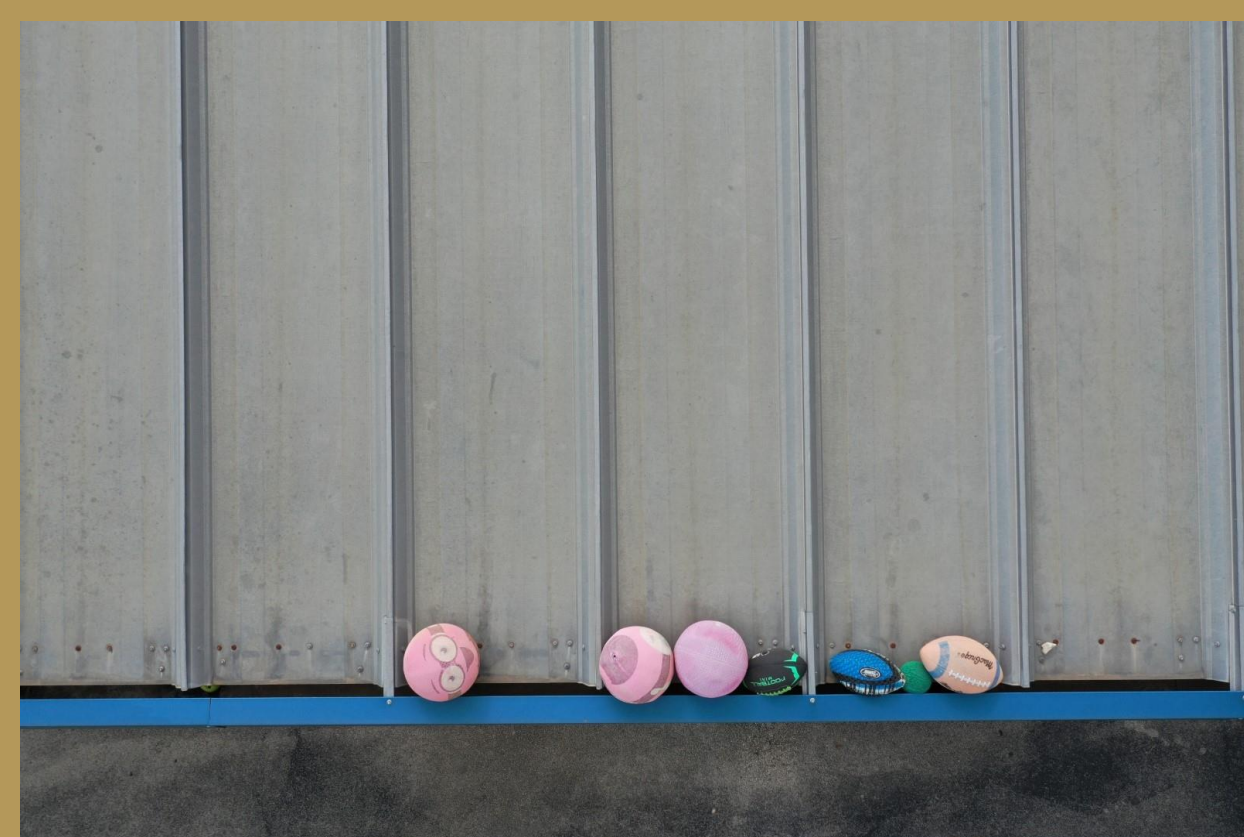


M2.01 – BallCat - Low-Cost Ball Retrieval

Colton Gohlke, Abdullah Jundi, Orlen Zambrano, Jameal Shorter
 Hoffmann Lane Elementary School

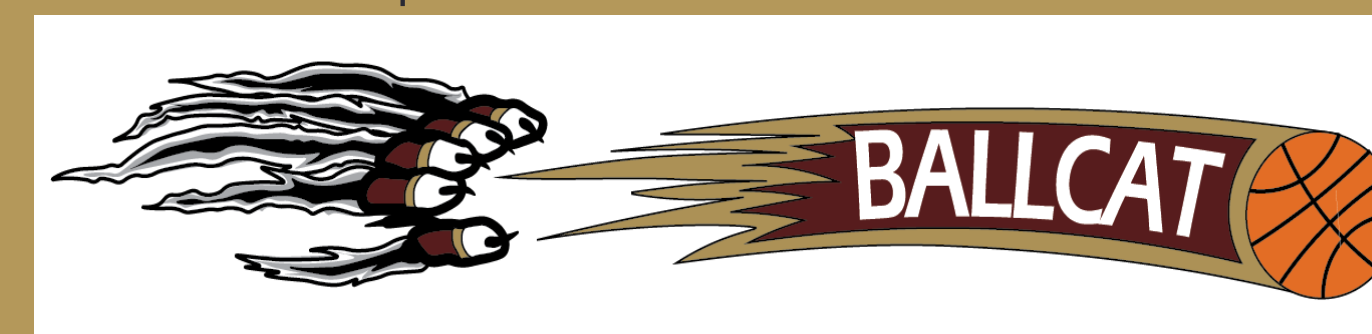
Problem

- ❖ Balls get stuck in the gutter system on the roof of the gymnasium which is 20 feet in the air and located next to an outdoor blacktop where students at the school have either kicked or thrown balls onto the roof.
- ❖ Balls that are left on the roof after a long time are sun damaged and ruined.
- ❖ Use of ladder and scissor lifts are shared amongst the entire school district therefore it takes time to retrieve the balls through maintenance.



Final Design

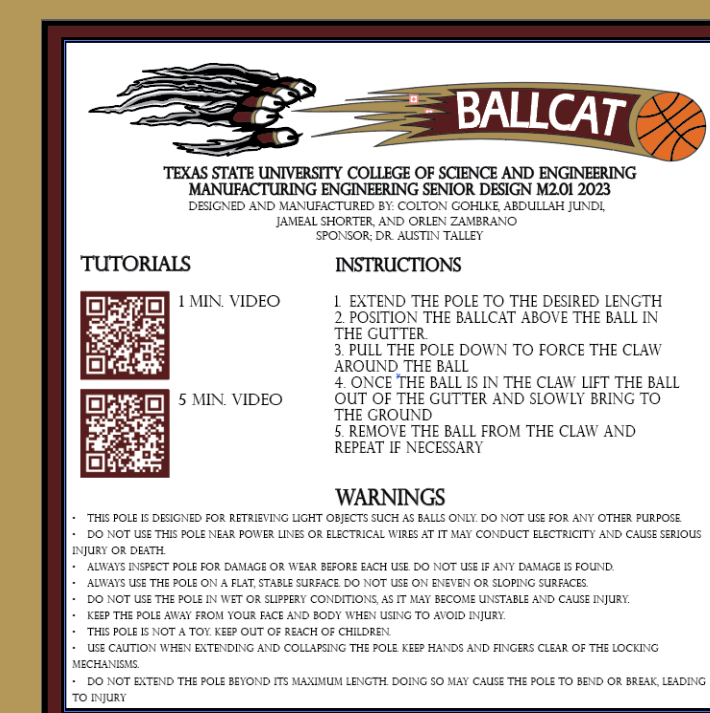
- ❖ New triangular telescopic pole to increase strength and reduce deflection
- ❖ Double sided claw with basketball and football attachment to eliminate changing out the implement
- ❖ Secure wall bracket for pole
- ❖ Bracket has attached Velcro strap to keep students from pulling pole off the wall
- ❖ Instructions and QR code are on the pole to send the user to tutorial videos and help with operations
- ❖ Product is reproduceable under \$100



1 Min. Video



5 Min. Video



1st Design



- Features-
- Telescopic Pole
 - Pool Hook

2nd Design



- Features-
- Telescopic Pole
 - Ball Claw
 - Adjustable Elbow

3rd Design



- Features-
- Telescopic Pole
 - Mechanical Claw
 - Adjustable Elbow

Final Design



- Features-
- Telescopic Pole
 - Double Claw
 - Welded Joint with 45° Angle

Procedure

Concept of Solution

- Design and manufacture a device that can retrieve balls from the gutter and is operated from the ground.
- A team of no more than 2 adults will be required to operate the device.
- Be able to reproduce the product under \$100
- Design the device to be compact, easy to store, and accessible.
- The device will be lightweight so any adult can operate the device.

Concept Generation

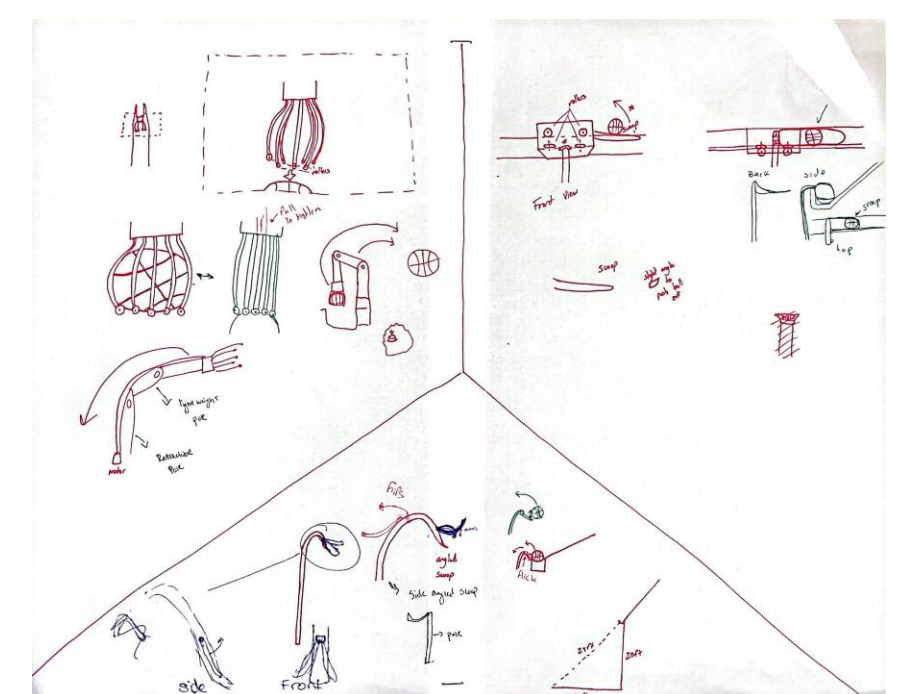
Customer Needs-

- Safe to use
- Easy to use
- Retrieve balls
- Can be stored in the gym



Original Ideas-

- Scoop (actuated)
- Basket
- Claw (actuated)



Testing Criteria

- Weight of device
- Time needed to retrieve ball from roof
- Deflection of pole
- People required to operate pole

