

Tianrui Hu & Yifan Pan

ECE 153B

Project Proposal

Automatic Milk Tea Machine

Overview

Milk tea is one of the most famous drinks flourishes in recent year. Making good and tasteful milk tea requires well-balanced ratio of materials (e.g., milk, green tea, and sugar). Moreover, different shaking methods are implemented on various styles of milk tea. Traditionally these processes are done by handmade.

The goal of this project is designing an automatic milk tea machine based on STM32 board, which can finish the milk tea production automatically with precise quantitatively control. In this machine, motors with fine design can finish both mixture process and shaking process mentioned description above. This machine stores various recipes of milk tea and Thai tea inside. Users can simply fill the machine with raw materials and just wait for delicious milk tea.

More than achieving the basic function, we also plan to add an LCD display and a Bluetooth module to the machine, which user can control the machine on mobile phone and monitor the production via LCD display. A support Android application is also developed for this purpose.

Peripherals

User Interface:

- LCD Display *128x64 Driver IIC I2C*
- Bluetooth Module *HC-05*

Milk Tea Production:

- Motor Drive Controller Board *L298N*
- 6x DC motors
- 2x Battery holders

Serial Interface Protocols

- I2C protocol: LCD Display control

- UART protocol: Bluetooth Module

Software structure

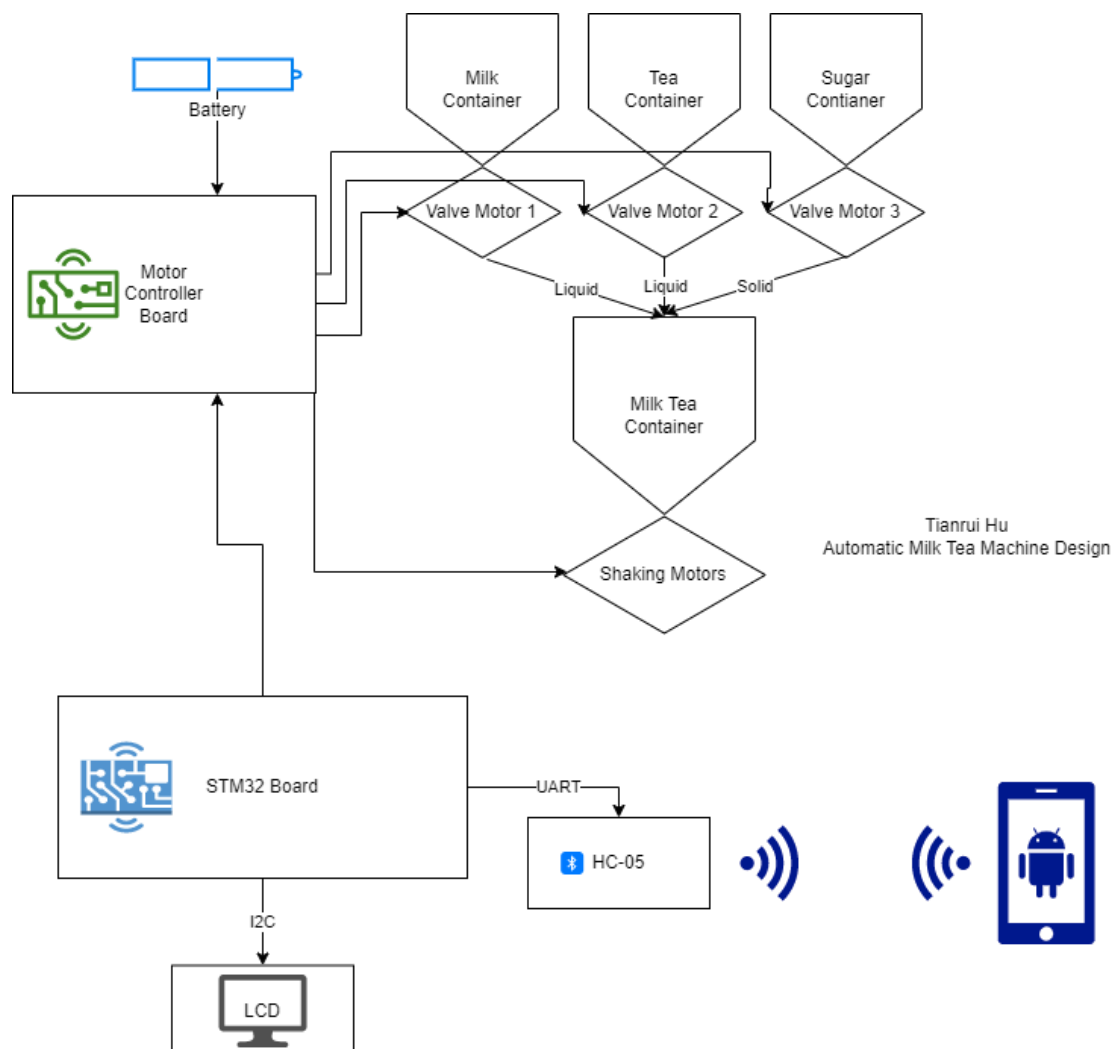
STM32 Board:

- Program I2C and UART protocols to drive LCD display and Bluetooth communication.
- Design LCD messages about production process.
- Implement milk tea production procession with motors.
- Store multiple milk tea recipes.

Android

- Design an Android application using Bluetooth for user to control the machine.

Block diagram



Responsibility list for everyone in group

Tianrui Hu:

- Hardware Design
- Structure Assemble
- Android Application Design
- STM32 software development

Yifan Pan:

- Serial interface protocols implement
- STM32 software development

Goal

Our basic goal is to successfully build up this machine and ensure it produces simple milk tea. User interface should also work correctly. Moreover, the best-scenario goal is supporting customized milk tea production defined by user.

Website

<https://sites.google.com/view/projekt-novosibirsk/home>