

## **Teeth Brush Helper**

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### **Abstract**

The robot was invented to help people to lower their workload. Nowadays, many robots are replacing human employees because the employee payments are heavier for the company, and the mistake of the robot is lower than the human employee. Before robotics technology was improved, humans did not believe in robotics invention. The robot sometimes makes mistakes and mixes up the trouble together. This project wants to discover the error and go back to the past.

Teeth brush helpers are helping humans to brush their teeth. However, it may have some trouble while the users brush their teeth. The teeth brush helper uses the robot arms[1] and other functions. For example, the human face detection [2] gives the teeth brush helper some chances to finish their teeth brushing mission. This project hopes to bring the funny moment to others and joke with the users.

### **Introduction**

In the past, invention was for improving human life quality. For example, Alexander Graham Bell [3], invented the telephone for people to communicate in March 1876. The Wright brothers [4], Wilbur and Orville Wright, invented the plane on the air in December 1903. Those inventions are improving human life quality. However, nowadays the inventions are being useless and just for fun. The useless machine was invented by Bruno Munari in the 1930s. He is an Italian artist. He aims to fight against society and make some difference on the invention of machines. Besides that, Katerina Kamprani built an uncomfortable collection with different daily life objects that we will use everyday. As a result we want to make a useless and funny machine that is joyful for humans. We design the teeth brush helper for helping people to brush their teeth and having fun. We hope the user of the tooth brush helper can save their time for other purposes.

### **Background**

Brushing our teeth is very important to our oral health, Haruaki Hayasaki mentioned in Japanese Dental Science Review that brush the teeth can remove plaque removal which cause people to have the periodontal disease and gingivitis, therefore brush our teeth can protect our oral (Haruaki, 2014) Hayasaki, 「 Tooth Brushing for Oral Prophylaxis 」. We always hear many academic or some doctor recommend brush teeth

two times in a day which can effective and better protection of the mouth, but Trends in the research of toothbrushing in 20 countries/regions from 1994 to 2010 which show prevalence of brushing more than once a day continued to decline in 2010 (Honkala, 2015)Honkala, 「 Trends in toothbrushing in 20 countries/regions from 1994 to 2010 」. Moreover, based on the covid-19 problem which change our daily life, we need to wear a mask everyday to avoid to get the covid-19 but this situation affect human' behavior of brush teeth, Peloso have research to show people reduce brushing times because they wear the mask (Peloso, 2021)Pinzan-Vercelino, 「 Does the use of face masks during the COVID-19 pandemic impact on oral hygiene habits, oral conditions, reasons to seek dental care and esthetic concerns? 」. Therefore, we want to create a robot to help us with brushing and reminders, we hope this robot will improve their bad behavior and daily life.

We alway busy in the morning. Sometimes we may oversleep and stay in bed for a long time to reduce the time available in the morning. We need to check social media, make breakfast, make up and catch the bus. Also people always finish those things in a short time, so this may increase our time pressure. Roxburgh has researched the association between subjective time pressure and depression, he shows the time pressure will increase people to have depression (Roxburgh, 2004). Therefore, we created something to decrease the time pressure in the morning and hope to improve and help people's mental state, so we want to create the brushing robot to help people to brush and earn more time to reduce the time pressure.

We try to make the robot into the non-perfect way, not only let people know the robot which can't totally replace humans, but the robot also has its technical problem, even nowadays the technology has a huge advance, the technology of the robot have improved and started to be growing up, we can see the robot have some problem in our society, for example, recently Hong Kong restaurant has a new element to replace employee which is the robot to replace human to the delivery order, we can see those robots have a problem like it will non-stop to say "Excuse me" when the customer or something had blocked the robot, so the robot can't totally replace human because the robot does not have any emotion and thought. However, we also try to use non-perfect way of the robot to bring our pleasure to users, it is because have research to show the robot which has a mistake, human will more like a robot and attracted by the robot, it is because the robot will more like a human as robot have a mistake and no longer perfect and out of reach, also the robot has a mistake, human will feel interesting (Nicole, 2017).

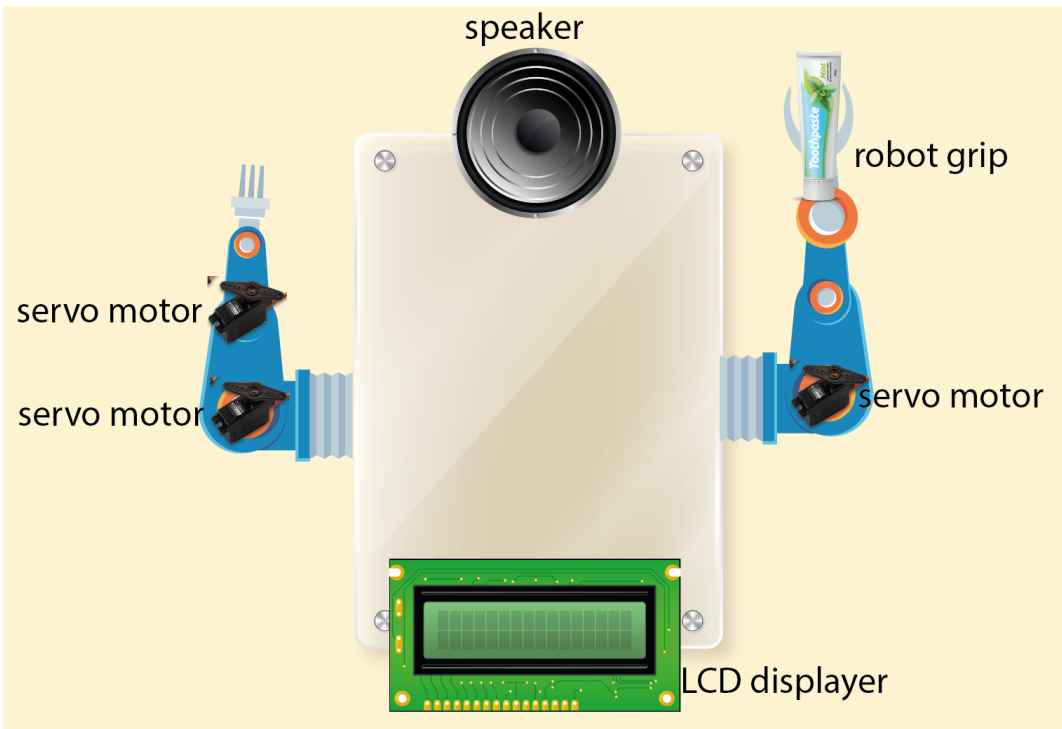
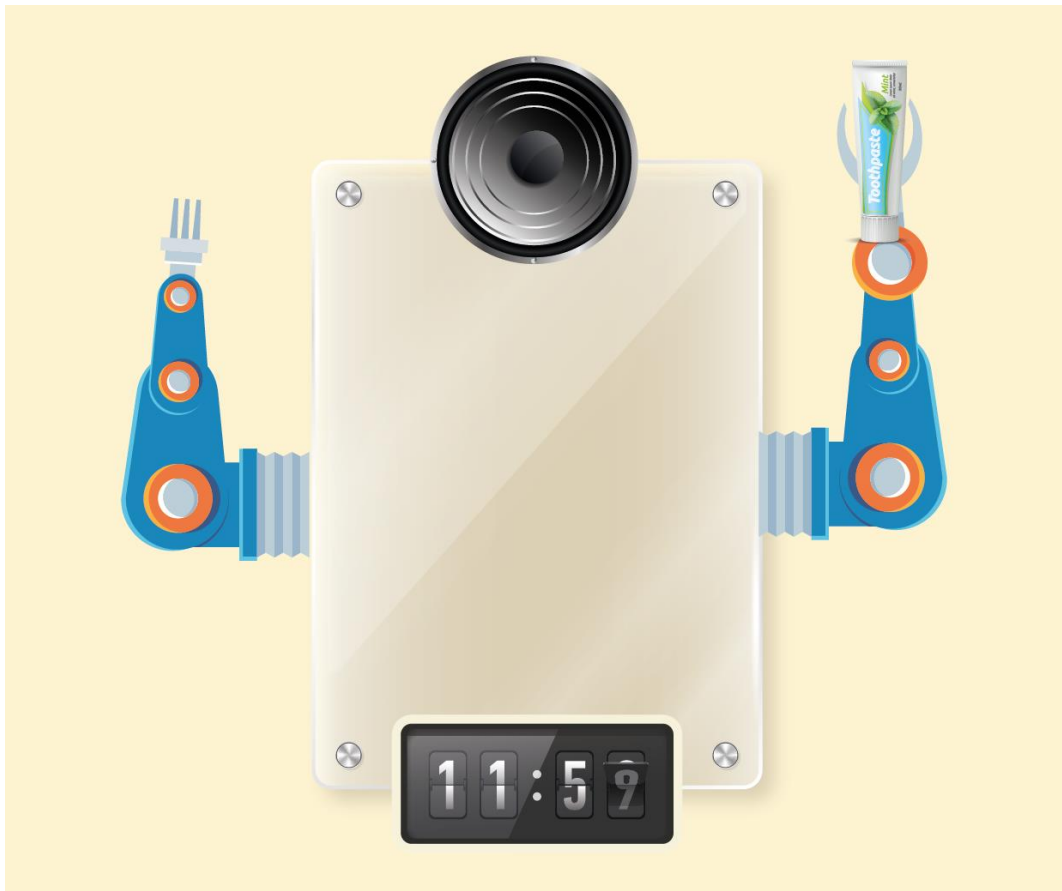
## **Methods**

We will create two robot arms, one robot arm to control the movement of the toothbrush, and the other robot arm to press the toothpaste. Also, we have a display to show the time and add a speaker to remind the user. For the first robot arm, we will use two servo motors to create, one motor is used to adjust the height and the other is to control the movement of the toothbrush. On the other robot arm, this arm needs one motor and one robot grip, one motor is used to adjust the height of toothpaste, and the robot grip used to press the toothpaste.

### **material list:**

- Servo motor x3
- Robot grip x1
- LCD displayer x1
- Arduino x1
- Speakerx1

ideal image



mockup of Results

<https://www.youtube.com/watch?v=cHZOY0HDY5c>

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