

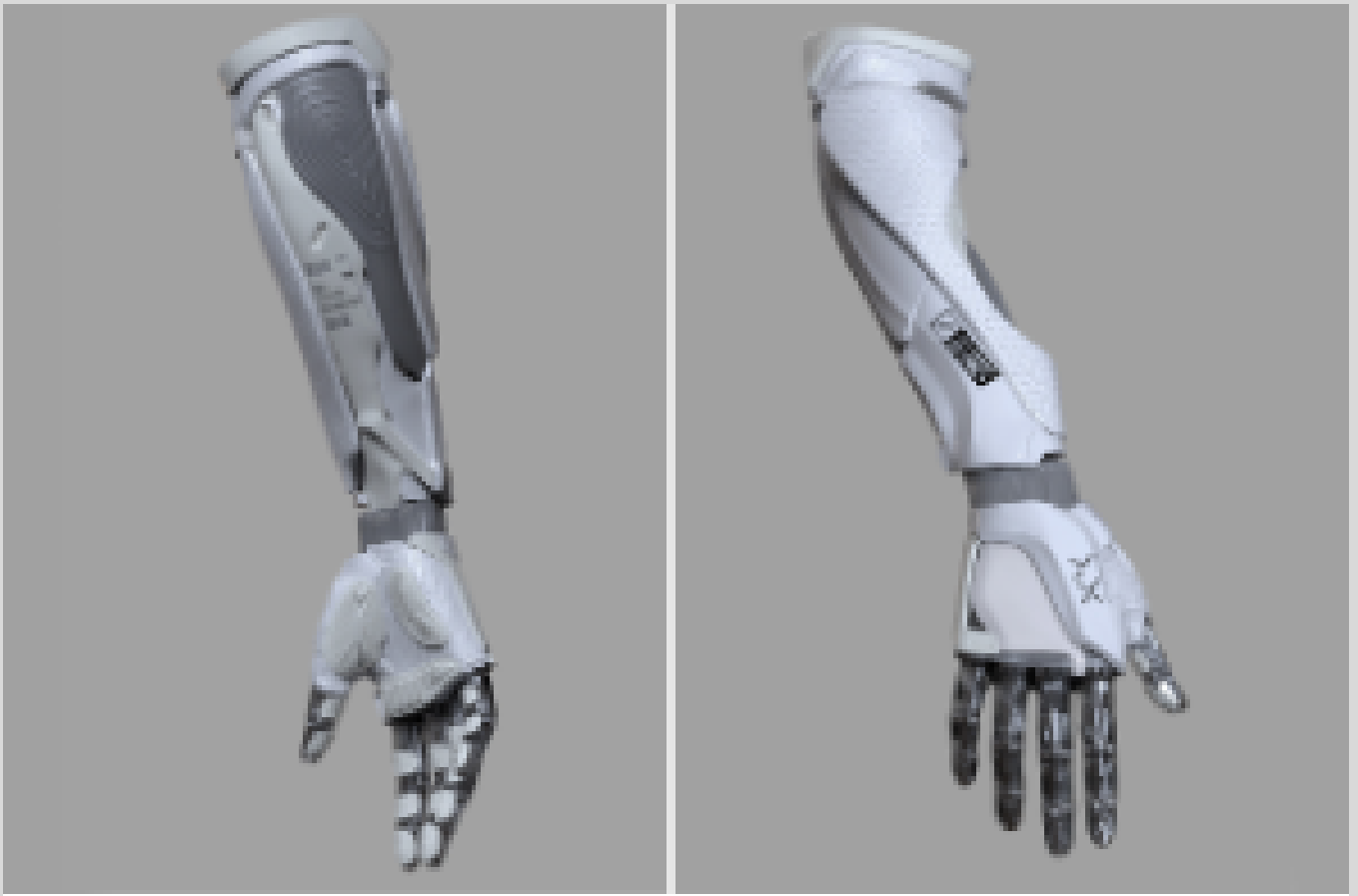
# CyberClimb

**Khanh Nguyen**

# Statement of Intent

I intend to make a Climb-specific prosthetic arm for Aaron, who has lost the right arm and has a passion for bushwalking and rock climbing. This arm is tailored to meet the unique needs and expectations of Aaron. The design will provide a functional and comfortable prosthesis that can enhance his climbing performance and quality of life. To achieve this, I will customize to fit Aaron's preferences, and climbing style ensuring it is personalized to his body and climbing style, while prioritizing the highest standards of safety, performance, comfort, and versatility in different climbing scenarios. It will also incorporate features such as adjustable grip. I will use an Ultrasonic Ranger sensor and servo motor in this Climb-specific prosthetic arm. The device is attached to the user using a silicone sleeve worn on the stump along with a fabric elastic band worn above the elbow to form a suction lock. The sleeves will be made of moisture-wicking material that is easy to clean and fits comfortably. The prosthetic arm will have a battery pack that will be small and lightweight, and it will be rechargeable. In creating this climb-specific prosthetic arm, I not only seek to restore his ability to climb but also to inspire others facing similar challenges, helping him reach new heights in climbing and life.

# Evaluation of existing ideas



This design is made by Yanko Design. The design has a very unique look while other prosthetic arms try to have a look of an actual limb to create a cohesive look with the user's body and skin tone. This design doesn't have a robotic look. I don't like the fingers on this design since it is not really climbing-specific.

# Evaluation of existing ideas



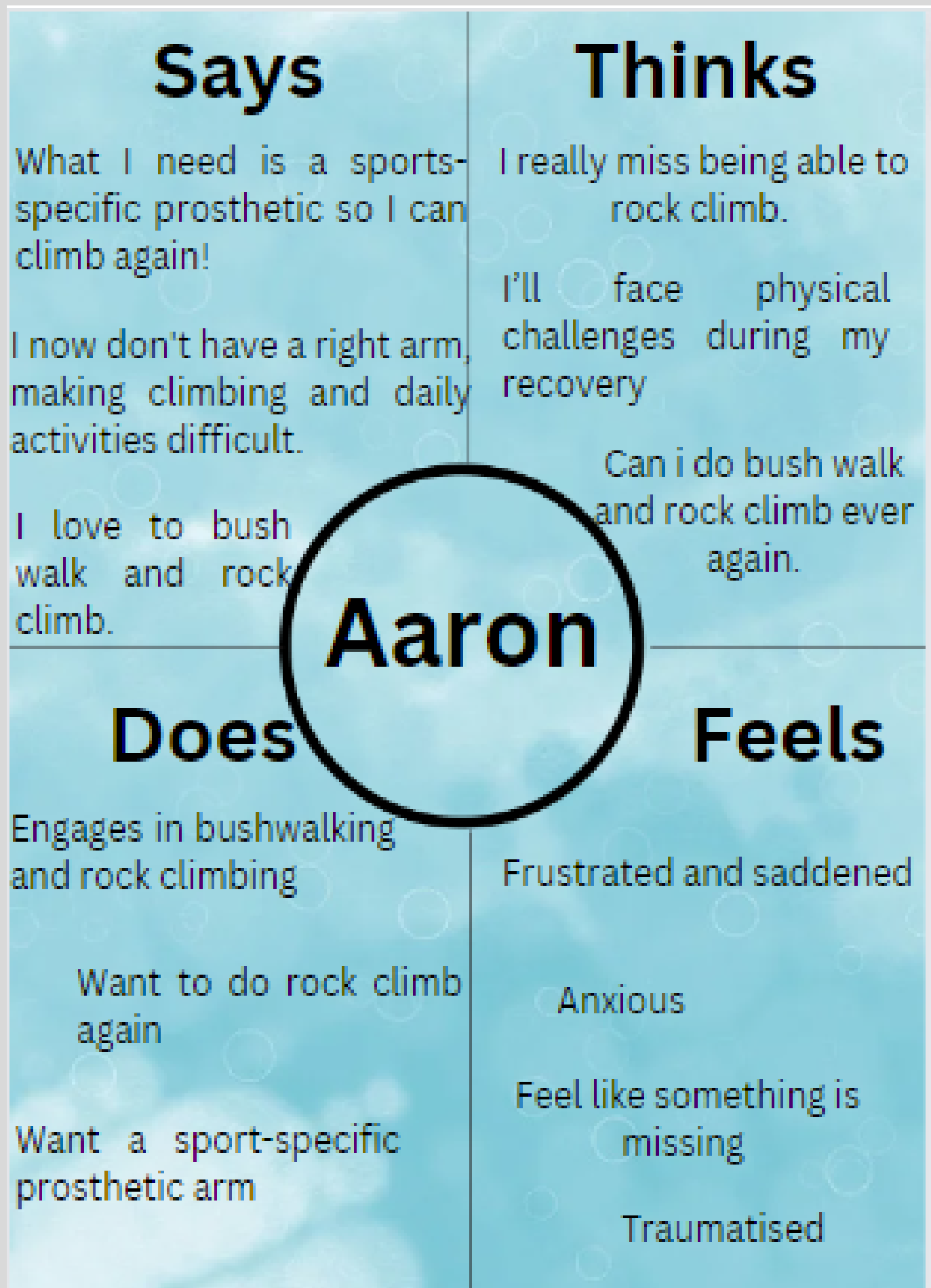
This prosthetic arm has a bright red, Iron Man-styled 3D-printed, it was made by Albert Manero, a UCF mechanical engineering doctoral student for a limbless 7 years old. I like how the design looks. The only thing that I dislike about this arm is that it looks heavy which may affect how Aaron climbs.

# Evaluation of existing ideas



This is a prosthetic arm made by a company called Scalo. I like how they use a hammer instead of a hand since it is used specifically for climbing. This would have Aaron climb faster but he also uses this prosthetic arm for performing daily activities.

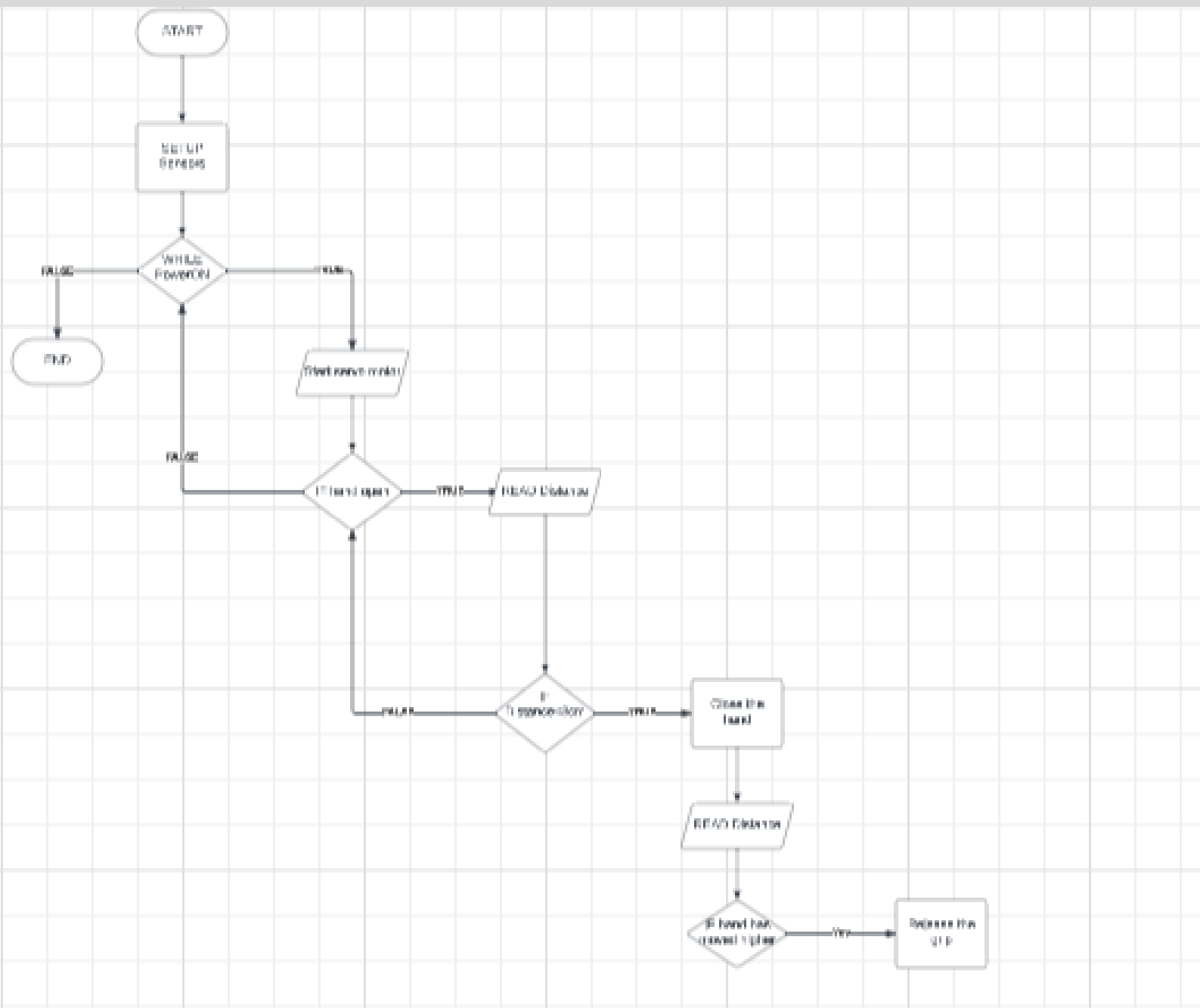
# Empathy map



# Pseudocode

```
START
SETUP sensors
WHILE power on
    Start servo motor
    IF hand open
        READ Distance
        IF Distance < 3cm
            Close the hand
            READ Distance
            IF hand has moved higher
                Release the grip
        END IF
    END IF
END IF
ENDWHILE
END
```

# Logic Flow Chart



[Click here to see clearly](#)



# Communication logs

For Aaron

Hey aaron,  
Could you send me the  
measurements of your stump so i can  
make the prosthetic arm fit your  
perfectly.

Thanks ( Oct 17,2023 11:34PM  
From Aaron

Hi Khanh,  
My Stump size is 10 cm

Aaron ( Oct 17,2023 11:36PM