



Micromouse Presentation



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Contents

Objectives

Hardware

Circuit Pin-out

Software

Cost

Result

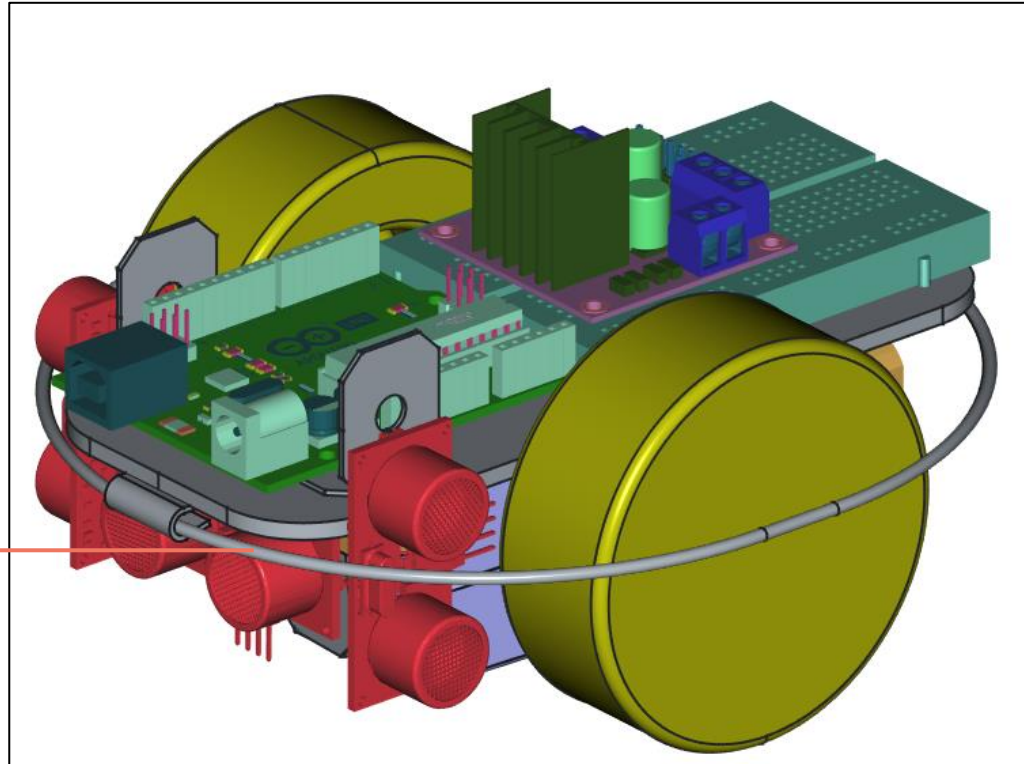
Objectives

- ❑ Develop a mouse within the dimensions (16 x 16 x 8 cm) to traverse a 9 x 9 grid maze, starting from the corner and ending in the middle
- ❑ Enforce an algorithm that allows the mouse to sweep the maze and find the quickest route
- ❑ Ensure the sum of materials is within the allotted budget (\$1500)



Hardware (Quite Hard)

CAD Model



Outer rim

Components

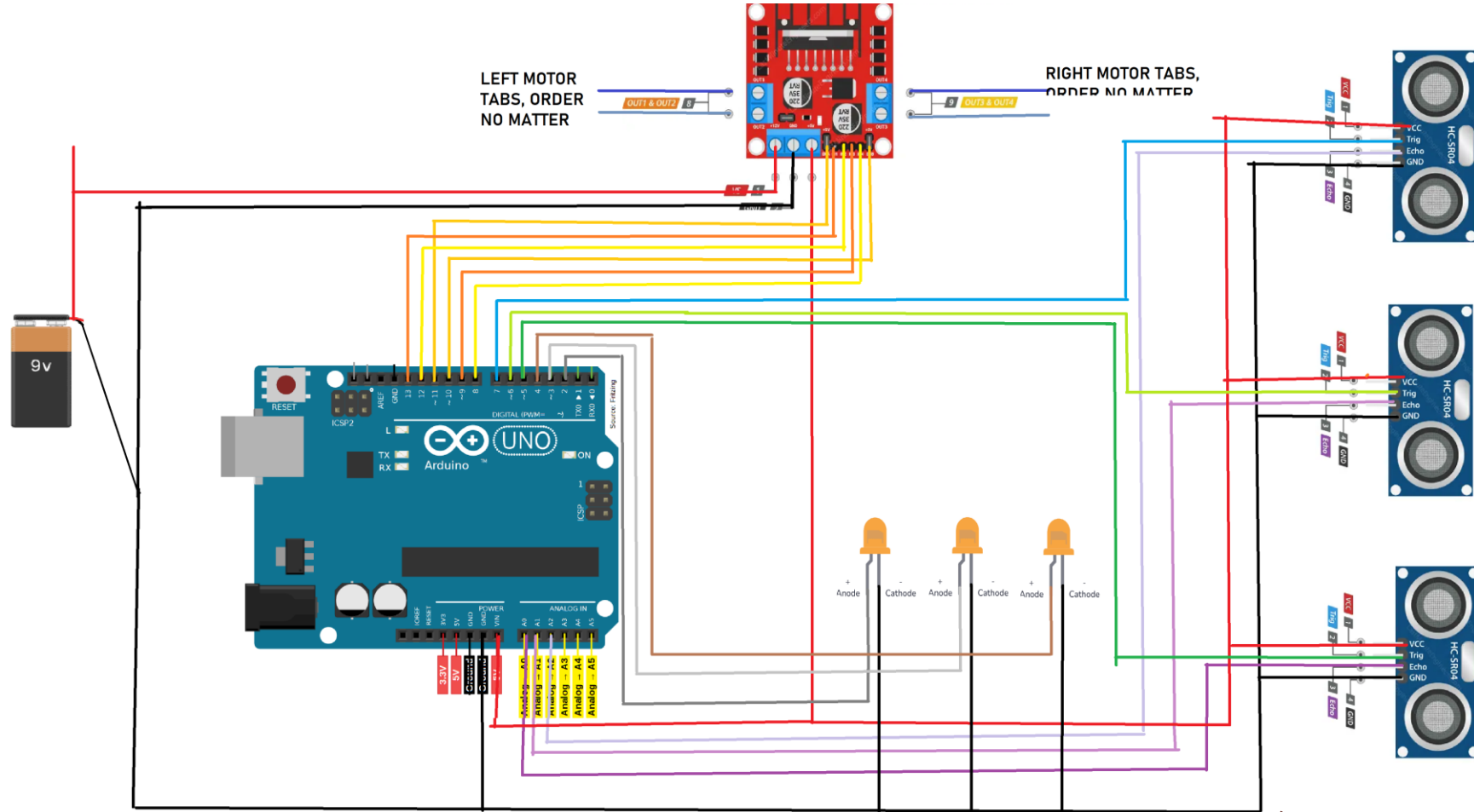
- 1) Arduino UNO R4 Wifi
- 2) Ultrasonic Sensors
- 3) L298N Dual H-Bridge
- 4) DC Motors
- 5) Breadboard
- 6) Rubber wheels

Hardware Explanation



Aspect	Reasoning
Arduino UNO R3	Already owned one. Has a decent sized RAM & processing speed.
Ultrasonic Sensors	Used for basic wall detection and have a high range.
L298N Dual H-Bridge	Can control two DC motors at the same time = turning & alignment precision adjustments if maus is not centred
DC Motors	Good torque and provide good control of direction & speed and good price. Originally tried steppers and then did not like it.
Large wheels	Less RPM for same speed = more efficient. Allows space for components to sit under chassis.
Outside Rim	Contingency if the maus hits a wall. The rim can help run the maus against the wall.

Half-Hearted Circuit Pin-out



Very Nibbleable,
Much Tasty wires
for the rats, Great
feature

Software

Arduino IDE

- Used for coding maus functions (movement, turning, sensing) & returning values used in algorithm

Algorithm

- DFS algorithm was attempted to be used due to memory & processing constraints
- It explores a path completely then backtracks to explore the next path, keeping track of explored paths
- Features include not working properly.



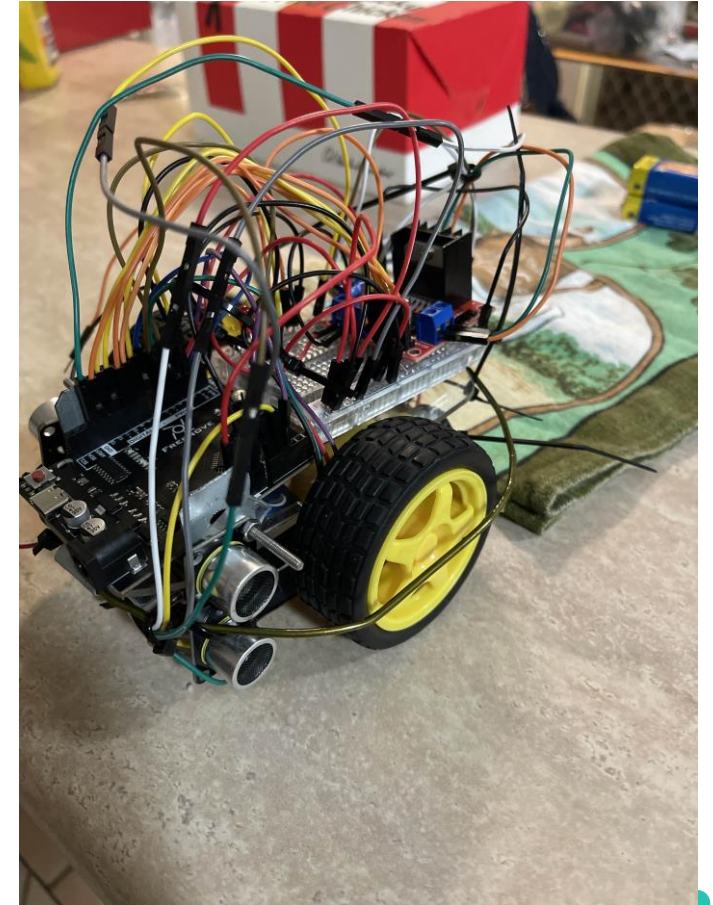
Cost(-a Rica)

Items Purchased	# of Items Used	Cost Per Pack	Cost in build
Acrylic Sheet (2 Sheets)	1	\$ 6.00	\$ 3.00
30mm Hood Socket PK2	1	\$ 3.90	\$ 3.90
Hex Head Boltnuts	3	\$ 4.20	\$ 12.60
Flat MAB Carinya	1	\$ 2.10	\$ 2.10
Motor Gear with Wheel	2	\$ 9.95	\$ 19.90
Ultrasonic Sensor	3	\$ 9.95	\$ 29.85
Lead Jumper PLG (pack of 40)	1	\$ 11.25	\$ 11.25
Breadboard	1	\$ 9.95	\$ 9.95
Batt Snap 9V	4	\$ 1.15	\$ 4.60
Assorted LEDs (pack of 100)	1	\$ 24.95	\$ 0.75
Batt ALK 9V Eclipse (pack of 6)	2	\$ 18.95	\$ 6.32
Arduino UNO R3 (preowned)	1	\$ 29.95	\$ 29.95
L298N Dual H-Bridge Motor Driver (preowned)	1	\$ 6.83	\$ 6.83
		Total Cost	\$ 141.00

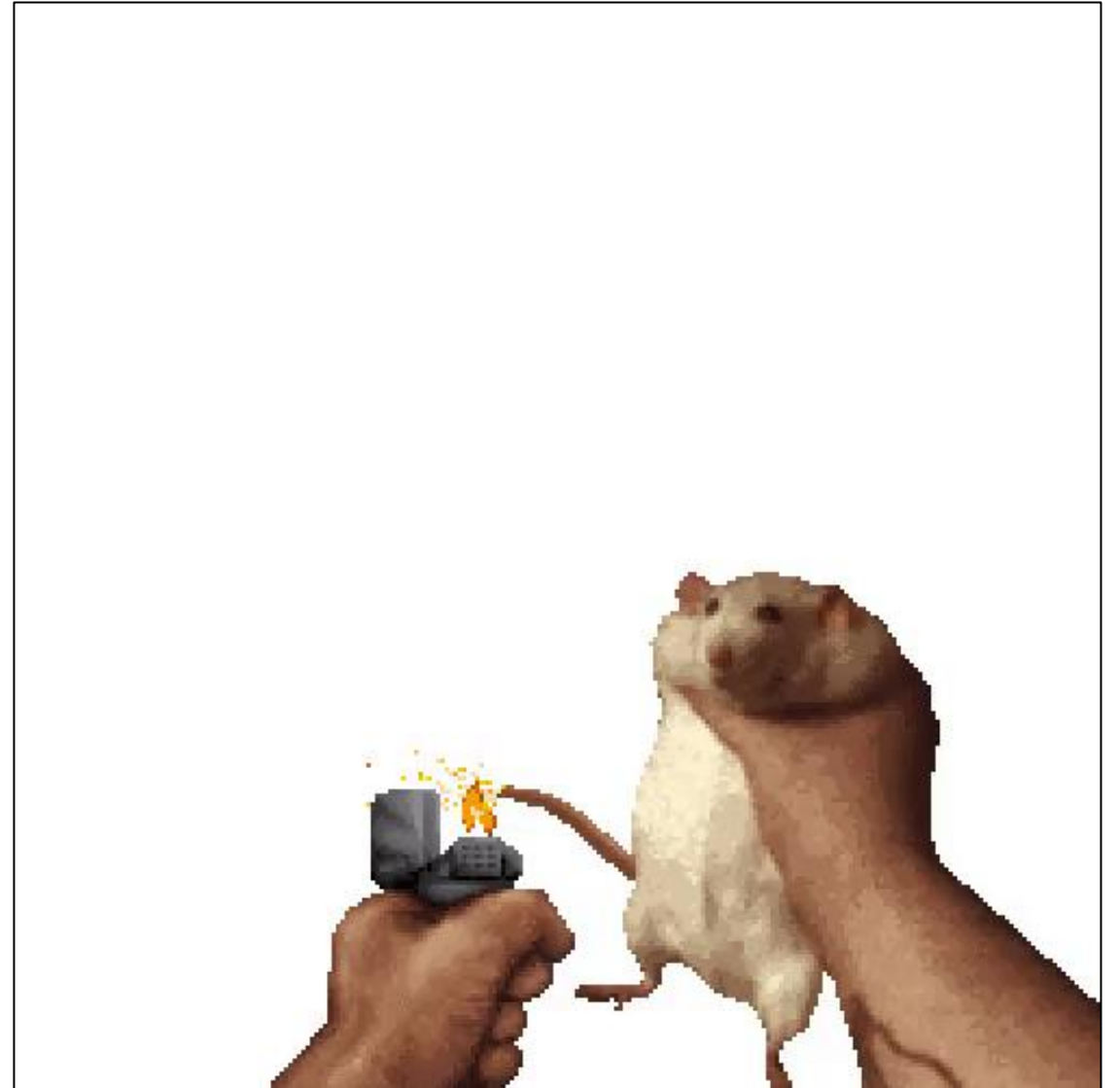


The Resulting Sh** Box

Notice how elegant and pristine and tidy the wiring is. (We entered two weeks ago).



Thank you



^^ How the maus feels when
we send it in

