4.

As we first started our competition, we had to figure out what type of equipment we could use like a claw, hook, bucket, etc. There were millions of options we could choose from, but there was only one that would work best for us. As we started designing,, we looked at Tinker CAD and fusion 360 to start making a build idea for any action we were planning to do to use in the game and which one would make the most effective output when putting the pixels on the backboard. , we started to group one of the ideas, like taking the pixels from the inside ring, the outside ring or just sliding it in. l of these groups were really good, but we needed to figure out which one was the best. So ain, we went n Fusion 360 to make a prototype and go on a website to see if it worked on the website we looked at. From all of this brainstorming, we needed to figure out which one was the most consistent of them all After all of this, we also did research on different types of wheel that we could use, like omni-directional wheels or mechanical wheels

1. Comparative Analysis of Concept

At the start of our season we had made very different choices like if we used a rackinpinion or linear slides, a claw or a bucket, etc. Etc. We had to be careful because each one had an advantage and a disadvantage, like rackinpinion which did not have a long of a reach at the same time, the linear slides also did that with an efficient time but were working as well. Also, with the claw, it was very inconsistent but worked but then the bucket was very consistent and worked at a quick and fast rate.

Design and Development

1. *Conceptual Design*

*At the start of the season we went through several ideas to get to this final version . all of our designs start off on paper then move to cad to get the precise parts . A couple of early designs were a couple versions of a claw and later went to active intake. All of the designs were chosen strictly based on numbers, as we believe that the numbers don't lie. Along with the design, the one website that we used was Onshape. We used it for the six boxes, the drone, battery holder, optake device, and our 2 team props.*

1. *Prototyping and Testing*

What caught our eye was a single claw attached to one arm. At this point, we first dismantled it and purchased the parts needed for construction. This idea was very important to us. It allows me to see any imperfections in the nail and I know how accurate I have to be. Through this consideration, we arrived at the following plan. It was a dynamic recording using a rack and pinion with a gripper.

1. *Modifications and Iterations*

*Through the designs we have been heavily iterating . We have about eight iterations of our two pixel box to make it as effective as possible . We have also modified our drone launcher and hang . We started out with just a rubber band to shoot the drone but soon realized that the power was not enough , so we finally ended up going to a slider to ensure there is equal and large amount of force on the drone . Secondly , our hang has gone through lots of iterations too we started out with a tape measure and realized that it got to wobbly at the top and so we switched to arm with magnets to ensure the hook stays on and then use a winch to pull*