

Mini-Bot

Animatronic robots

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1 Intro

Mini-Bot is a robot inspired by the Minions from the Despicable Me cartoon.. The robot will feature a 2-DOF head and a mouth mechanism capable of expressing basic emotions, such as happiness or sadness.

Functionally, the Mini-Bot will utilize a camera and computer vision algorithms to achieve two main goals: Face Tracking: Physically tracking a user's movement to keep their face in the frame.

Emotion Mimicry: Analyzing the user's facial expressions and replicating their emotions in real-time.

2 Methods

The most important tool I've used is a 3D printer. All the components not listed below were 3D printed.

- Dynamixel AX12
- Camera Logitech
- Power Supply

3 Code

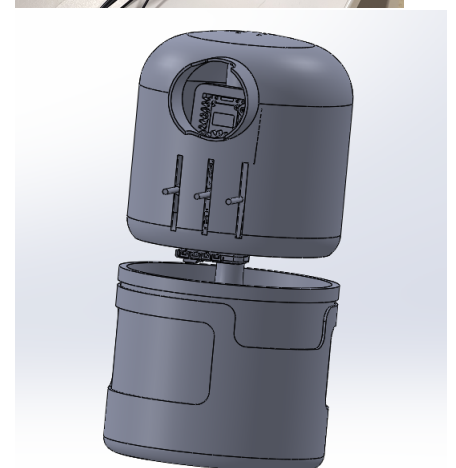
We programmed in python, and used a pc to run the code. Below, you'll find a list of the libraries I used:

- Deepface
- Cv2
- Dlib
- Imutils
- Numpy
- DynamixelSDK

4 Conclusion

If we had more time, we would focus on making the motion tracking smoother and faster. We also want to achieve realistic emotional expressions, which is a complex challenge involving both mechanics and programming. Mini-Bot taught us a lot about design and 3D printing, and we see great potential in continuing this project.

Extra figures



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