PRESENTATION ON

Aquatic FishRobo

- Presented by:

1.Sagar Narkhede(17231014)

2.Omkar Sutar (16132063)

3. Ashlesha Borade(16131036)

4. Pooja Katkar(17231011)

- Guided by:

  Dr.N.P. Futane

- Reference by:

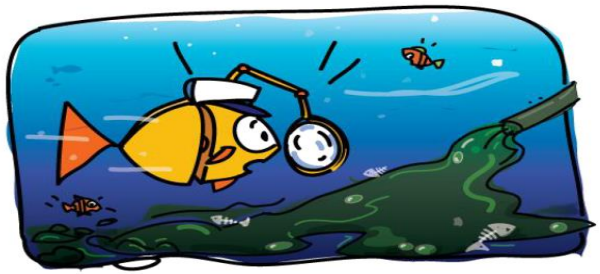
  eYantra Robotics Competition

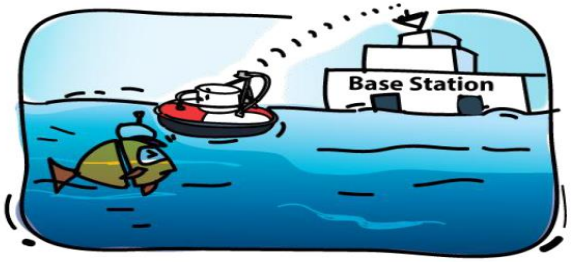
1. Introdction:

In this theme, we are designing and building a **Aquatic FishRobo** that bio-mimics different locomotion's of a fish. The aquatic world is populated with a diverse variety of fishes from which we took inspiration for designing our Aquatic robot. This robot replicates the natural movement of a fish's muscles by using a number of **servo actuated joints** that are connected to each other. Through a coordinated movement of these joints, the fish robot can swim to propel itself forward.

In order to represent the muscle joints of a natural fish, we use servo actuators and for the fish's body, we design brackets, that serve the following two purposes:

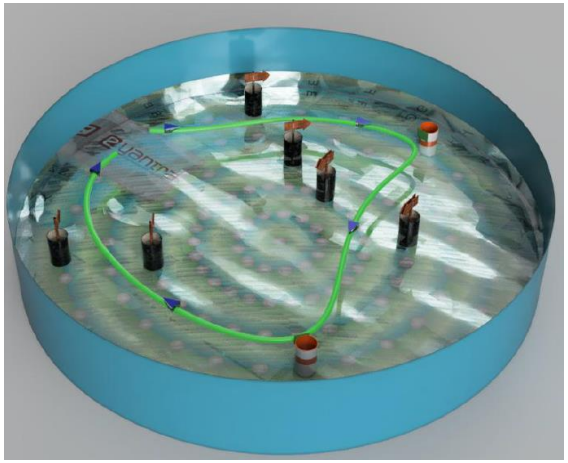
- to define the relative position and orientation between actuators and
- to define the profile of the fish.





2. Arena Setup:

1.Arena

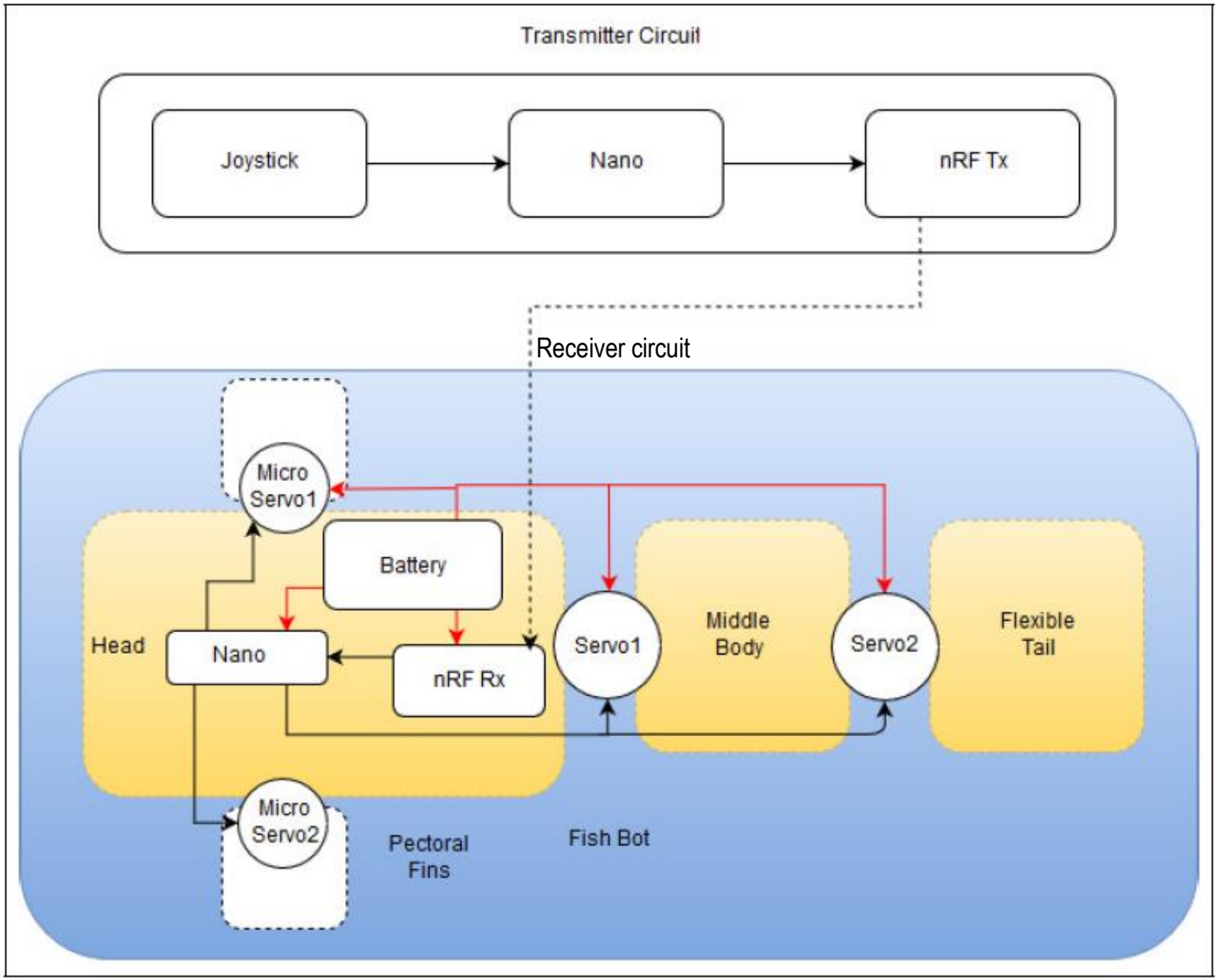


2.Pool

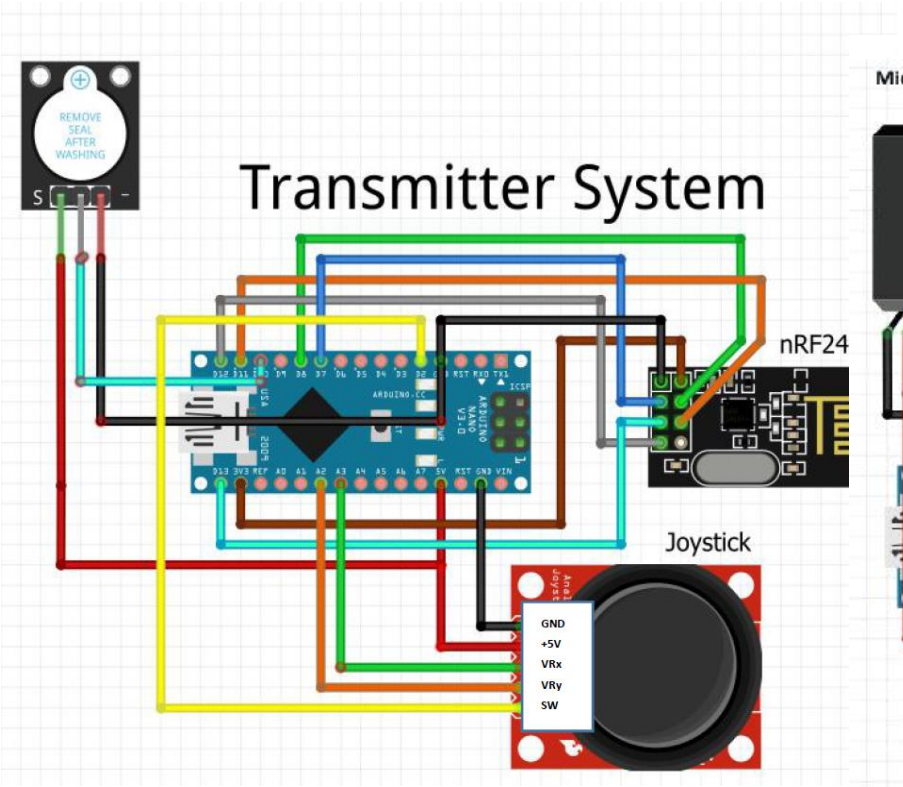
3.Gateway

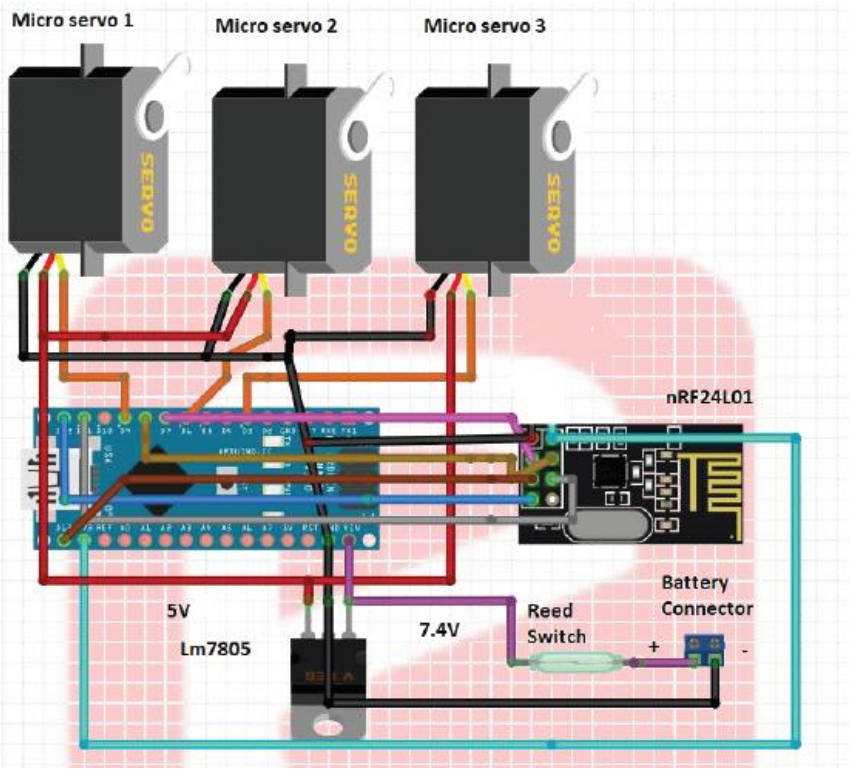
4.Bouy

3.Block Diagram:



4.Connection diagram:





1.Transmitter System

2.Receiver System

5.Challenges:

1. 3D designing and fabrication.
2. 3D Animation using Blender Software.
3. 3D Gaming using key controlled.
4. PCB designing and Fabrication.
5. Microcontroller programming
6. Wireless communication.
7. Waterproofing.

7.1 Waterproofing the Electronics:

- Nail Polish Coating
- Silicone Paste/Adhesive

7.2 Waterproofing of Fish:

- Custom Silicon Gasket using a 3D Printed Mould and Liquid Silicone Rubber.
- Candle Wax near the circular joints.
- Waterproof duct tape.

6.Hardware:

Components	Quantity
Arduino Nano(Atmega328 Controller)	2
NRF24L01	2
Joystick Module	1
Buzzer Module	2
Servo Motors	5
Batteries	5, 9v
Reed Switch	1
Slide Switch	5
Magnet.	2

Components	Quantity
Push Button	10
Timer Ic555	3
Hall Effect Sensor	27
LEDs	20
Capacitors & Resistor	_
Copper Clad	_
Programming Cable	2
IC7805,7809,7812	5
Jumper Wire	_
PLA 3D Printing Material	1kg

7.Software:

1.Autodesk Fusion 360:- 3D designing.

2.Autodesk eagle :- PCB Designing.

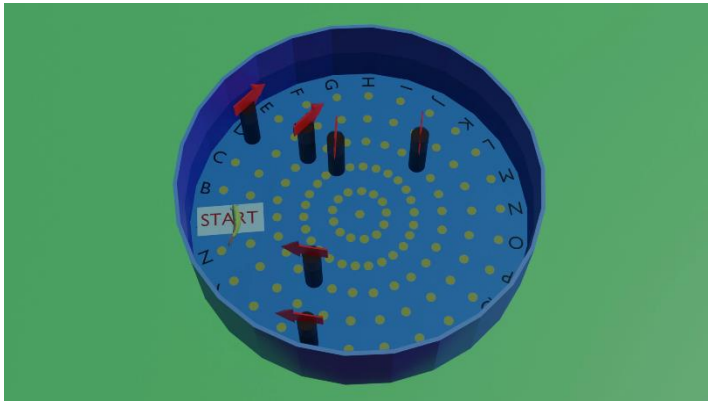
3.Arduino IDE`:- Programing the microcontroller.

4.Blender :- 3D Animation.

5. Latex :- For Documentation.

6.UBGE :- 3D Game using key controlled.

8. Videos:-



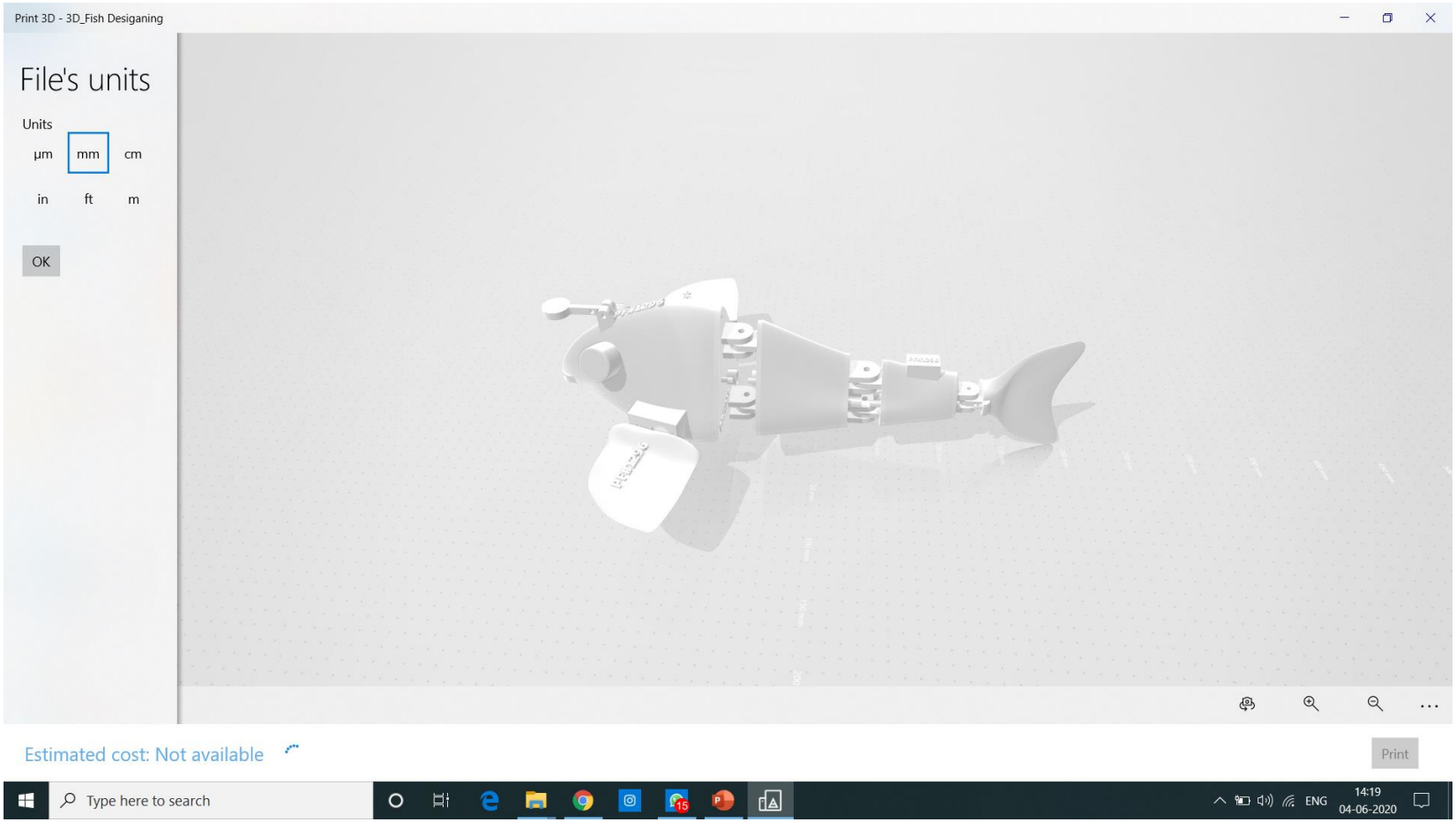
Video 1:Fish Animation in Pool.mp4
https://youtu.be/NSARryXW1uk

Video 3:- Progress_Video_2.mp4
https://youtu.be/BRsX5pmcscM

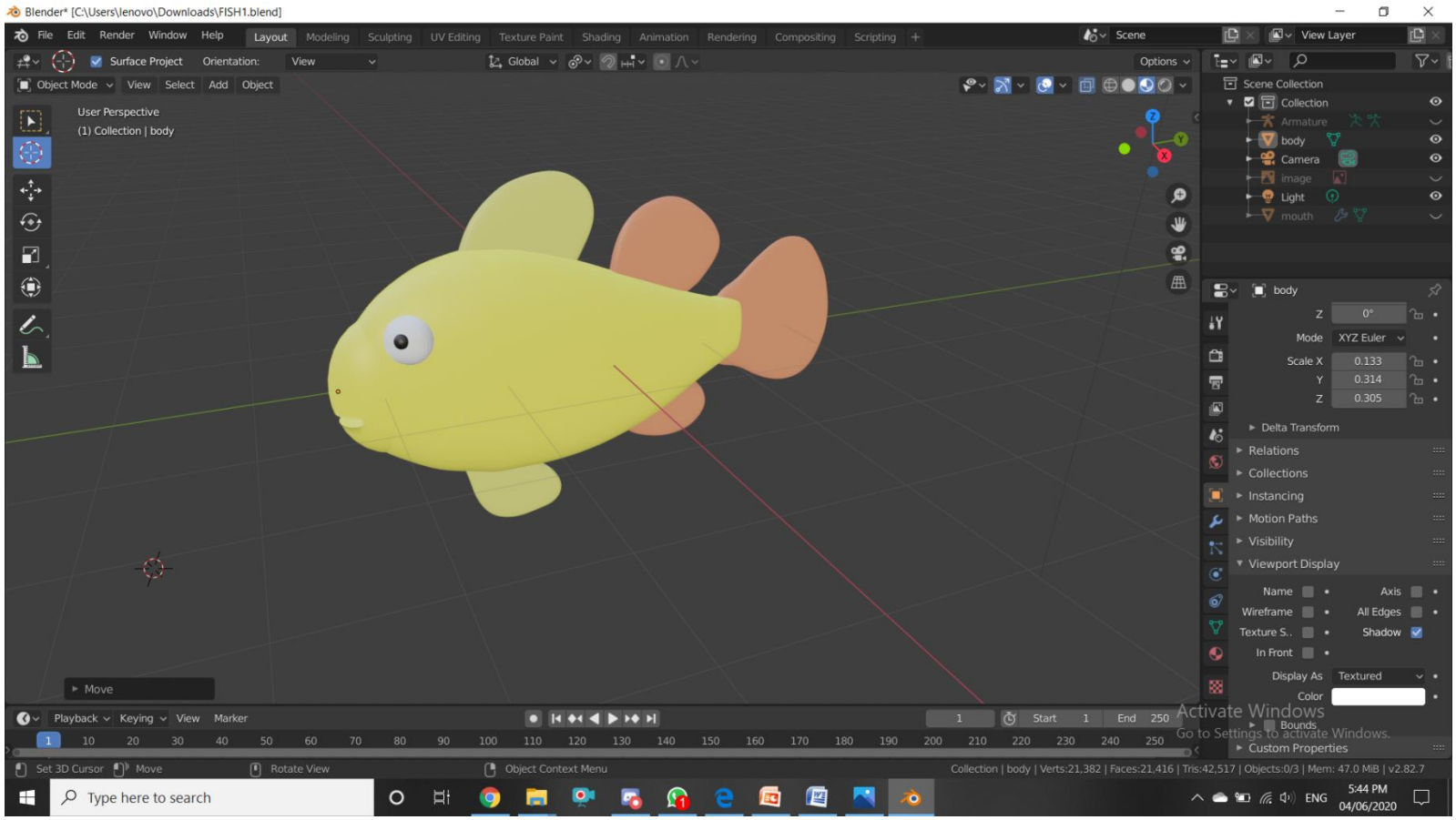
Video 2: Progress_Video_1.mp4
https://youtu.be/jCL4euYWsCw

Video 3:Final Demonstration
https://youtu.be/UlDN9iitq78

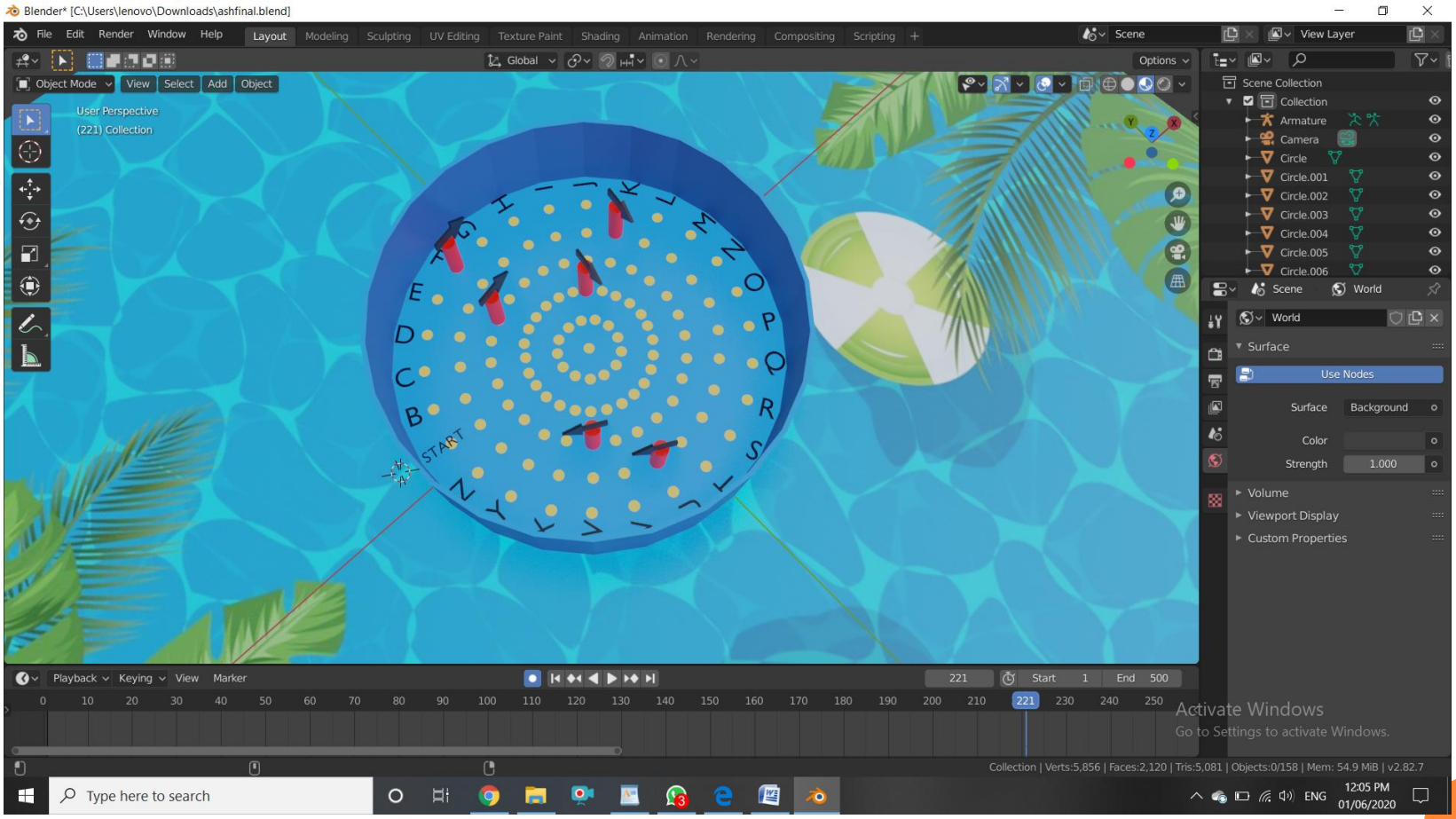
9. 3D Fish Design using Autodesk Fusion 360



10. 3D Fish using Blender 2.82



11. 3D Arena Design using Blender 2.82



10. Application:

1.Submarine wireless communication.

2.3D Game Design Platform.

3. Creating Animated movies.

4. Macrolevel Research on Aquatic life and habitat.

Thank you