	yes
Safety Interlock	binary	yes

Design Choices

A Litter Box

Curved Base
• Simplifies scooping motion
• Minimize unreachable areas
Weight Sensors
• Disables scooping mechanism when cat is present
• Triggers scooping cycle when cat exits litter box

B Scoop System

Multi-Level Rails
• Simplifies design by using single mechanism
• Linear and rotational motion of scoop
Slotted Scoop
• Efficiently separates waste from clean litter

C Refill System

Auger
• Moves litter from fresh litter reservoir to litter chute
Litter Chute
• Drops fresh litter to litter box
• Directs litter away from rail system

D Waste System

Waste Bin
• Slides freely for easy disposal
• Volume 9200 cm^3 allows for multiple days use
Lid Subsystem
• Separate from waste box
• Aids in odor control and sanitation

E Frame

T-Slotted 6105 Aluminum Bars
• Lightweight
• Strong
• Ease of assembly