A black and white logo

Description automatically generated with low confidenceA picture containing text, clipart

Description automatically generated[Text

Description automatically generated](https://www.linkedin.com/company/mcmaster-autoplow/)AutoPlow trailer

*Mechanical-oriented*

**Objective:**

Design a trailer pulled behind the TurtleBot, ideally Halloween themed that can be used for “reverse trick-or-treating” to engage others and get club engagement. The trailer should ideally hold a reasonable amount of candy, and the AutoPlow miniature display screen should be incorporated into the design and be seen clearly (to provide our club name, QR code to our socials and/or website and logo).

**Constraint(s):**

The trailer must remain light enough to be pulled independently by the TurtleBot and have enough candy to avoid constant refilling.

**Preliminary Ideas/Brainstorming:**

Diagram

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*^^draw.io is used, but above diagram is only a suggestion (feel free to make your own brainstorming process/setup!)*

**Concept Sketches :**

Diagram

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Diagram

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**Matrix Evaluation (Decision and Pugh):**

Decision Matrix

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Criteria** | **Weighting (\_\\_)** | **Idea #1** | **Idea #2** | **Idea #n** |
| *Criteria #1* | W1 | W1 \* R1 = S1 | W1 \* R1 = S1 | W1 \* R1 = S1 |
| *Criteria #2* | W2 | W2 \* R2 = S2 | W2 \* R2 = S2 | W2 \* R2 = S2 |
| *Criteria #3* | W3 | W3 \* R3 = S3 | W3 \* R3 = S3 | W3 \* R3 = S3 |
| *Criteria #n* | W4 | W4 \* R4 = S4 | W4 \* R4 = S4 | W4 \* R4 = S4 |
| **Total** |  | **SUM(S1;S4)** | **SUM(S1;S4)** | **SUM(S1;S4)** |

*R\_ = rating for that criterion*

*(rating can be out of whatever you choose, but try to stick to round numbers like \_/5 or \_/10)*

*\*\*\*Make sure to rate designs criteria appropriately (i.e., if cost is high, rating shouldn’t be high)\*\*\**

Pugh Matrix

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Criteria** | **Weighting (\_\\_)** | Current Solution | **Idea #1** | **Idea #2** | **Idea #n** |
| *Criteria #1* | W1 | 0 | +1 \* W1 | 0 \* W1 | -1 \* W1 |
| *Criteria #2* | W2 | 0 | 0 \* W2 | 0 \* W2 | -1 \* W2 |
| *Criteria #3* | W3 | 0 | -1 \* W3 | -1 \* W3 | -1 \* W3 |
| *Criteria #n* | W4 | 0 | -1 \* W4 | +1 \* W4 | 0 \* W4 |
| **Total** |  | 0 | **SUM(S1;S4)** | **SUM(S1;S4)** | **SUM(S1;S4)** |

*Rate with +1 if idea is better, 0 if idea is just as good, and -1 if idea is worse than currently selected design*

\*\*\*Weightings are **optional**, but they help identify designs based on proficiency *and* priority\*\*\*

**Low-Fidelity Prototype Pictures:**

(CAD designs/prints, cardboard + duct tape models, as long as it’s a physical prototype)

**Design Considerations/Adjustments:**

**Test Plan:**

**Final Design:**