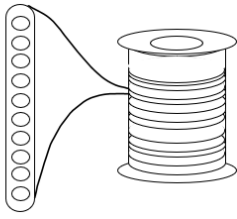


Technical Specifications:

This is an open-source robotic microfluidic blood analysis using Raspberry Pi.



The test strips are melt-extruded fluoropolymer MCF containing 10 microcapillaries.

A strip holder contains 12 strips.



A light source is built using white LEDs. It is suitable for colorimetric use.



Opal acrylic light diffuser sheet and black cast acrylic sheet were used. LED strips were connected to each other with black and red wires. And the strips were glued with silicone on the black sheet.

The sheets were then fixed to V-slot aluminium linear rail extrusions. The light source is controlled by a grove single relay.

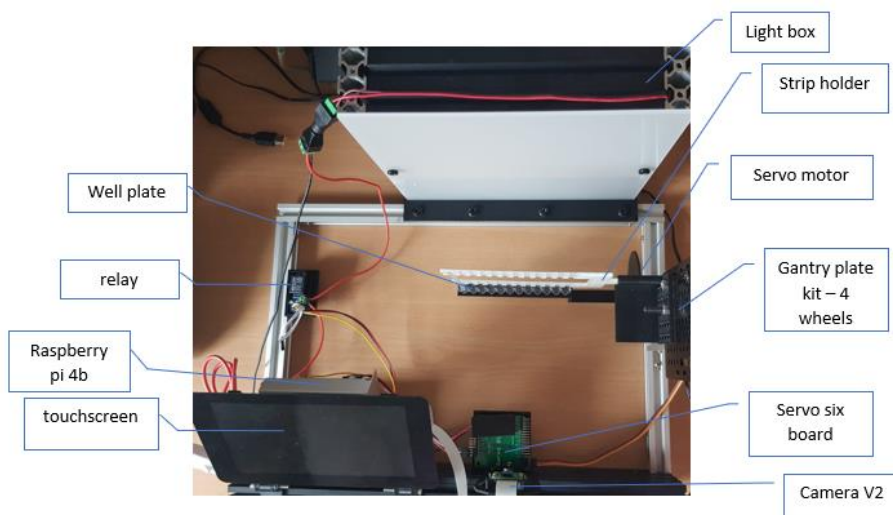
Technical Specifications:

Initially, a handmade LED turns on by controlling a relay, after that a servo motor via the gantry plate and wheels dip the strip holder into the blood sample which moves into the capillaries by capillary action and after the test is completed the strip holder goes back and the LED turns off.

The servo motor needs 4 batteries. In the meantime, a raspberry pi camera V2 takes images during the experiment.

This camera can take between 6 and 8 images within 1 second. Its resolution is 3280x2464.

Taking the images can be previewed on the touchscreen and the test can be started by clicking run on the script via touchscreen.



There is only one script that can control the relay (LED), the servo motor and the camera. With the one-click, the test can be done. The python script has instructions about what the script does and how to change features such as camera resolution, fps, experiment time etc.

After the images are taken, the calculation part begins. From the photos taken in first step, the rise of the blood sample and velocity are calculated, and the data are saved.

The rig gives image like the following:

