FIRE v2.6
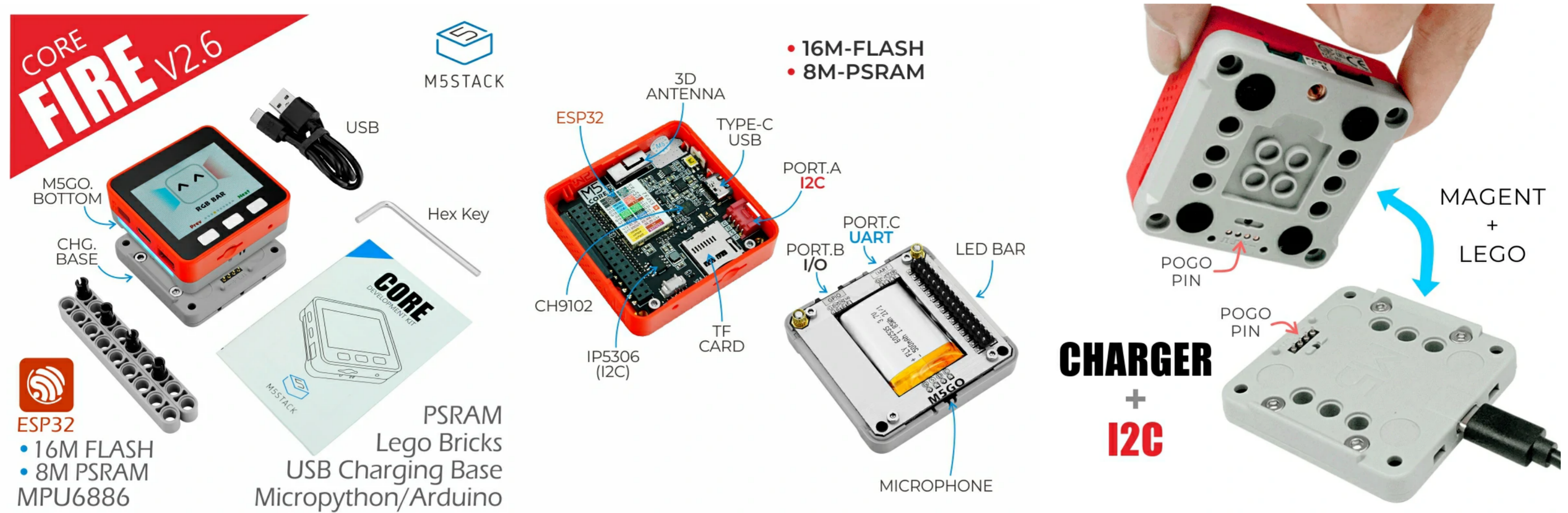
Tutorials & Quick Start

Select the development platform you want to use, view the corresponding tutorials & get started quickly.

UIFlow   Arduino   Micropython

Description

M5Stack **FIRE** It ' a cost-effective **Wi-Fi & Bluetooth** dual-mode IoT controller adopts Espressif **ESP32** main control chip, equipped with two low-power **Xtensa® 32-bit LX6 microprocessors**, with main frequency up to **240MHz**. With **8M PSRAM** + **16M FLASH** memory, **2.0-inch full-color HD IPS display** panel, IMU, LED, microphone, speaker, TFCard slot and other peripherals. The full-coverage case ensures circuit stability even in complex industrial applications. The internal offers a wide range of common interface resources (ADC/DAC/I2C/UART/SPI, etc.) which is highly expandable. This functional and powerful IoT controller is very applicable to various product prototyping, industrial control and smart building applications.

- **High productization** .
  - Exquisite designs, Prototyping right into products
  - Product-grade full-coverage cover for more stable circuit operation

- **Low code development** :
  - Support UIFlow graphical programming platform, scripting-free, cloud push
  - Fully compatible with Arduino, ESP32-IDF and other mainstream development platforms
  - Support FreeRTOS, with dual-core and multitasking mechanism, it can perform the tasks efficiently, Program optimization.

- **High integration** .
  - 2.0-inch IPS display panel, 6-axis IMU, programmable RGB lights x10, microphone,

speaker, custom buttons x3

- Built-in Li-ion power, integrated power management chip, supports TypeC and POGO PIN
- finely tuned RF circuit for stable and reliable wireless communication
  - **Strong expandability** .
    - GROVE expansion ports x3 (I2C, GPIO, UART)
    - Easy access to M5Stack software and hardware system, stackable module design, plug-and-play sensor expansion

Note：
GPIO 16 / 17 of FIRE are connected to PSRAM by default, so when you connect or stack other modules, you need to pay attention to avoid conflicts with these two pins to prevent the device from not working properly and generating instability..

Switching operations：
Power on：Click the red button on the left
Power off: Quickly double-click the red button on the left
USB power: By default, It can not be shutdown when USB power is on.

Driver Installation

Click the link below to download the driver that matches the operating system. There are currently two driver chip versions, CP210X (for CP2104 version)/CP34X (for CH9102 version) driver compressed package. After decompressing the compressed package, select the installation package corresponding to the number of operating systems to install. (If you are not sure which USB chip your device uses, you can install two drivers at the same time. During the installation process of CH9102_VCP_SER_MacOS , an error may occur, but the installation is actually completed, just ignore it.)

Driver name	Applicable driver chip	Download link
CP210x_VCP_Windows	CP2104	Download
CP210x_VCP_MacOS	CP2104	Download

CP210x_VCP_Linux	CP2104	Download
CH9102_VCP_SER_Windows	CH9102	Download
CH9102_VCP_SER_MacOS	CH9102	Download

Product Features

- Based on ESP32 development
- 8M PSRAM + 16M FLASH memory combination
- Integrated HD IPS display panel with various hardware peripherals
- Rich resources interface, compatible with M5Stack stacking modules and sensors, highly expandable.
- Adopt M5GO BOTTOM base compatible with 8mm size LEGO blocks, the structure is full of fun to build.
- Microsoft Azure authentication device
- Compatible with multi-platform development:
    - UIFlow
   - MicroPython
    - Arduino

Included

- 1x M5Stack FIRE
- 1x M5GO Charging Base
- 2x LEGO Building Blocks
- 5x LEGO Connections
- 1x M3 Hex Wrench
- 1x Type-C USB (50cm)
- 1x User's Manual

Applications

- IoT Controller
- DIY creator works
- Smart Home Control

Specifications

Specifications	Parameters
ESP32-D0WDQ6-V3	240MHz dual core, 600 DMIPS, 520KB SRAM, Wi-Fi, dual mode Bluetooth
Flash	16MB
PSRAM	8MB
Input power	5V @ 500mA
Interface	TypeC x1, POGO PIN x1, I2C x1, GPIO x1, UART x1
Keys	Custom Keys x 3
LCD screen	2.0"@320*240 ILI9342C IPS panel, maximum brightness 853nit
Speaker	1W-0928
Microphone	Analog BSE3729 Microphone
IMU	6-axis MPU6886
USB Chip	CH9102F
LED	SK6812 RGB LED x 10
Antenna	2.4G 3D antenna
Battery - 500 mAh @ 3.7V	
Operating Temperature	0°C to 40°C
Net Weight	62.3g
Gross Weight	162g
Product Dimensions	54mm x 54mm x 30.5mm
Package Size	105mm x 65mm x 40mm
Cover Material	Plastic (PC)
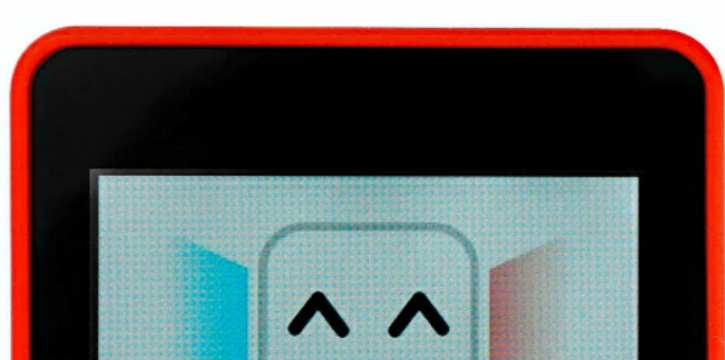
EasyLoader

EasyLoader It's a simple yet fast program burner has built-in product-related case programs, which can be burned into the master control in simple steps to verify functional and performance

Download Windows Version Easyloader

Case Description:
Load the UIFlow firmware, the built-in demo program supports accelerometer, LED BAR, microphone, keypad and some peripheral sensors testing, the firmware can be used for UIFlow graphical programming.

Pin Mapping

LCD screen & TF card

LCD Pixel: 320x240 TF card support up to 16GB

ESP32 Chip	GPIO23	GPIO19	GPIO18	GPIO14	GPIO27	GPIO33
ILI9342C	MOSI/ MISO	/	CLK	CS	DC	RST
TF Card	MOSI	MISO	CLK			

Button & Speaker

ESP32 Chip	GPIO39	GPIO38	GPIO37	GPIO25
Button Pins	BUTTON A	BUTTON B	BUTTON C	

GROVE Interface A & IP5306

The power management chip (IP5306) is a custom I2C version, and its I2C address is 0x75. Click here to view the IP5306's register manual.

ESP32 Chip	GPIO22	GPIO21	5V	GND
GROVE A	SCL	SDA	5V	GND
IP5306	SCL	SDA	5V	GND

IP5306 charge/discharge, voltage parameters

Charging			Discharging
0.00 ~ 3.40V -> 0%			4.20 ~ 4.07V -> 100%
3.40 ~ 3.61V -> 25%			4.07 ~ 3.81V -> 75%
3.61 ~ 3.88V -> 50%			3.81 ~ 3.55V -> 50%
3.88 ~ 4.12V -> 75%			3.55 ~ 3.33V -> 25%
4.12 ~ / -> 100%			3.33 ~ 0.00V -> 0%

MPU6886 3-axis accelerometer + 3-axis gyroscope

MPU6886 I2C address 0x68

ESP32 Chip	GPIO22	GPIO21	5V	GND
MPU6886	SCL	SDA	5V	GND

▎M5GO Base Pins

GROVE Interface B

ESP32 Chip	GPIO36	GPIO26	5V	GND
GROVE B	GPIO36	GPIO26	5V	GND

GROVE Interface C

ESP32 Chip	GPIO16	GPIO17	5V	GND

ESP32 Chip	GPIO16	GPIO17	5V	GND
GROVE C	RXD	TXD	5V	GND

LED strip & microphone & speaker

ESP32 Chip	GPIO15	GPIO34	GPIO25
hardware	SIG Pin	MIC Pin	Speaker Pin

M5 Port Description

PORT	PIN	Note:
PORT-A(red)	G21/22	I2C
PORT-B(black)	G26/36	DAC/ADC
PORT-C(blue)	G16/17	UART

ESP32 ADC/DAC

ADC1	ADC2	DAC1	DAC2
8 Channel	10 Channel	2 Channel	2 Channel
G32-39	G0/2/4/12-15/25-27	G25	G26

M-BUS

GPIO TYPE	Analog Function		M-BUS				Analog Function	GPIO TYPE
			LINE 0		LINE 1			
			GND	ADC		G35	ADC1_CH7	I
			GND	ADC		G36	ADC1_CH0	I
			GND	RST		EN		
I/O/T		G23	MOSI	DAC/SPK		G25	ADC2_CH8	I/O/T
I/O/T		G19	MISO	DAC		G26	ADC2_CH9	I/O/T
I/O/T		G18	SCK	3.3v				
I/O/T		G3	RXD1	TXD1		G1		I/O/T
I/O/T		G16	RXD2	TXD2		G17		I/O/T
I/O/T		G21	SDA	SCL		G22		I/O/T
I/O/T	ADC2_CH2/T2	G2	GPIO	GPIO		G5		I/O/T

I/O/T	ADC2_CH5	G12	IIS_SK	IIS_WS	G13	ADC2_CH4/T4	I/O/T
I/O/T	ADC2_CH3/T3	G15	IIS_OUT	IIS_MK	G0	ADC2_CH1/T1	I/O/T
			HPWR	IIS_IN	G34	ADC1_CH6	I
			HPWR	5V			
			HPWR	BATTERY			

When use the RGB LEDs of GPIO15, we recommend initialize the pins Mode(15, OUTPUT_OPEN_DRAIN); For more info about pin assignment and pin remapping, please refer to ESP32 datasheet
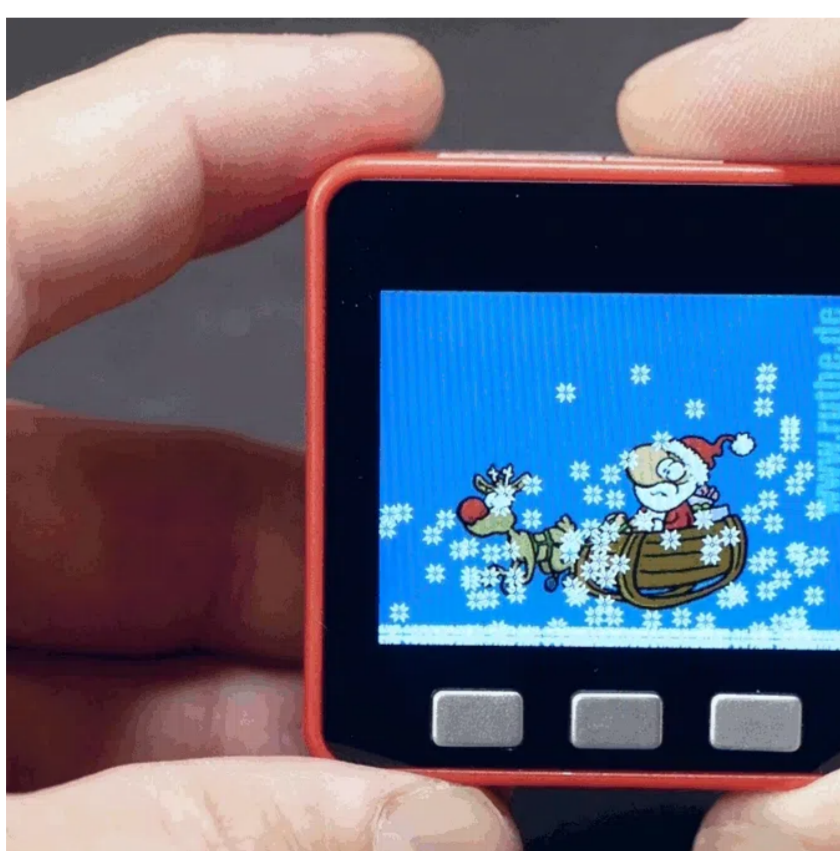
Related Links

- **Datasheet**
  - ESP32
  - MPU6886
  - IP5306
- **API**
  - Arduino API
  - Github

Schematics

- Schematics

Learn

M5Stack Christmas Snow Globe

Modern times make modern solutions possible. Therefore, the step to a digital snow globe is not that far.
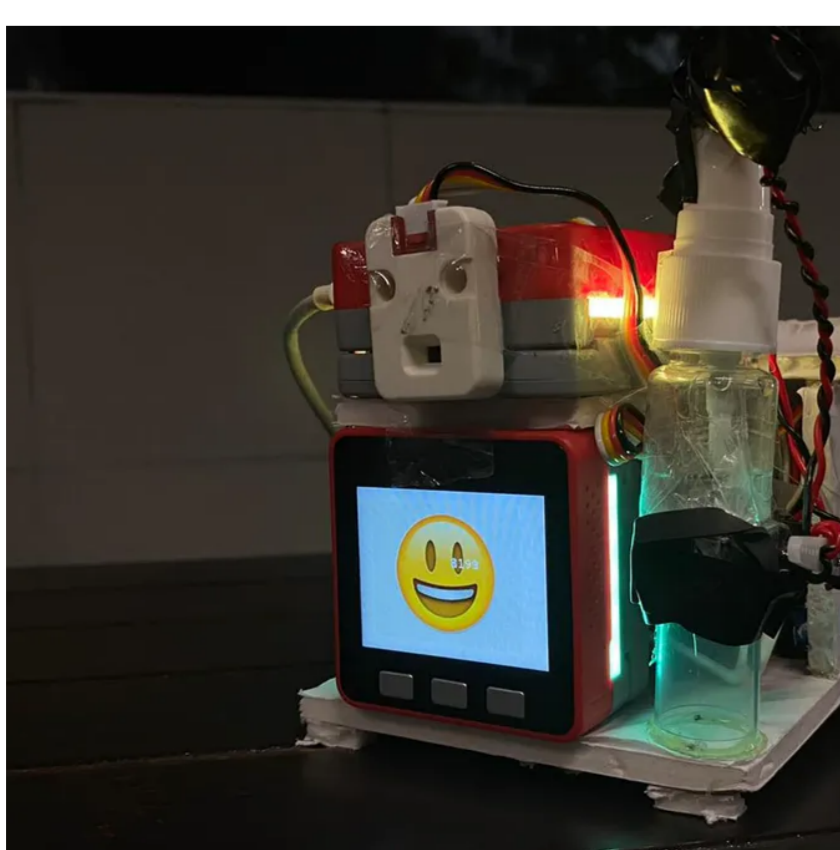
Q-Bot

We aim to build a robot that is effective in sanitizing surfaces without putting cleaners in harm's way.
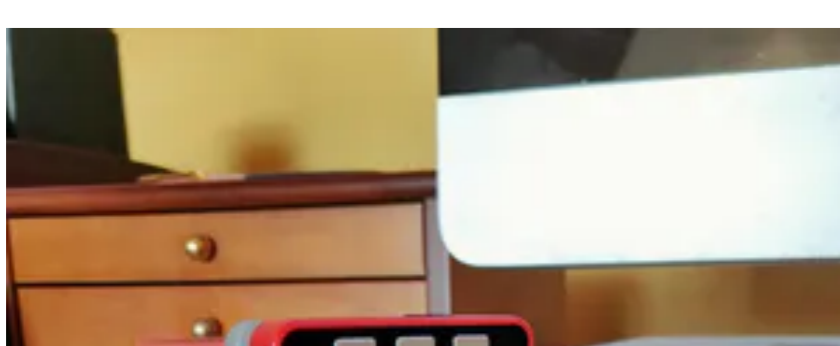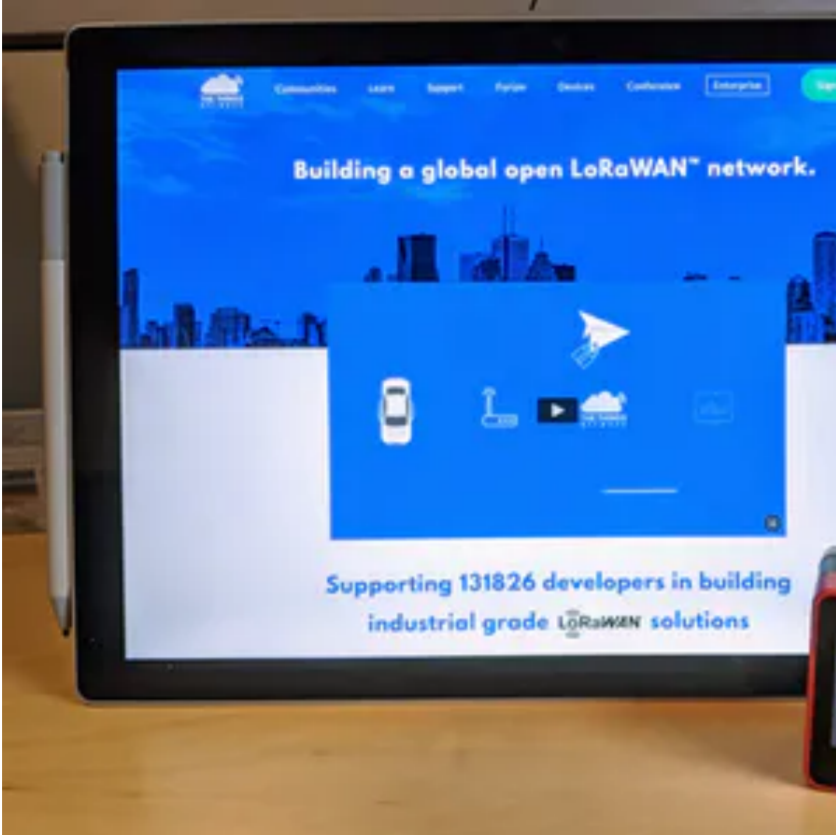

Office M5Stack Assistant

An IoT office assistant with "free, busy and lunch" indicators, Pomodoro timers and quick meetings with IFTTT and your calendar integration.
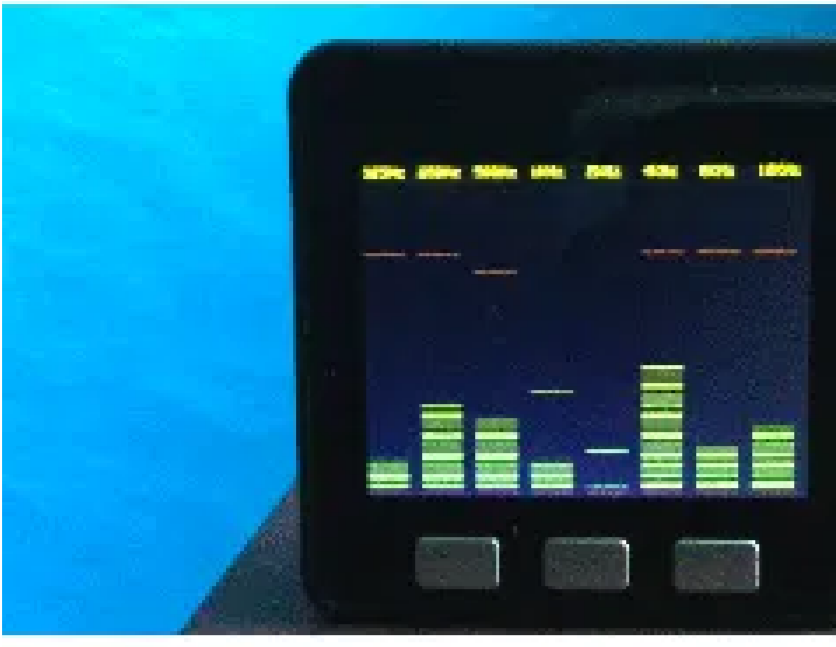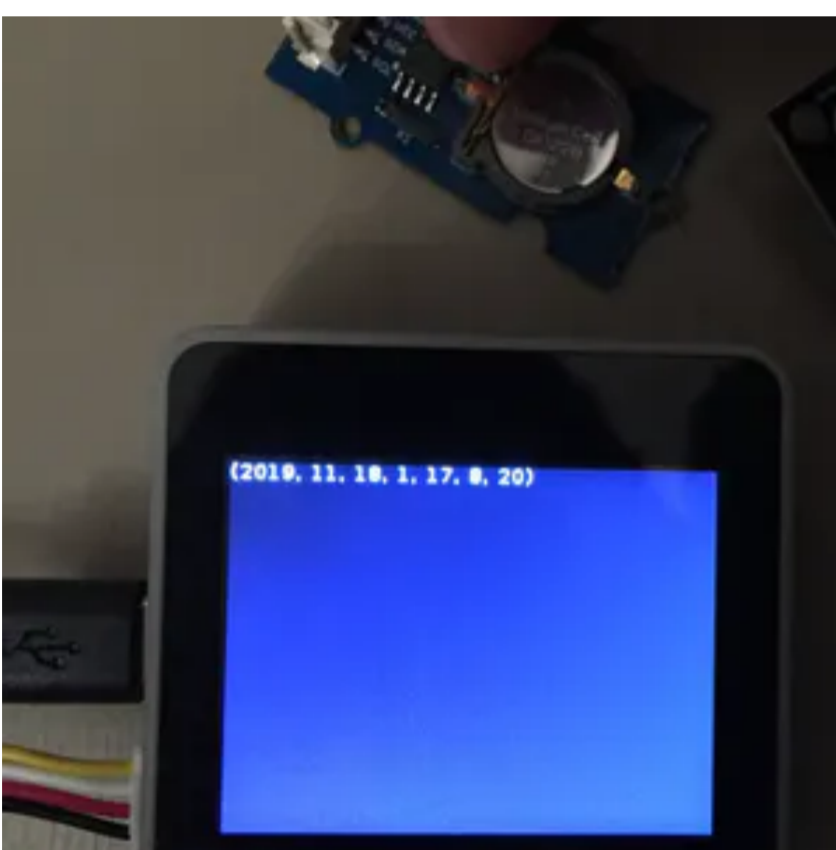
Audio Spectrum Display with M5Stack

An audio spectrum visualiser using the M5Stack internal mic or FC-04 sound sensor with the M5Stack core. Translated from a guide by macsbug

M5Stack COM.LoRaWAN Using UIFlow

M5Stack recently released an updated LoRaWAN module. This tutorial teaches you how to connect it to The Things Network using UIFlow.

RTC Modules with M5Stack

Out of the M5Stack family only the M5StickC has an inbuilt RTC. Here's how to add one to your other M5Stack devices

Grove Ultrasonic Sensor with M5Stack

Simple setup of a Seeed Studio Grove ultrasonic sensor (not HC-SR04) in Arduino.

M5Stack FM Radio

An FM radio (RDA5807) powered by UIFlow. 📻

DIY Camera with Thermal Printer

A DIY project conduct with a thermal printer and M5Camera.

Smart Library System

A minimal library book management system emulation program.

M5Stack RFID Face Wav Playing Flashcard Program

After I recently discovered how to play WAV files on the M5Stack, I thought it would be perfect to make a flashcard system.

Gesture Recognition with M5Stack + TensorFlow Lite

This is an example based on TensorFlow gesture recognition.

Run-Time Display Rotation

This allows the display to be rotated to 0, 90, 180, and 270 degrees at any time with no added overhead.
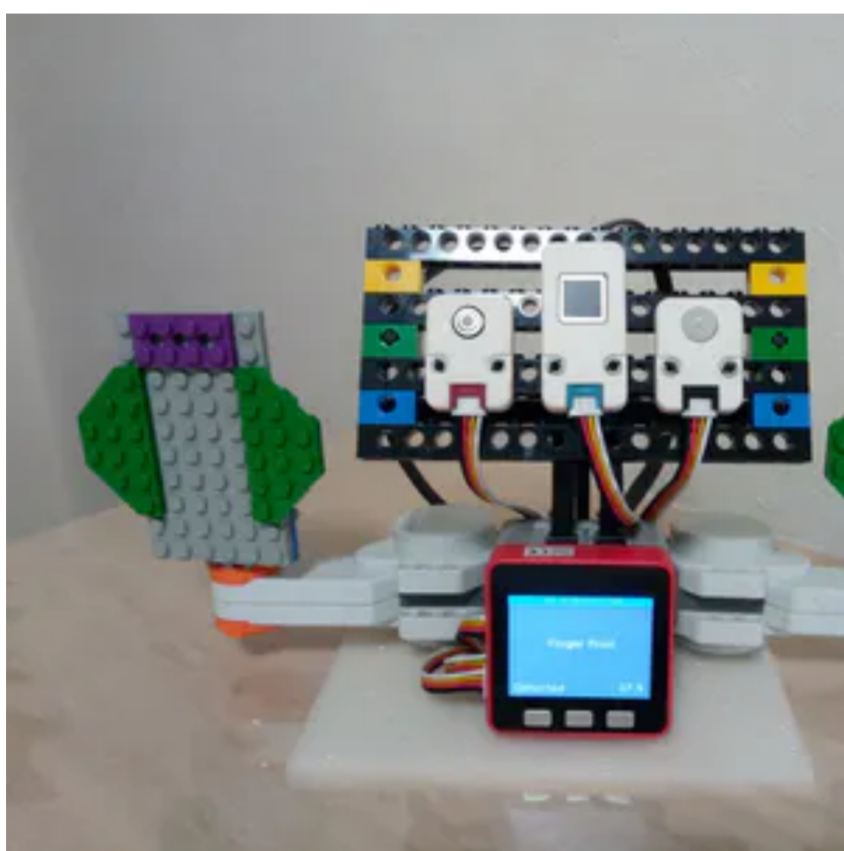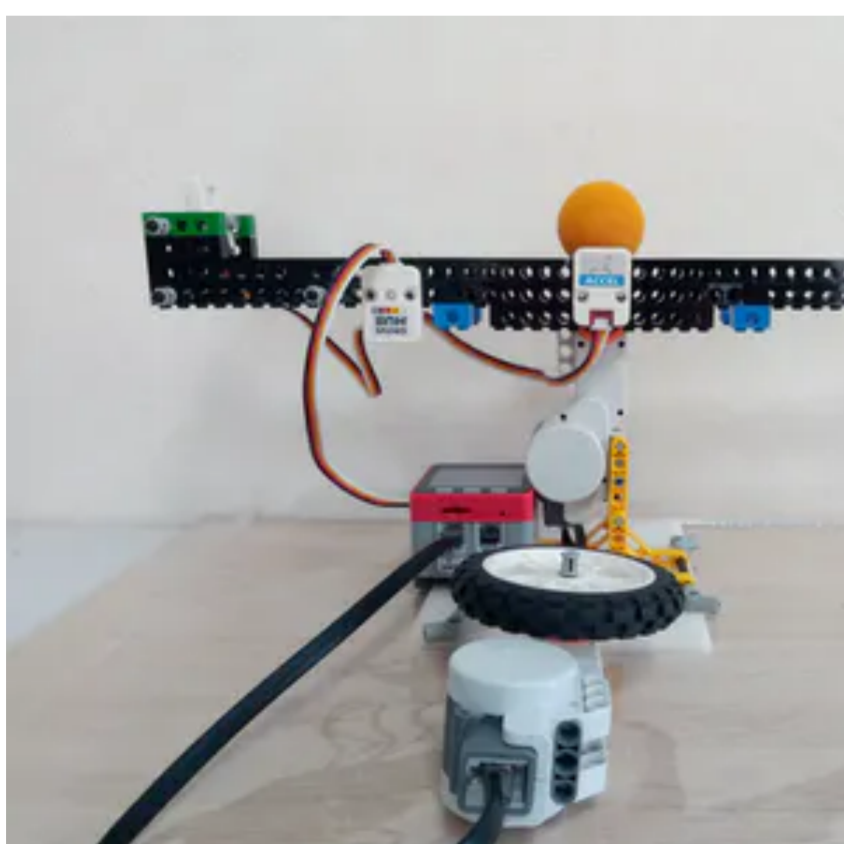

Gesture Controlled Drone with M5Stack and Edge Impulse

Controlling DJI Tello drone with gestures via the M5Stack FIRE module and Edge Impulse.

M5Stack Based Anti-COVID Security Gate (Proof of Concept)

Gate/door fingerprint security system with body temperature checks for the anti-COVID measure.
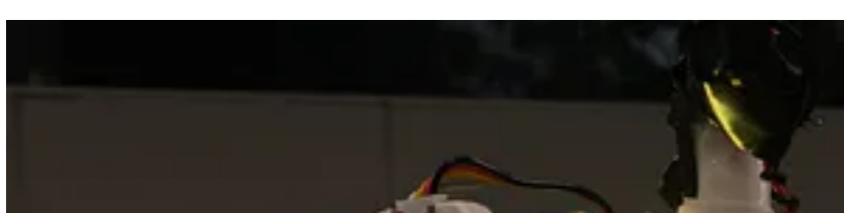

M5Stack Based PID Control Learning Platform

The PID Control Learning Platform is based on an M5Stack Fire & BaseX with TOF and Accel Units, and some Lego NXT parts.
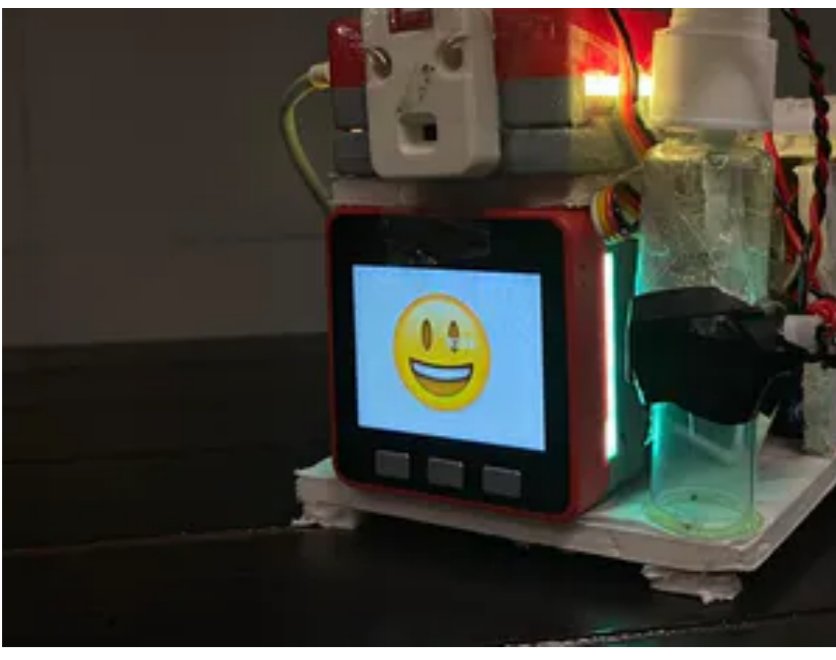

Autism Communications Assistant

The model will help learn / associate the items/phrases commonly used by a user (autistic/semi-verbal); so that they can communicate.
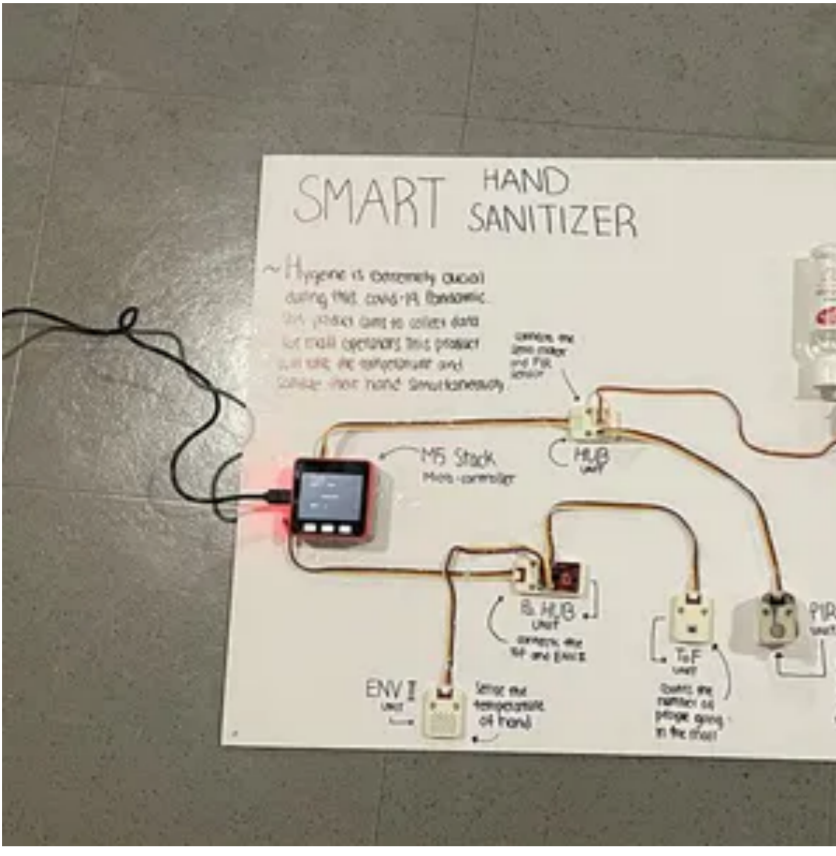
Q-Bot

We aim to build a robot that is effective in sanitizing surfaces without putting cleaners in harm's way.

3 in 1 Sanitiser Dispenser

We have devised with an innovation that dispenses hand sanitiser, measures the temperature of user, shows the count of people in vicinity.

M5Stack Christmas M5 Tree

This year's Christmas, I decorated the tree with M5Stack devices.

Hand Hygienics

Hand Hygienics aims to reduce spread of Covid-19 through contact.

Telegram Controlled Drone with M5Stack

Control a DJI Tello drone via Telegram from anywhere in the world

SEAM [Safe-Entry Access Machine]

An automatic system to perform the tasks of Safe Entry. It consist an adjustable Thermometer, RFID / QR Code Check in and Counting.

Related Video

About M5Stack

Version Updates

Releas

Release Date	Product Changes	Notes
2018.6	First Release	/
2019.7	MPU9250 changed to SH200Q+BMM150, TN screen changed to IPS screen	Please upgrade your M5Stack library to the latest version (v0.2.8 or above) to solve the screen reflection problem
2019.8	Change SH200Q to MPU6886	/
2019.11	Battery capacity 600mAh changed to 500mAh	/
2020.4	PSRAM size changed from 4MB to 8MB	/
2021.8	Upgrade to v2.6: BMM150 magnetometer removed, CP2104 changed to CH9102, structure details optimized	/

> Note: **2018.2A** PCB version of the device does not support C2C (TypeC to TypeC) connection and PD power supply.