53-451 Picnic Games
Mole-Archy
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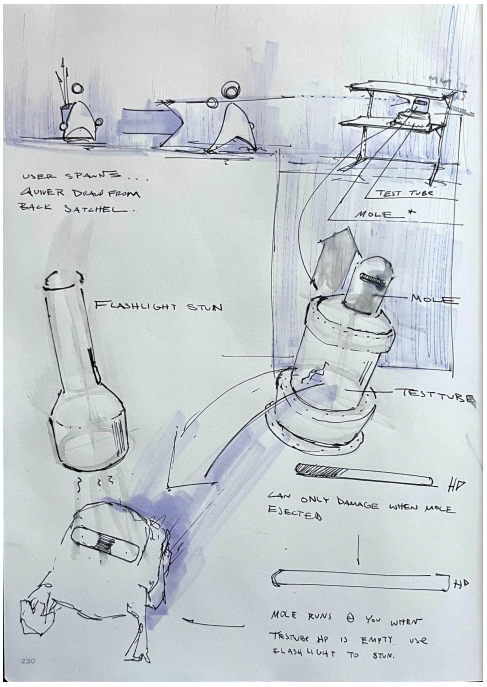
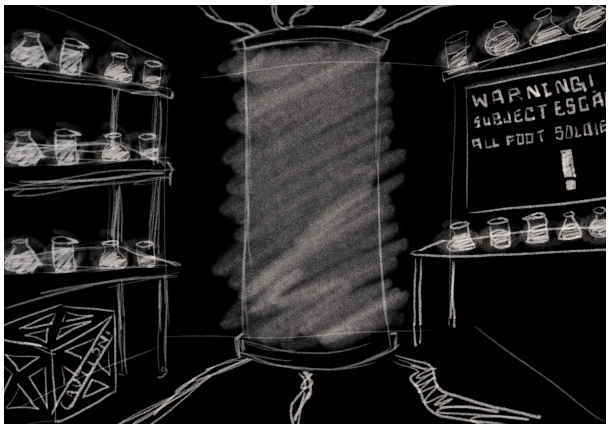
Project description:
Mole-Archy is a blend of Whack-a-Mole and lawn darts with a pinch of horror. The player is introduced to the world of Mole-Archy by Helper Bot, a small but sassy training robot that teaches the player about their new job of mole extermination. By using lawn darts and a stun light, the player makes their way through their first expedition, where they encounter the Mole-Arch, a boss mole that they must defeat to win the game.

Ideation Process:
Our starting point when deciding what to build for our Picnic Games project was the idea of building Whack-a-Mole in VR. From there, we fleshed out the idea by thinking about how we could incorporate a lawn game into that core mechanic, and landed on the idea of throwing darts to hit the moles instead of a typical hammer. The setting would be a dystopian, sci-fi laboratory where the player would need to escape the moles by killing them all.

Our original game play idea was to have the moles sit in beakers in a typical lab setting and pop out to attack the player. They would each have their own mini projectiles that would then be thrown at and damage the player. We debated either giving the moles HP bars or making them invulnerable until the player broke their beaker. As a last ditch effort, the moles would run out at the player with murderous intent and the player would have to kill the mole before it reached them.



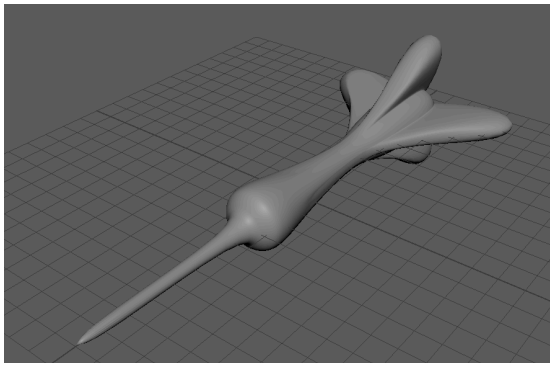


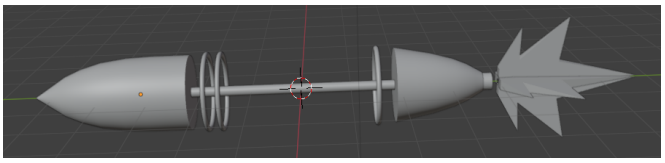
We ultimately decided against giving the moles their own projectiles to avoid any sudden physical movements from the player that might result in injury. Additionally, giving the moles HP bars made the moles feel a bit overpowered, so we ultimately settled on making the moles die on impact and giving the darts an AOE effect to help the player aim.

Building the Game:

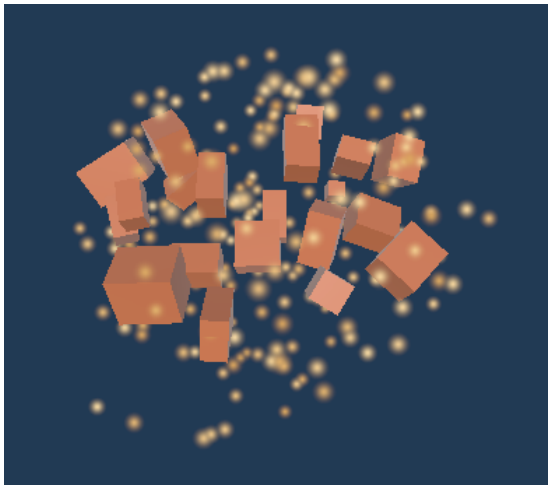
DESIGNING THE DARTS:

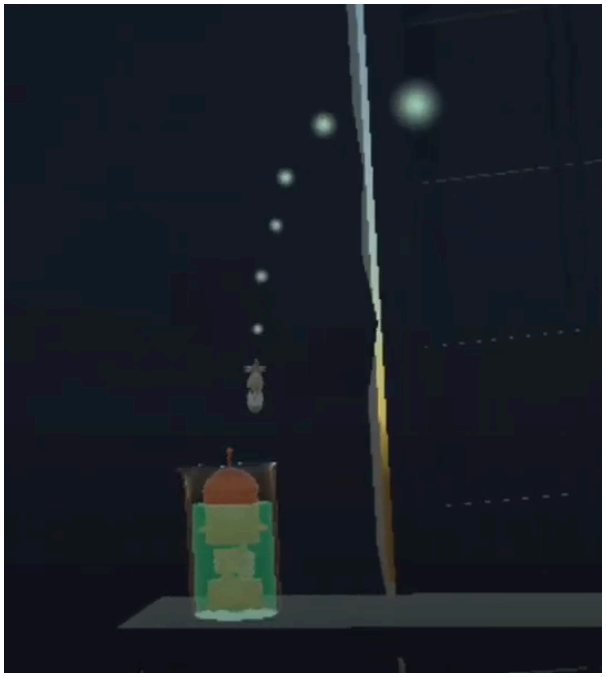
We experimented with two different dart models, one that was more traditionally dart-shaped and one that was more abstracted. We picked the abstracted dart because it could be made bigger to imply weight and also because it matched the feel of the game better. To reload a dart, the player would reach behind them as if they had a quiver full of darts, and then toss the dart at the moles. The AOE effect we used for dart landings worked well with the latter of the two options because the shape of the dart was almost missile-shaped.



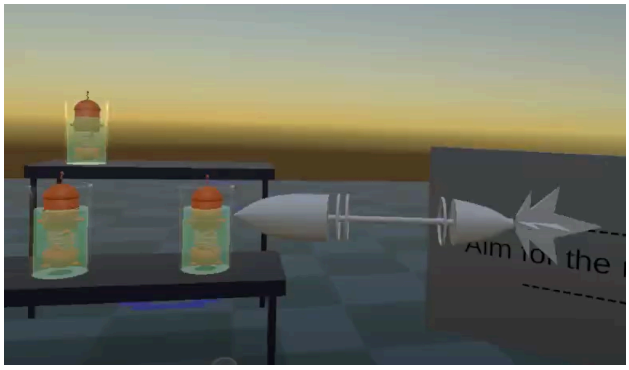


During playtesting, we quickly realized that one issue was that users reported feeling confusion because they could not predict the dart's path very well, thus making the process of learning how to aim much more difficult. To address this issue, we gave the darts a trail of particles to help the player visualize the arc of the dart in the air.



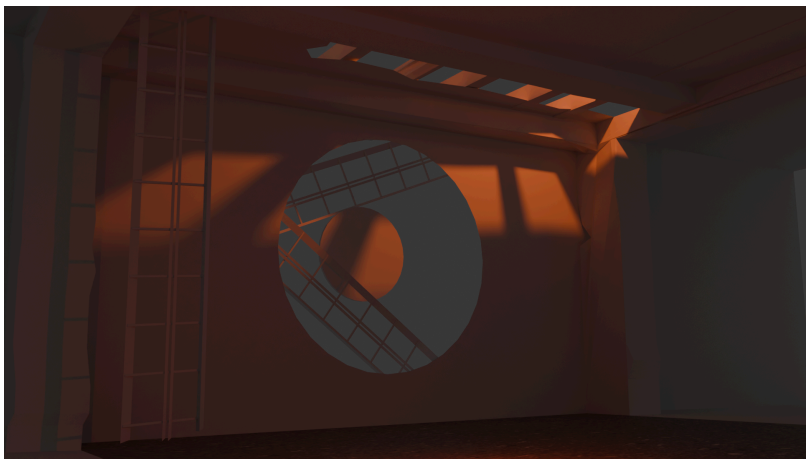


Users also reported frustration with the mechanic of reaching backwards to reload the dart because it was hard to tell whether or not they had been able to successfully grasp the dart when they were reaching behind their backs. As a response to the feedback, we moved the dart to float in front of the player.



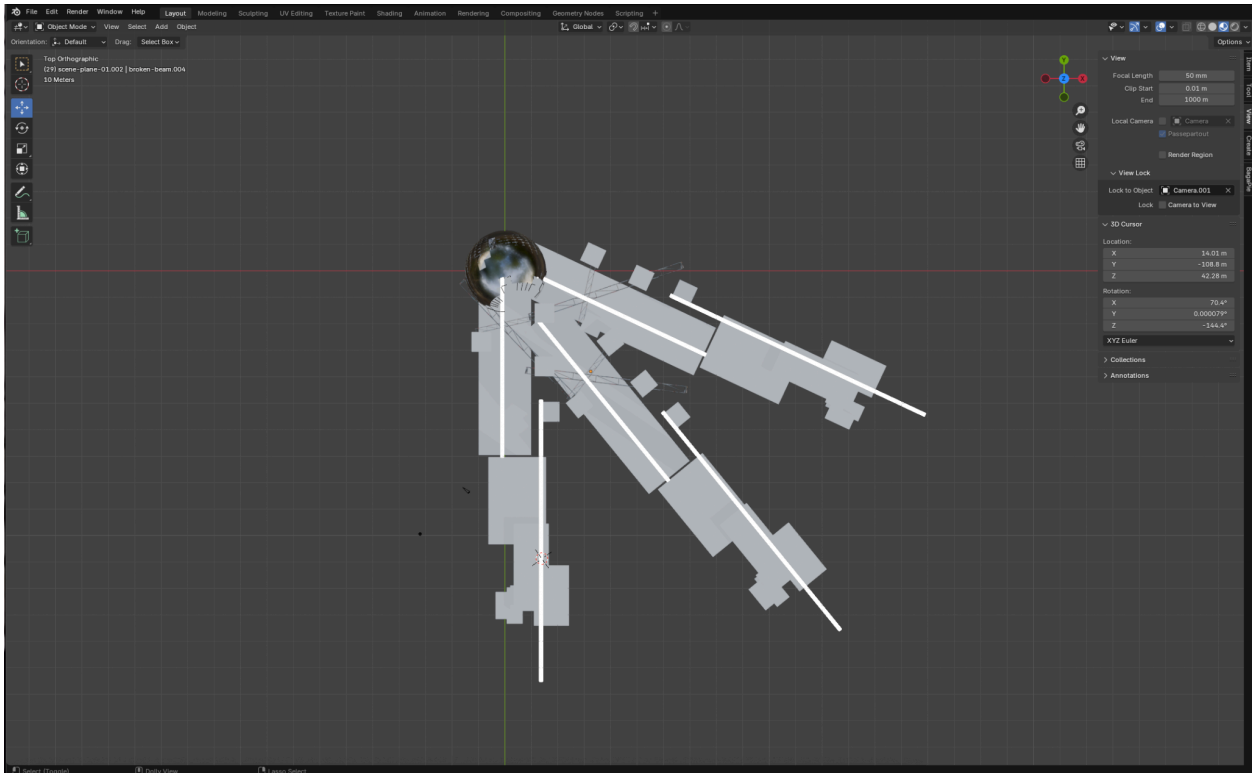
DESIGNING THE SPACE:
We also tried different room layouts, and our first iteration of the room was a square format with a circular window.

However, the unique benefit VR affords is the ability to immerse one in vast, larger-than-life
Our intent was to make the game a bit more spatial, so we decided to go back to the drawing board and create a space that has depth and dimension. Details like cutting into ceilings, denting walls, and making dystopian assets like wireframe bars and exposing ceiling foundations.



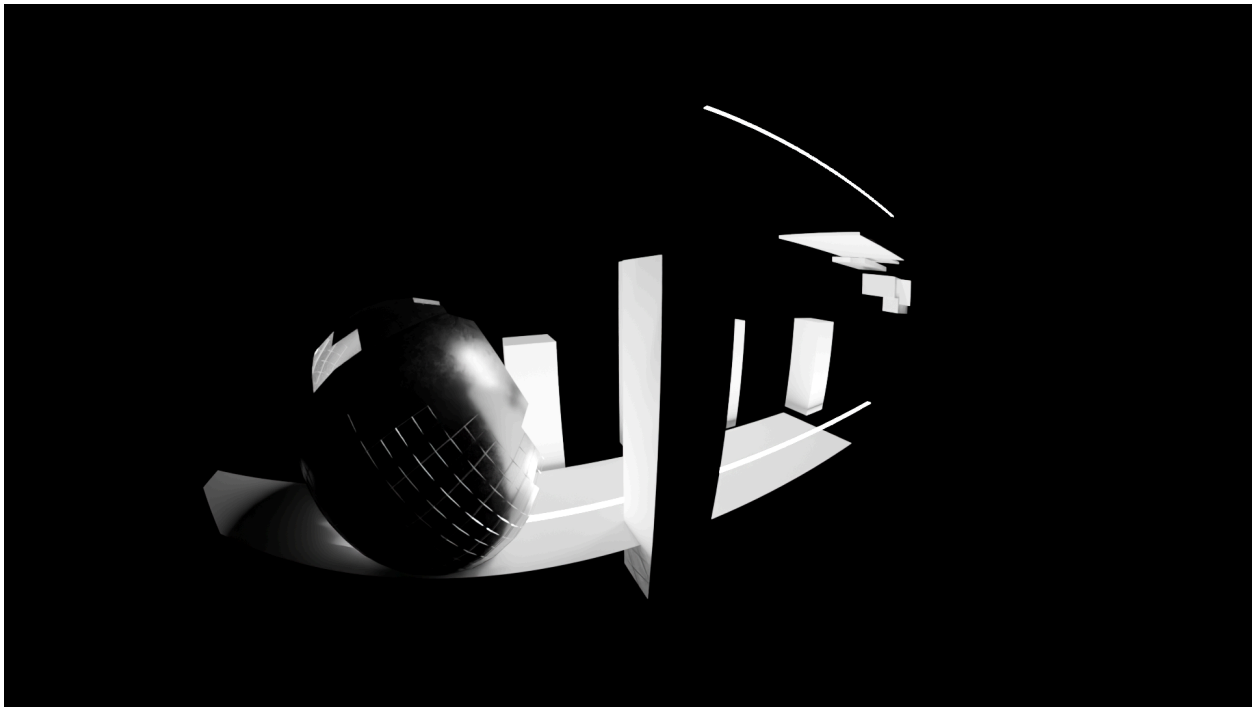
Initial Environment ^^

Learning how to create dystopian structures via geometry nodes and more advanced model making techniques—these didn't make it into the final environment, but represent concept.

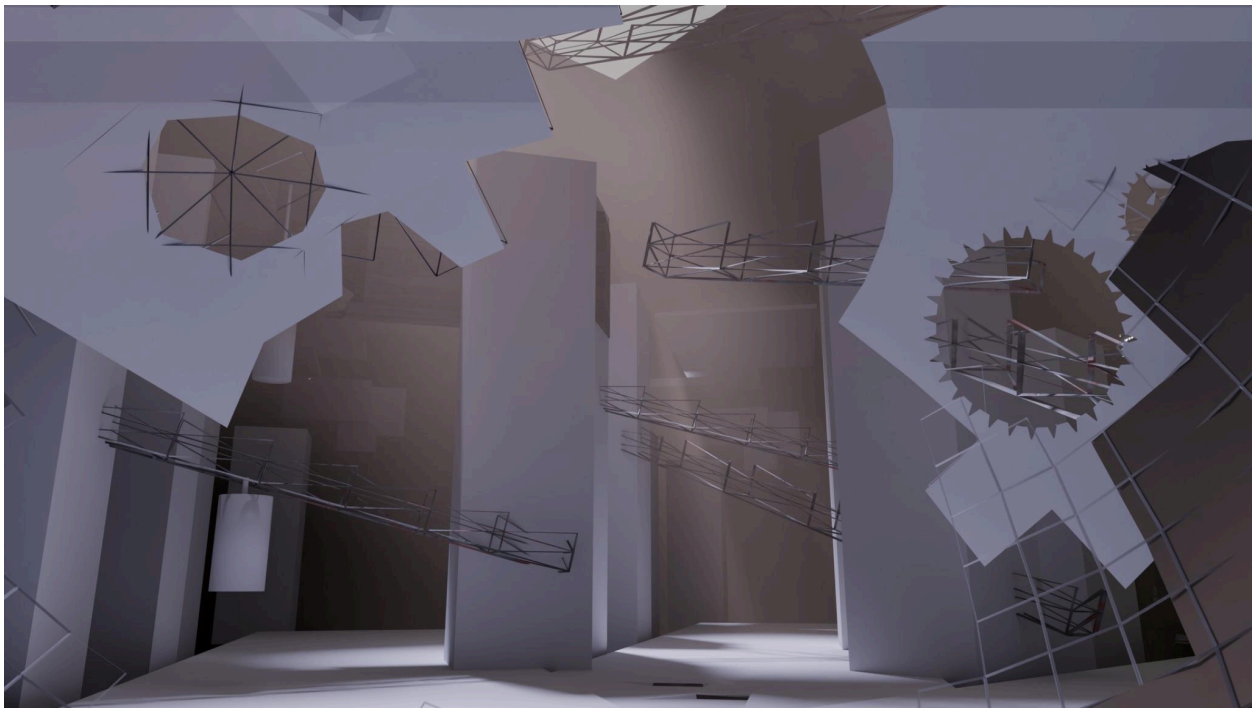


New Environment mapping ^^

We decided on a 3-track mapping so the player has around a 160 degree field of vision for attacking moles. 360 degrees of possible enemies could be too chaotic and cause potential injury.

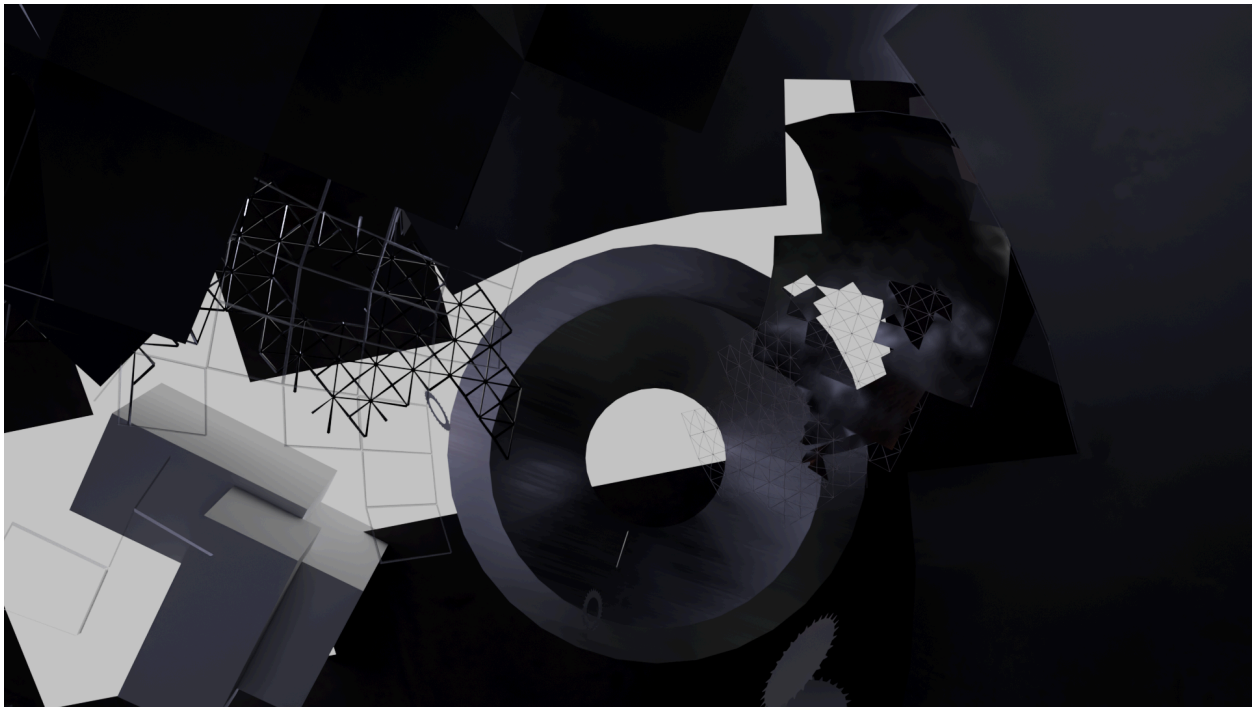


A dome conceals the player's rear. It also reduces visibility of the outside world, which allows for less objects necessary to build out an immersive abandoned dystopian lab.



The test tubes would hang from the crossing beams connecting building blockouts.

A first person POV of the blockout with blender rendered volumetric lighting — a vision if HMDs had more computing power to sustain graphics as such.



The player’s view looking above from within the dome: A dome-like structure placeholder the emergence of where the boss mole would come out of.

DESIGNING THE MOLES:

The moles are the main characters of our game, but they were one of the last things to be modeled for our game. This was mainly due to a lack of consensus on what they should actually look like. Because our moles exist in a sci-fi realm, we wanted to add a mechanical element to them. However, sci-fi is a large space that can mean many different things, so this decision was a hard one to make.

The inspiration for our initial mole design came from Super Mario Party's Monty Mole and from Toy Story's Slinky Dog.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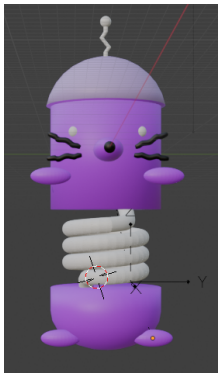


As a result, our first mole iteration leaned towards the cute side. The neon colors were intended to make the mole easy to see in a dimly lit room. However, this mole version was not on theme with the rest of the game.

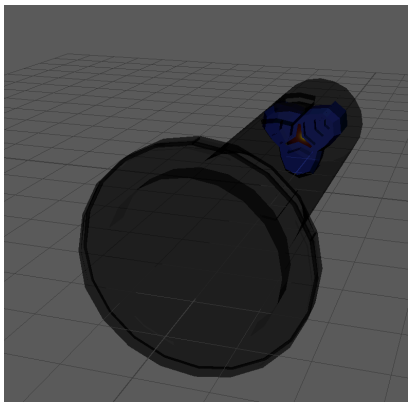
To fix this issue, we decided to make the moles more angular, neutral colored, and angry. We gave them little claws and triangular eyes to convey the feelings of aggression, and all of its initial soft, round aspects were flattened out to give the mole more of an edgy feel.

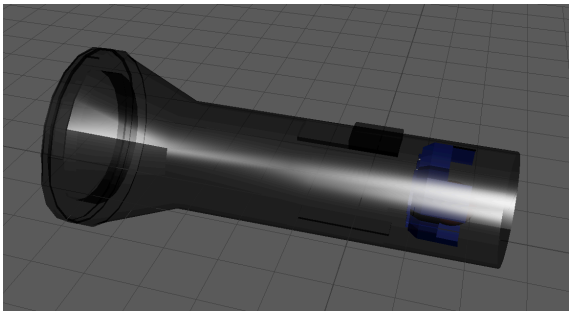
Similarly, our final version of the boss mole wears a crown with spikes that have little orbs floating above them, which is a reference to the little ball at the top of the normal mole's head. The idea was to suggest that the Mole-Arch had begun mind controlling its subordinates.

The spring design inspired the mechanic of having the moles bounce towards the player once they were angry enough.

DESIGNING THE LIGHT:

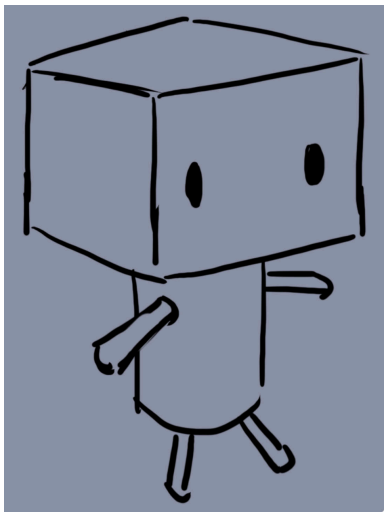
The design of the stun light stayed the same for the most part of our development process, as we were more interested in developing other aspects of the game. Players can use X or A to toggle the light on and off to stop the moles from approaching.

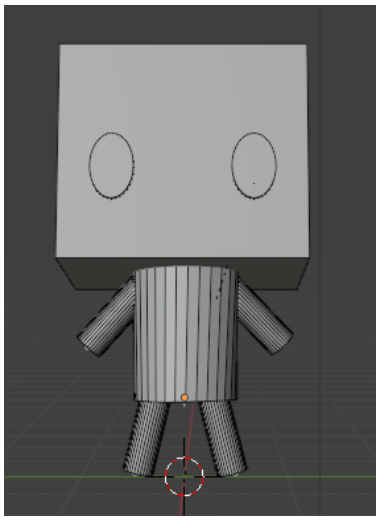




DESIGNING HELPER BOT:

After a few rounds of playtesting, we found that players were highly interested in having a tutorial to teach them how to play the game and to practice aiming the dart. To accommodate this, we introduced HelperBot, who serves a dual mission of coaching the player and hosting the plot line of the game.





Helper Bot is a friendly face and voice that accompanies the player through the game.