

Elcie, an Elderly Care Companion

Designing a low cost robotic assistant for the elderly

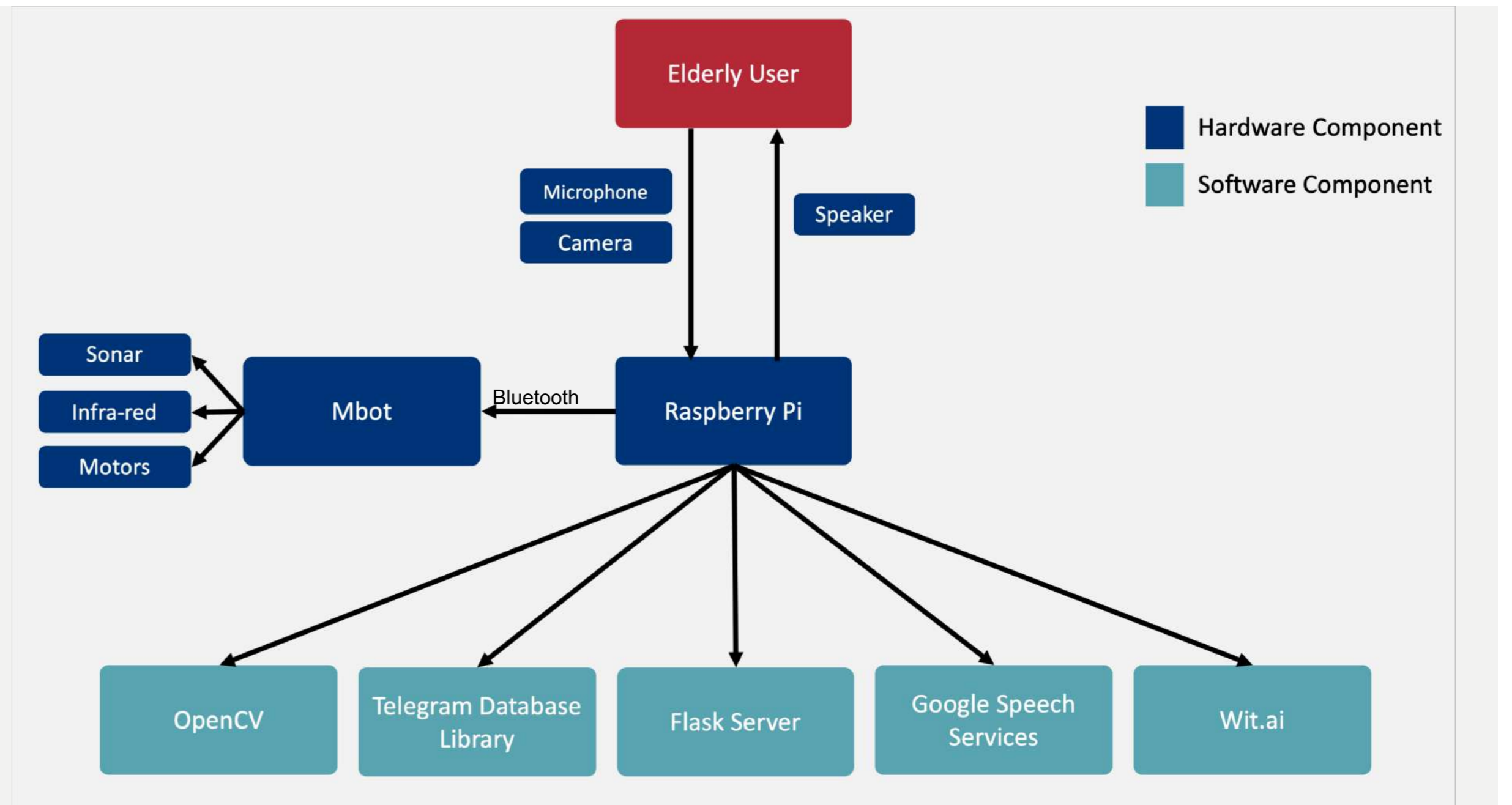
Objectives

Aging population will be one of the biggest problems for first world countries. The United Nations report that the old-age dependency ratio (ratio of people above 65 years old per a hundred people between 15 to 64 years old) will rise from 11.3 in 2005 to 18 in 2030.

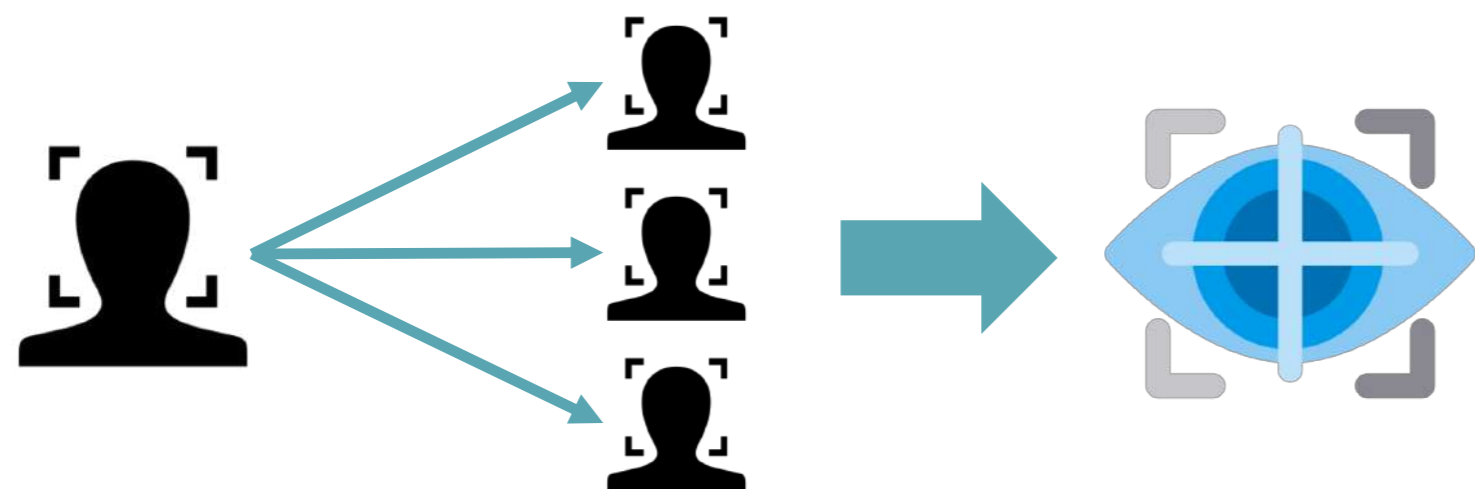
People in developed countries live longer but have more age-related illnesses. 1 in 5 elderly persons exhibited signs of depression in 2012 (Ng, 2013). In 2015, 126 elderly committed suicide, a 60% increase from 2000 (Tai, 2015).

Cheap electronics allow creation of mass market personal companion robots that can target the specific problems that the elderly face. These robots will have to be designed to reduce loneliness while improving health and be elderly-friendly.

Elcie uses the low cost Arduino and Raspberry Pi. This project aims to optimise the design of an elderly care robot to work well with the limitations of these affordable hardware components.



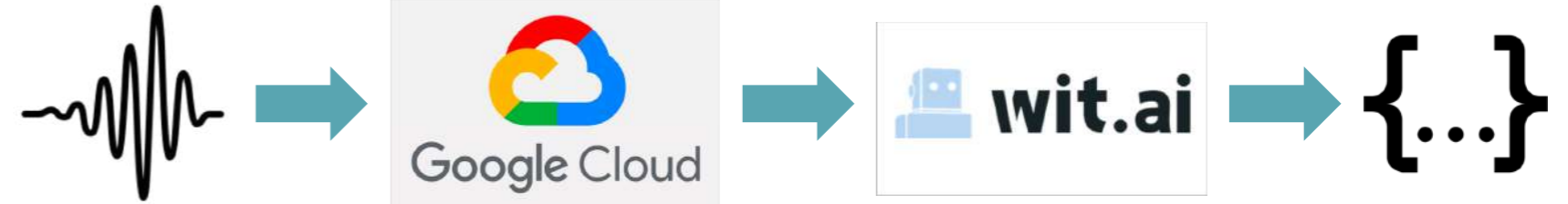
Elderly Tracking



- Comparison of Single Shot Detector, dlib and You Only Look Once algorithms
- Haar cascade face detection, dlib based facial embeddings
- Support Vector Machine matching

Voice Commands

"Elcie, turn on the lights in the kitchen"

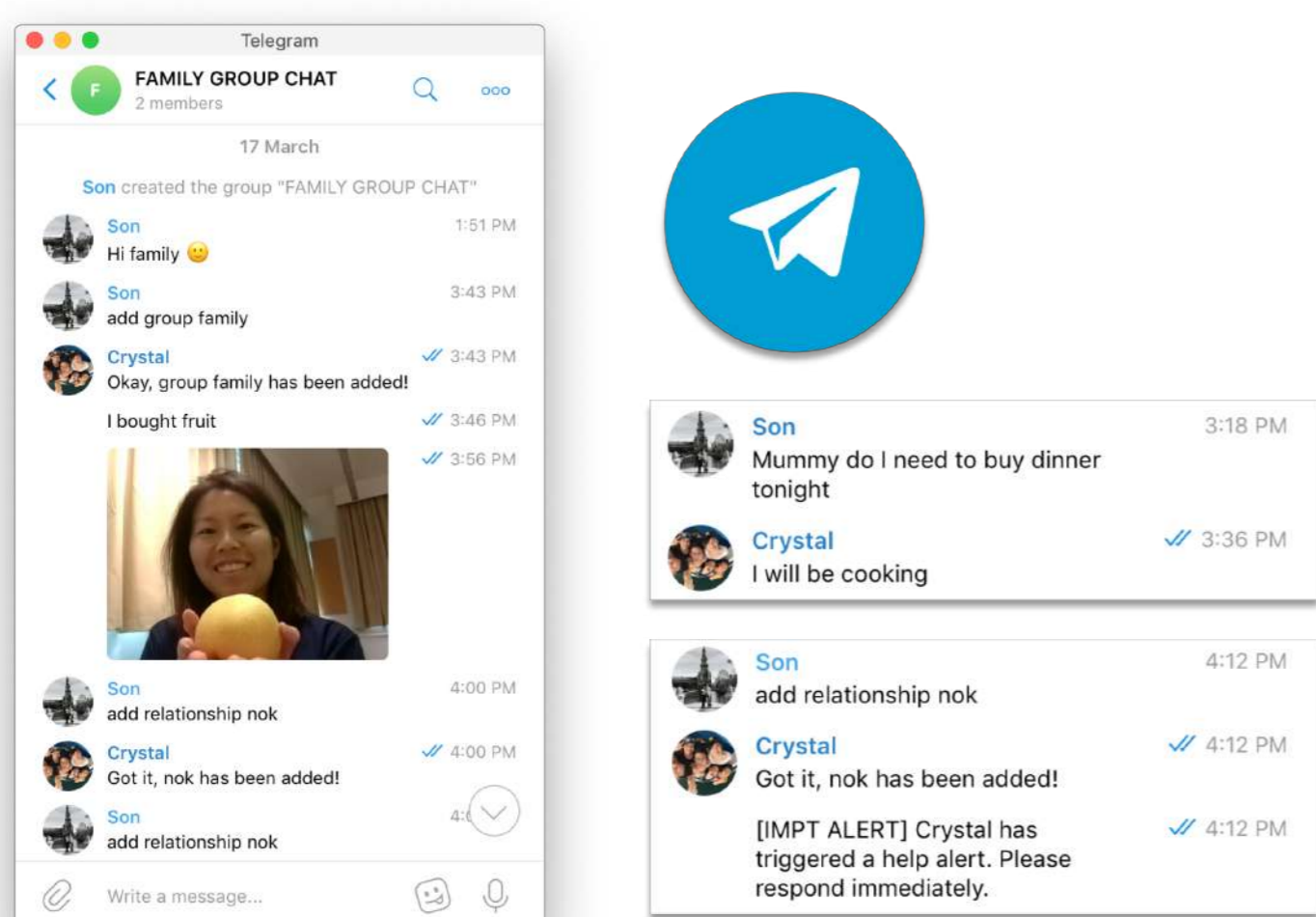


- Comparison of NLP providers Google DialogFlow and Facebook wit.ai
- Transcribing using Google Cloud Speech to text
- Text to intents using pre-trained local wit.ai model

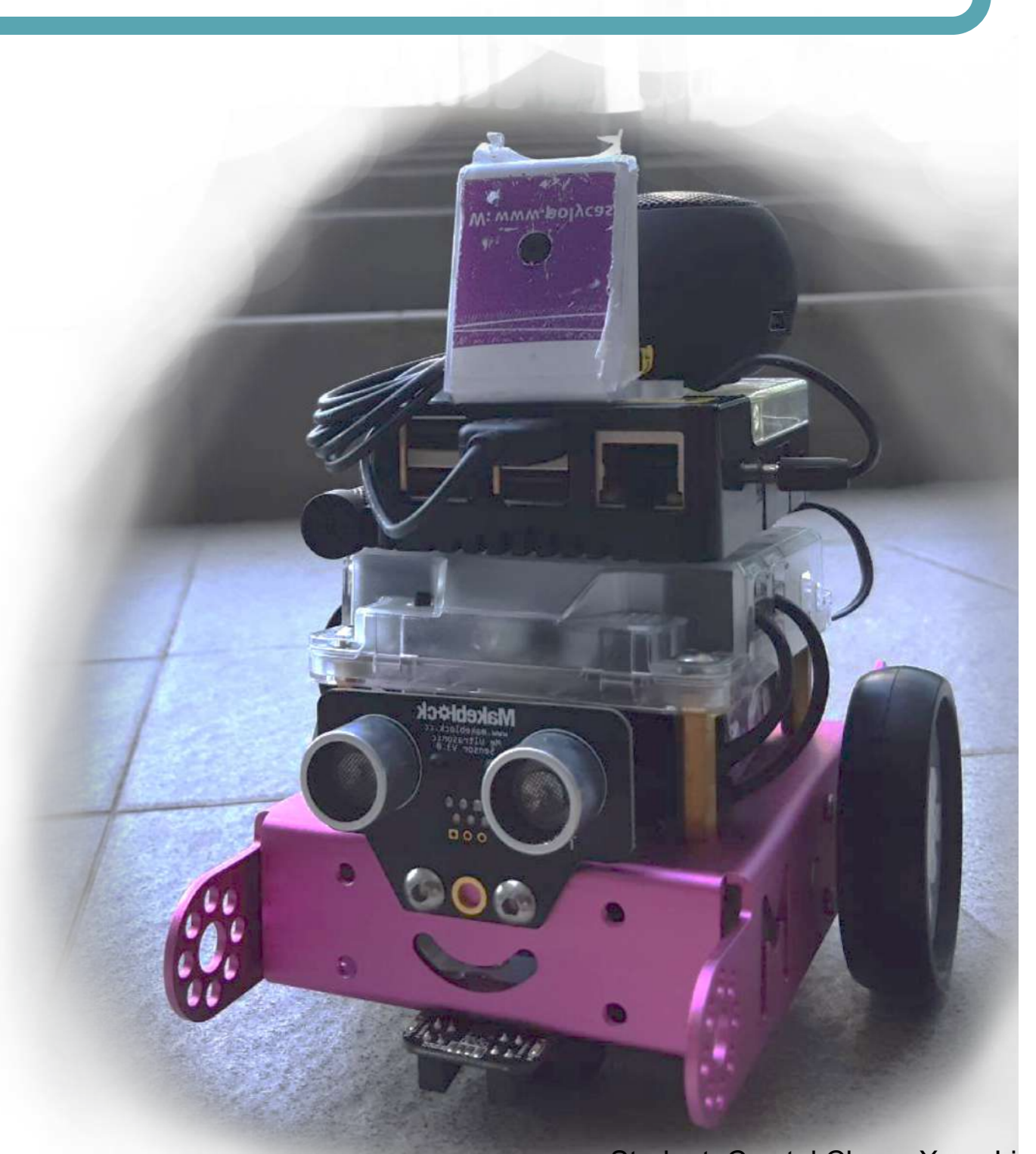
QR Codes for functions



Telegram Client built for Raspberry Pi



- Telegram client built with Telethon
- User can send messages, photos to individuals and groups
- Easy initialisation to address book
- Emergency alerts to Next of Kin



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