Team Puckboiz

Member Names: Alexis, Audrey, Kristi, Kyle, Kyro, Randy

Status Update #1

Date: 11/03/2024

Period: 10/27 – 11/03

Key Accomplishments:

1. Submitting BOM order #1 and t-shirt order
    a. Wrote some spreadsheet code that automatically exports our cumulative BOM format to Prof. Mello's .xlsx template

| Vendor | Part Number | Link | Item Name | Category | Price | Qty | Total Price | Skater 1 | Skater 2 | Goalie | Order # | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Online Metals | 1248 | https | 0.25" Aluminum Plate 6061-T651 (12" X 36") | Frame | $87.82 | 1 | $87.82 | ☑ | ☑ | ☐ | 1 | |
| Online Metals | 1247 | https | 0.19" Aluminum Sheet 6061-T6 (12" x 12") | Frame | $29.37 | 1 | $29.37 | ☑ | ☑ | ☐ | 1 | |
| Online Metals | 21112 | https | 0.16" Aluminum Sheet 6061-T6 (12" x 24") | Frame | $52.04 | 1 | $52.04 | ☑ | ☑ | ☐ | 1 | |
| Online Metals | 6994 | https | 1" x 3" x 0.125" Aluminum Rectangle Tube 6061-T6-Extruded (24") | Frame | $7.98 | 1 | $7.98 | ☑ | ☐ | ☐ | 1 | |
| Online Metals | 23284 | https | 0.5" x 2.75" Aluminum Rectangle Bar 6061-T6511-Extruded (12") | Frame | $13.71 | 1 | $13.71 | ☑ | ☑ | ☐ | 1 | |
| Online Metals | 1112 | https | 0.375" Aluminum Square Bar 6061-T6511-Extruded (36") | Frame | $5.58 | 1 | $5.58 | ☑ | ☐ | ☐ | 1 | |
| Online Metals | 1084 | https | 0.5" Aluminum Round Bar 6061-T6511-Extruded (24") | Frame | $4.92 | 1 | $4.92 | ☑ | ☐ | ☐ | 1 | |
| Online Metals | 17791 | https | 0.375" x 0.625" Aluminum Rectangle Bar 6061-T6511-Extruded (12") | Frame | $3.13 | 1 | $3.13 | ☑ | ☐ | ☐ | | |
| Online Metals | 7575 | https | 0.25" Carbon Steel Round Bar 12L14 Cold Drawn (12") | Frame | $0.75 | 1 | $0.75 | ☑ | ☐ | ☐ | | |
| McMaster | 8574K38 | https | Clear Polycarbonate Sheet 12" x 48" x 1/16" | Frame | $16.75 | 1 | $16.75 | ☑ | ☑ | ☐ | 1 | |
| VEX | 217-2754 | https | 3/8" OD Hex Stock (36") | Shafts | $7.49 | 1 | $7.49 | ☑ | ☑ | ☐ | | |
| WCP | WCP-0229 | https | External SnapRing (1/2") (20-Pack) | Transmission | $1.99 | 1 | $1.99 | ☑ | ☑ | ☑ | | |
| WCP | WCP-0228 | https | External SnapRing (3/8") (20-Pack) | Transmission | $1.99 | 1 | $1.99 | ☑ | ☑ | ☐ | | |
| VEX | 217-2775 | https | #25 Standard Roller Chain (10') | Transmission | $6.49 | 1 | $6.49 | ☑ | ☑ | ☐ | | |
| Amazon | B0006IVZFU | https | MIU France Set of 2 Silicone Pot Holders, Red | Electronics | $10.38 | 1 | $10.38 | ☑ | ☑ | ☐ | | |
| Amazon | B07CVDLM5R | https | OVONIC 3s 11.1V Lipo Battery 8000mAh 50C Deans T Connector (2 Packs) | Electronics | FREE | 1 | FREE | ☑ | ☑ | ☐ | 1 | 2 pack, actual price: $80.99 |
| Amazon | 12247F1 | https | Franklin Sports NHL Street Roller Hockey Pucks - Single Puck | Miscellanous | FREE | 1 | FREE | ☐ | ☐ | ☐ | 1 | Actual price: $9.99 |
| Amazon | B0CCX9ZJKN | https | Small Magnets, 30 Pack Refrigerator Magnets 20x3mm | Magnets | $13.99 | 1 | $13.99 | ☑ | ☑ | ☐ | 1 | |
| Amazon | B076H3XHXP | https | Voltage regulator (6 pack) | Electronics | $9.99 | 1 | $9.99 | ☑ | ☑ | ☑ | | |
| Amazon | B07GZ17ZWS | https | Receiver (12 pack) | Electronics | $17.99 | 1 | $17.99 | ☑ | ☑ | ☑ | | |
| | | | | Last order number: | | 1 | $292.36 | | | | | |

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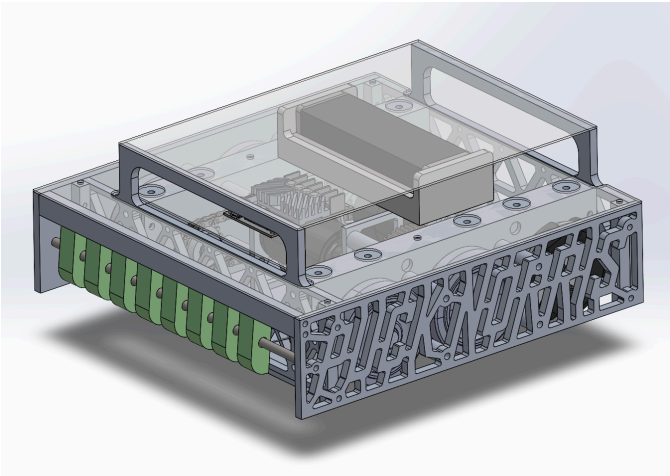
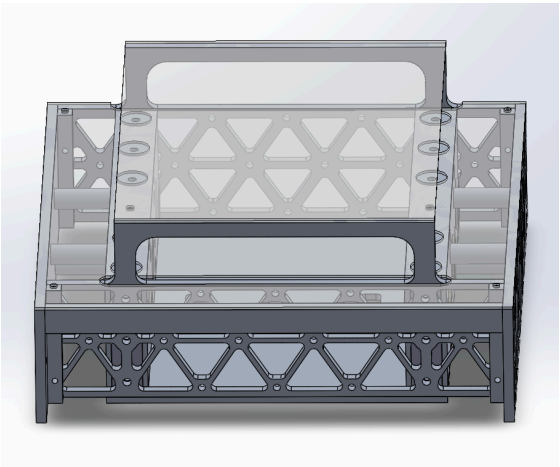
| | A | B | C | D | E | F | G | H | I | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | MEMBERS | SUPPLIER | PART # | DESCRIPTION | QTY | INDIVIDUAL COST | SUBTOTAL | TOTAL | |
| 2 | | | Amazon | B07CVDLM5R | OVONIC 3s 11.1V Lipo Battery 8000mAh 50C Deans T Connector (2 Packs) | 1 | FREE | FREE | | https://www.amazon.cc |
| 3 | | | Amazon | 12247F1 | Franklin Sports NHL Street Roller Hockey Pucks - Single Puck | 1 | FREE | FREE | | https://www.amazon.cc |
| 4 | | | Amazon | B0CCX9ZJKN | Small Magnets, 30 Pack Refrigerator Magnets 20x3mm | 1 | $13.99 | $13.99 | | https://www.amazon.cc |
| 5 | | | AndyMark | am-4967 | 3 in. Aluminum Omni Wheel With 3/8 Hex Bore | 1 | $25.00 | $25.00 | | https://www.andymark. |
| 6 | | | Banebots | M7-RS775-18 | RS775 Motor - 18V | 1 | $17.50 | $17.50 | | https://banebots.com/n |
| 7 | | Alexis Herfurth | BasicMicro | IMC419 | RoboClaw ST 2x45A Motor Controller | 1 | FREE | FREE | | https://www.basicmicro |
| 8 | Team Name: Puckboiz | Audrey Wong | McMaster | 8574K38 | Clear Polycarbonate Sheet 12" x 48" x 1/16" | 1 | $16.75 | $16.75 | | https://www.mcmaster. |
| 9 | | Kristi Sevier | Online Metals | 1248 | 0.25" Aluminum Plate 6061-T651 (12" X 36") | 1 | $87.82 | $87.82 | $284.65 | https://www.onlinemeta |
| 10 | | Kyle Chen | Online Metals | 1247 | 0.19" Aluminum Sheet 6061-T6 (12" x 12") | 1 | $29.37 | $29.37 | | https://www.onlinemeta |
| 11 | | Kyro Bastawros | Online Metals | 21112 | 0.16" Aluminum Sheet 6061-T6 (12" x 24") | 1 | $52.04 | $52.04 | | https://www.onlinemeta |
| 12 | | Randy Ngo | Online Metals | 6994 | 1" x 3" x 0.125" Aluminum Rectangle Tube 6061-T6-Extruded (24") | 1 | $7.98 | $7.98 | | https://www.onlinemeta |
| 13 | | | Online Metals | 23284 | 0.5" x 2.75" Aluminum Rectangle Bar 6061-T6511-Extruded (12") | 1 | $13.71 | $13.71 | | https://www.onlinemeta |
| 14 | | | Online Metals | 1112 | 0.375" Aluminum Square Bar 6061-T6511-Extruded (36") | 1 | $5.58 | $5.58 | | https://www.onlinemeta |
| 15 | | | Online Metals | 1084 | 0.5" Aluminum Round Bar 6061-T6511-Extruded (24") | 1 | $4.92 | $4.92 | | https://www.onlinemeta |
| 16 | | | WCP | WCP-1150 | 6t Steel Spur Gear (20 DP, 8t Center Distance, RS550/775 Bore) | 1 | $9.99 | $9.99 | | https://wcproducts.com |
| 17 | Order 1 | # of table rows: 16 | - | - | - | - | - | - | - | |
| 18 | To create a new automatically-filtered order list, copy this sheet and change the order number accordingly. If a #REF! error is thrown, click on one of the middle rows and add rows (either above or below) until the error goes away. | | | | | | | | | |
| 19 | Then, make a copy of ME72_FA24_Puckboiz_ORDER#@TEMPLATE under the Orders folder. Add rows there as needed to correspond with the size of the automatic order list located in this sheet. | | | | | | | | | |
| 20 | When adding rows to the .xlsx order file, do so in the middle of the table so the merged columns are also the same. For all new rows, make sure to copy over his formulas under the Subtotal column to the newly created cells. | | | | | | | | | |
| 21 | Once that is done, you can copy columns C through G and column J from the above table in the sheet tab here to the order file you just made under the Orders folder. | | | | | | | | | |
| 22 | Make sure to use Ctrl+**Shift**+C when copying to avoid copying over formulas! | | | | | | | | | |
| 23 | Once the order sheet is sent to Dr. Mello, **DO NOT MODIFY ANYTHING ABOUT THAT PART UNDER THE STOCK, SKATER, OR GOALIE TABS!** | | | | | | | | | |
| 24 | If more quantity of an item needs to be ordered, make another row and put that under a different order number. | | | | | | | | | |

2. Upgraded battery to a 11.1V Lipo battery with 8000mAh whereas previously we had the same Lipo battery but with 5000mAh. This battery will provide enough power to continuously run each of our motors at its maximum torque requirements for 6 minutes (more time than the 5 minute rounds we compete in). The previous battery could only do this for 4 minutes.
    a. The math for 5200 mAh:
        i. Each motor draws 40A at their maximum torque, which creates a total maximum torque of 80A
        ii. 5.2Ah/80A = 0.065 hrs or 3.9 minutes (multiplied by 60 min/1hr for conversion)
    b. The math for 8000 mAh:
        i. Each motor draws 40A at their maximum torque, which creates a total maximum torque of 80A
        ii. 8.0Ah/80A = 0.1 hrs or 6 minutes (multiplied by 60 min/1hr for conversion)
3. The first design of the battery holder for the skater bot is ready to print on Monday when the techlab first opens.
4. Modified CAD to include brushed motors and added important details such as mounting holes and lightening patterns (skeletonization).





Technical Issues:

1. When we added brushed motors to our first skater bot instead of brushless, our robot became overweight (above 15lbs). Some possible solutions include:

    **- Pocketing side/front/back walls/belly pan**

    **- Using thinner polycarb**

    - Using thinner front/back metal walls

    - Using thinner belly pan

    - Milling holes/slots into the tubes

    **- Pocketing gearboxes**

    **- Smaller infill/thinner walls on battery holder**

    - Using smaller bolts

    The bolded selections were chosen.

Resources Needed:

1. Submitted Order #1 - *Includes free electronic components, official puck, aluminum, magnets, and a wheel/gear/motor for subsystem tests. See the below spreadsheet for the complete list of components with suppliers.*

| | MEMBERS | SUPPLIER | PART # | DESCRIPTION | QTY | INDIVIDUAL COST | SUBTOTAL | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Team Name: Puckboiz | Alexis Herfurth<br>Audrey Wong<br>Kristi Sevier<br>Kyle Chen<br>Kyro Bastawros<br>Randy Ngo | Amazon | B07CVDLM5R | OVONIC 3s 11.1V Lipo Battery 8000mAh 50C Deans T Connector (2 Packs) | 1 | FREE | FREE | $284.65 |
| | | Amazon | 12247F1 | Franklin Sports NHL Street Roller Hockey Pucks - Single Puck | 1 | FREE | FREE | |
| | | Amazon | B0CCX9ZJKN | Small Magnets, 30 Pack Refrigerator Magnets 20x3mm | 1 | $13.99 | $13.99 | |
| | | AndyMark | am-4967 | 3 in. Aluminum Omni Wheel With 3/8 Hex Bore | 1 | $25.00 | $25.00 | |
| | | Banebots | M7-RS775-18 | RS775 Motor - 18V | 1 | $17.50 | $17.50 | |
| | | BasicMicro | IMC419 | RoboClaw ST 2x45A Motor Controller | 1 | FREE | FREE | |
| | | McMaster | 8574K38 | Clear Polycarbonate Sheet 12" x 48" x 1/16" | 1 | $16.75 | $16.75 | |
| | | Online Metals | 1248 | 0.25" Aluminum Plate 6061-T651 (12" X 36") | 1 | $87.82 | $87.82 | |
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| | | Online Metals | 6994 | 1" x 3" x 0.125" Aluminum Rectangle Tube 6061-T6-Extruded (24") | 1 | $7.98 | $7.98 | |
| | | Online Metals | 23284 | 0.5" x 2.75" Aluminum Rectangle Bar 6061-T6511-Extruded (12") | 1 | $13.71 | $13.71 | |
| | | Online Metals | 1112 | 0.375" Aluminum Square Bar 6061-T6511-Extruded (36") | 1 | $5.58 | $5.58 | |
| | | Online Metals | 1084 | 0.5" Aluminum Round Bar 6061-T6511-Extruded (24") | 1 | $4.92 | $4.92 | |
| | | WCP | WCP-1150 | 6t Steel Spur Gear (20 DP, 8t Center Distance, RS550/775 Bore) | 1 | $9.99 | $9.99 | |

2. Planned Order #2 - Springs (puck-handling mechanism), silicon (battery holder)

Work in Progress:

1. Rethink/develop ideas for puck-handling and scoring attachments: Despite settling on a traffic spike inspired handling mechanism, we should investigate alternative methods (in case a shooting mechanism can be developed) or devise a simple solution in case the puck-handling mechanism doesn't meet our expectations.
2. Submit Order #2 - Once we measure the depth of the puck indentation, we can form a clearer picture of the feasibility of our puck-handling mechanism. If we decide the indentation is deep enough to try prototyping the mechanism, we will submit an order for torsion springs.
3. Redesign the electronic circuit - with the original brushless motor now being switched to a brushed motor, we will have to switch out some specific brushless motor components like an ESC for brushed motor components like a RoboClaw.
4. Create GD&T drawings: Before we start machining, we will take our CAD models (once they are finalized) and make official drawings.
    a. Relating to this, we will also lay out where each part is cut on our sheet metal so that they are arranged in the most space-efficient manner possible, minimizing wasted metal.
5. Divide Gantt chart tasks among team members and include more specific deadlines.