

The background features a light blue network diagram with nodes and connecting lines. On the left side, there are several gear icons of varying sizes and orientations, some with arrows pointing upwards.

# Maker's Pet DPRG talk

3/28/2026

[makerspet.com](http://makerspet.com), [dprg.org](http://dprg.org)

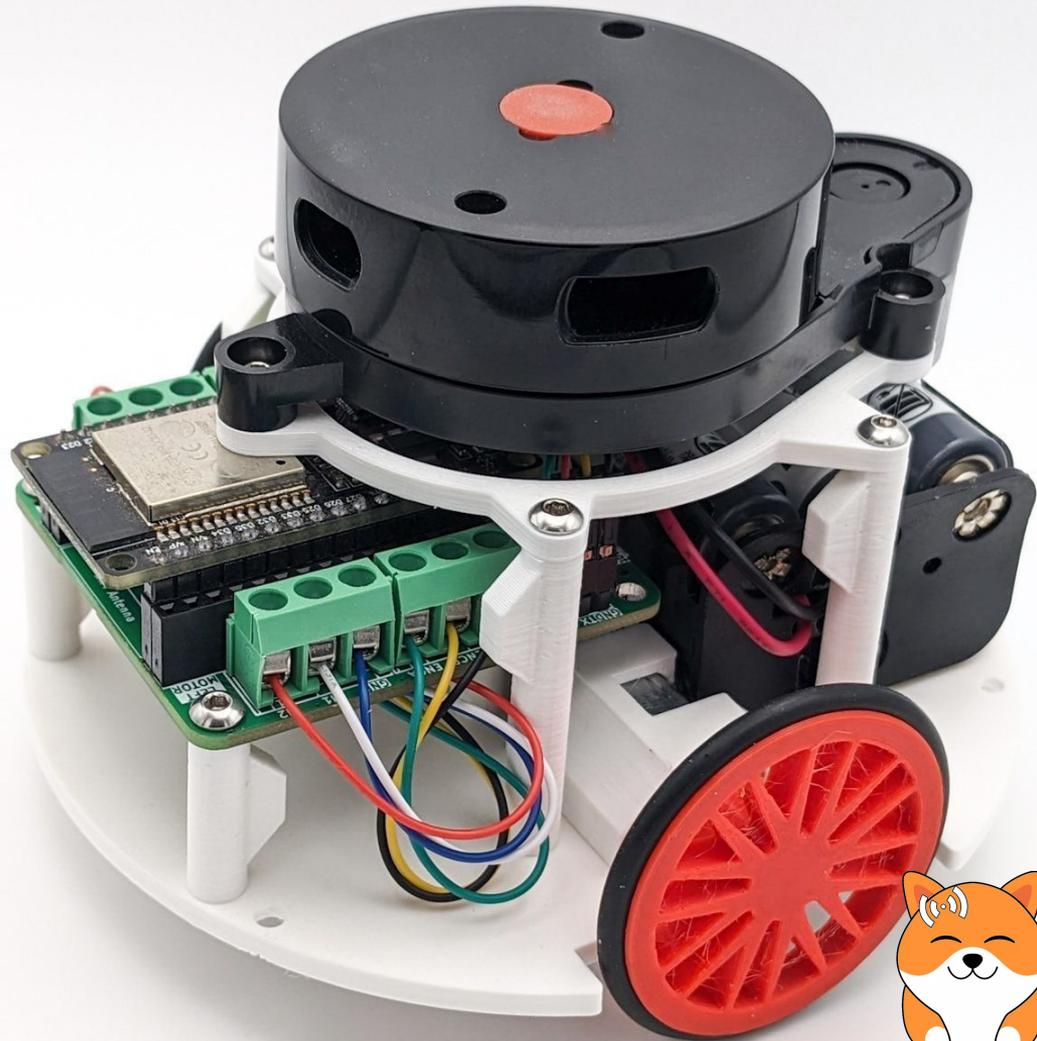
These slides can be downloaded at [makerspet.com/dprg\\_talk.pdf](http://makerspet.com/dprg_talk.pdf)

# Educational ROS2 Robot Kit

LiDAR, differential drive. Mapping,  
navigation & SLAM out-of-the-box.

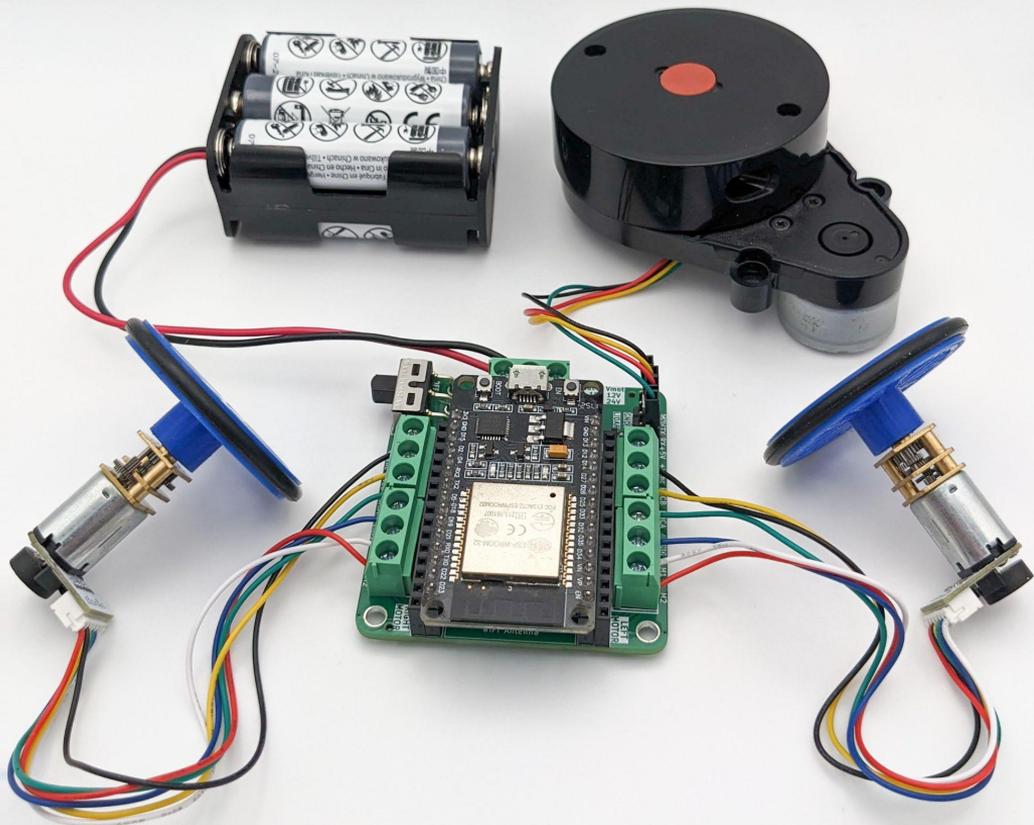
Beginner-friendly instructions.

Inspired by Turtlebot3. Optimized for cost.



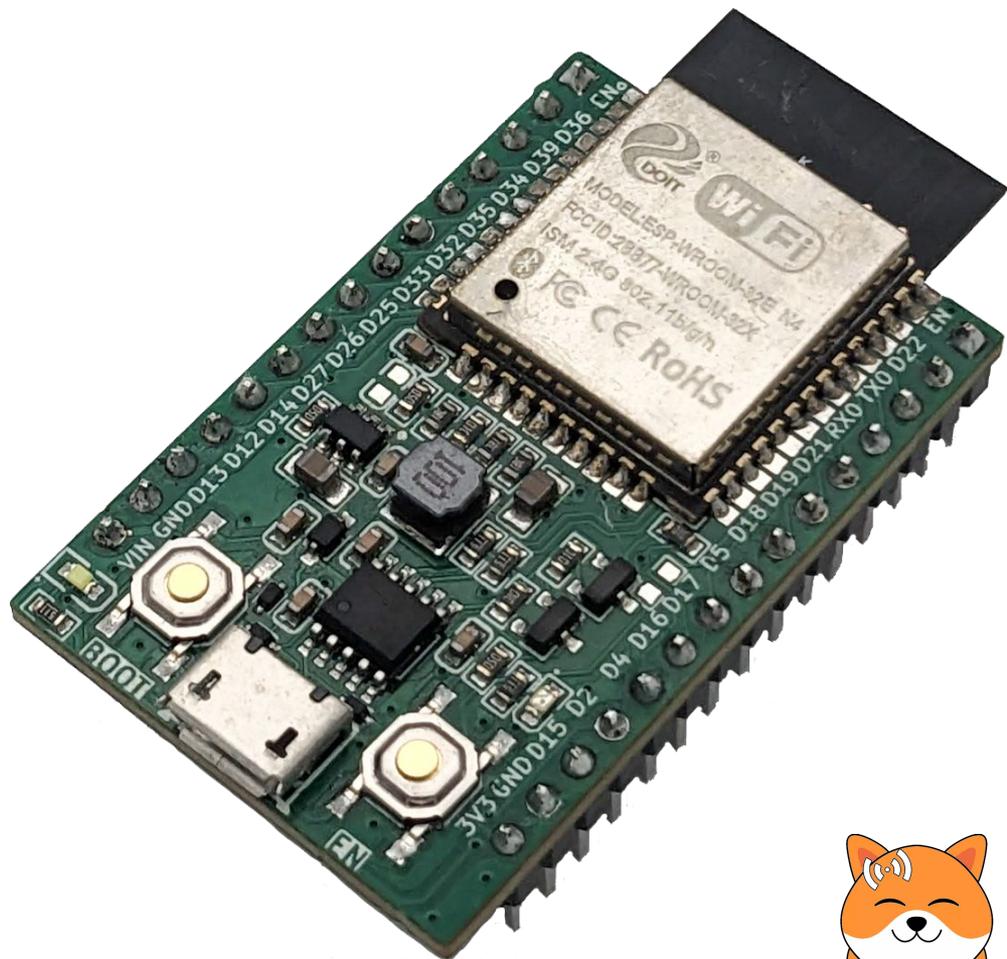
# Specifications

MCU Board	ESP32
LiDAR	LDROBOT LD14P 0.1~8m 4KHz 6Hz
Motors	2x DC N20 12V; 3mm shaft dia. 200RPM max, 150RPM rated 1.6Kg*cm rated, 4.8Kg*cm stall
Base	120cm diameter
Wheels	43cm diameter
Power	6xAA or 2x18650 3.8V cells
ROS2	Jazzy, Iron
Firmware	Arduino + Espressif toolchain
Open Source	Yes (Maker's Pet design)



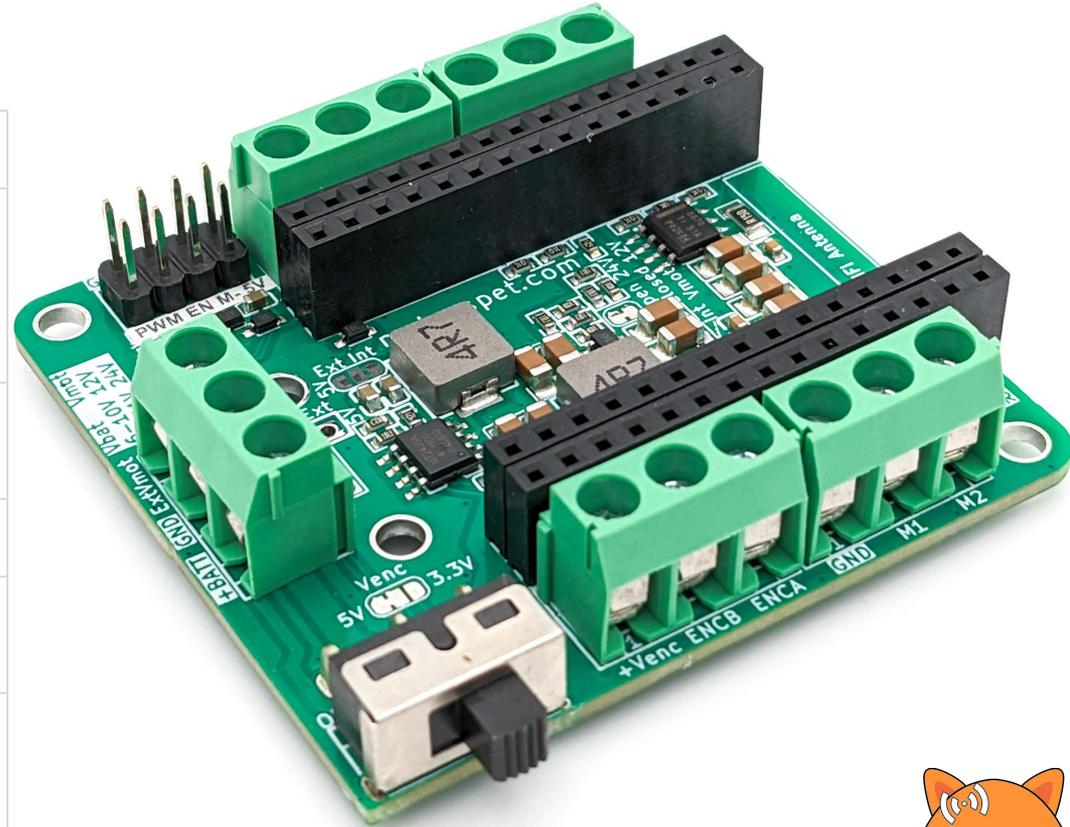
# MCU

Module	DOIT ESP32E
MCU	240 MHz 32-bit Xtensa LX6 dual-core 520 KB SRAM, 448 KB ROM
WiFi	802.11 b/g/n (up to 150 Mbps)
Bluetooth	Bluetooth v4.2 BR/EDR, BLE
USB-to-Serial	CH340K
USB	Micro USB
Power	5V external; on-board DC-DC to 3.3V
Firmware	Espressif ESP-IDF, Espressif for Arduino
Open Source	Yes (Maker's Pet design)

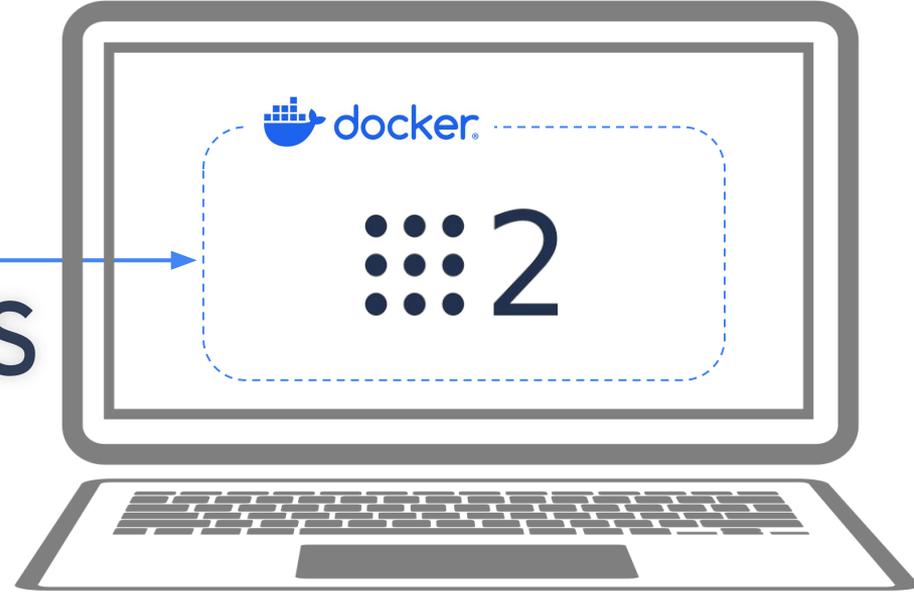
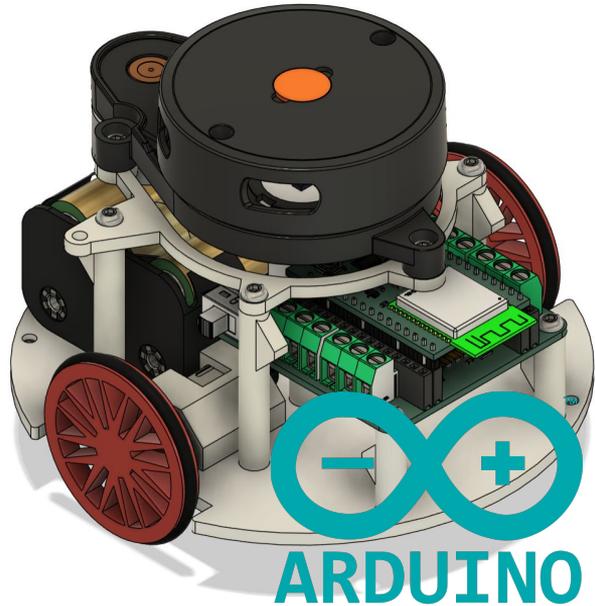


# Motor Drivers

MCU Board	ESP32 30-pin
Motors Drivers	2 channels, DC 12/24V Texas Instruments DRV8870DDAR Current limit ~2.2A, overtemperature Max total motors current ~3A
LiDAR I/O	25+ 2D LiDAR models supported 8-pin header
Sensors I/O	Motor encoders, battery voltage
Features	On-board DC-DC conversion for motors, 5V for LiDAR, ESP32, motor encoders
Power Supply	Vbat 6V to 10V for Vmot=12V Vbat 6V to 21V for Vmot=24V E.g. 6xAA or 2x18650 3.8V cells for 12V
Open Source	Yes (Maker's Pet design)



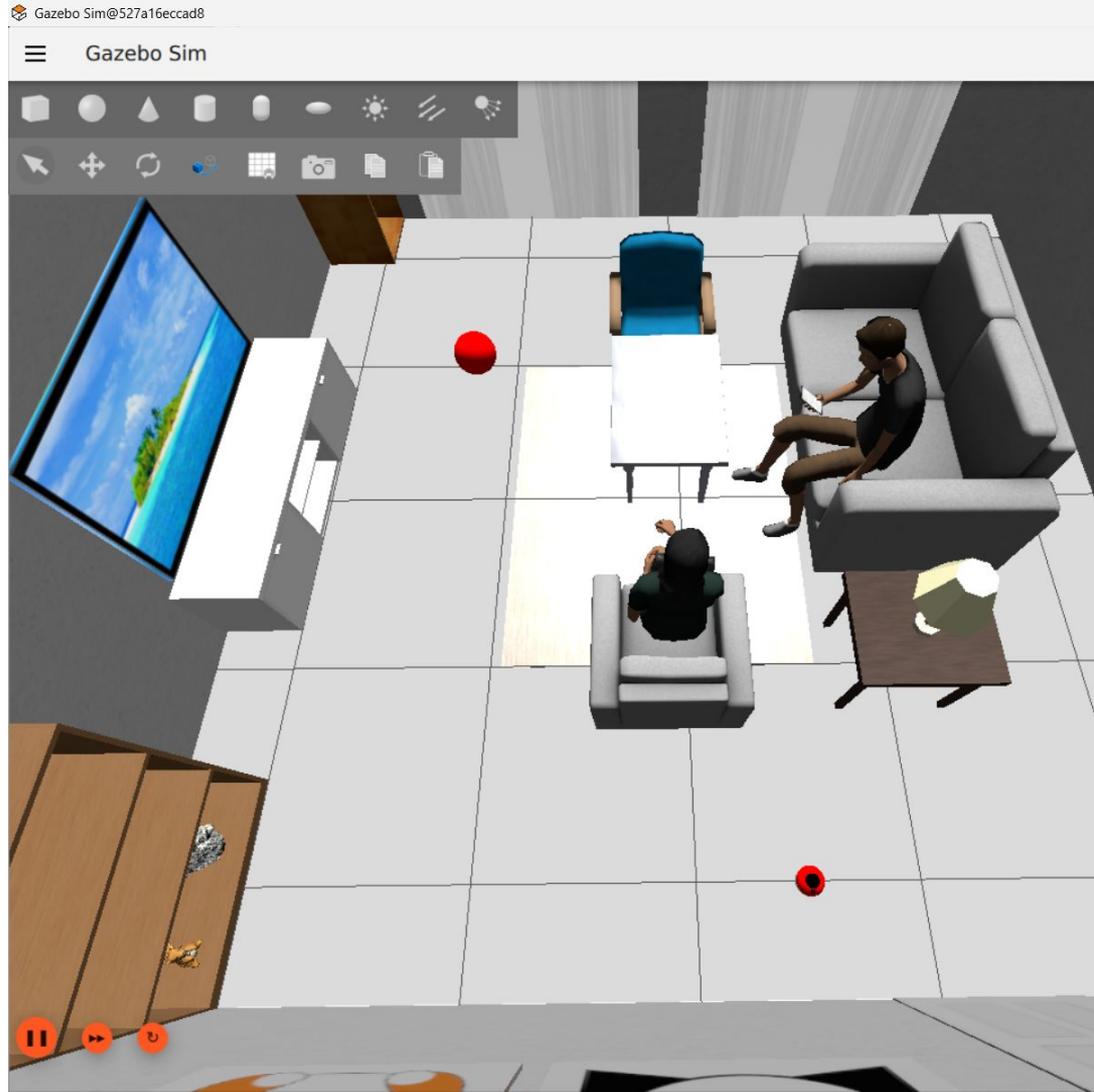
# Software & Firmware



# Simulation

Out-of-the-box Gazebo for  
ROS2 Jazzy & Iron

Mapping, navigation, SLAM, frontier  
exploration

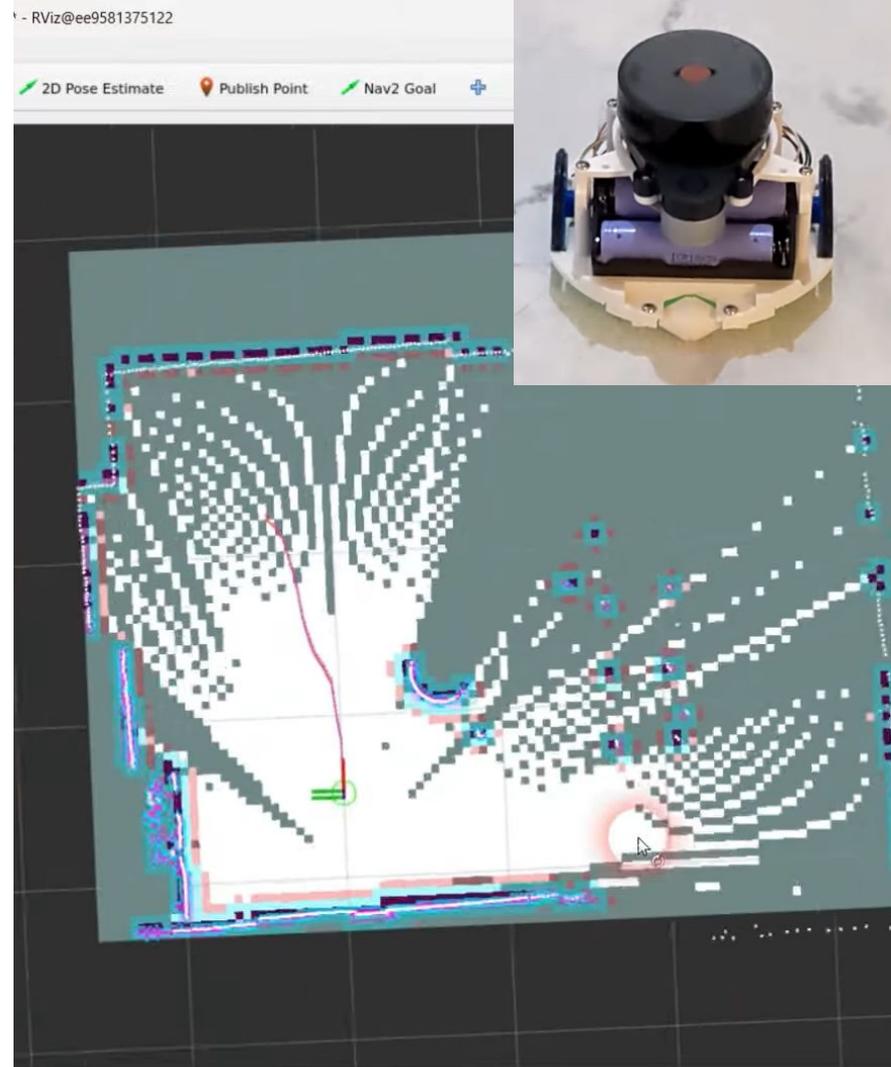


# Mapping & Navigation

Out-of-the-box

Google Cartographer mapping, Nav2 SLAM

Full self-driving Frontier Exploration



# Video Instructions & Support

8 videos complete series.

No prior robotics knowledge needed.

1.98K YouTube subs



~100 Support forum threads



# Build an Arduino Self-Driving Robot

Video instructions series



makerspet.com

# Kit

<https://makerspet.com/store#!/Arduino-ROS2-Self-Driving-Robot-120mm-Build-Pack/p/725772983>

## 3D & Schematics

<https://github.com/makerspet/store/>

## Firmware

<https://github.com/kaiaai/firmware>

## ROS2

<https://github.com/kaiaai/kaiaai>

## Troubleshooting

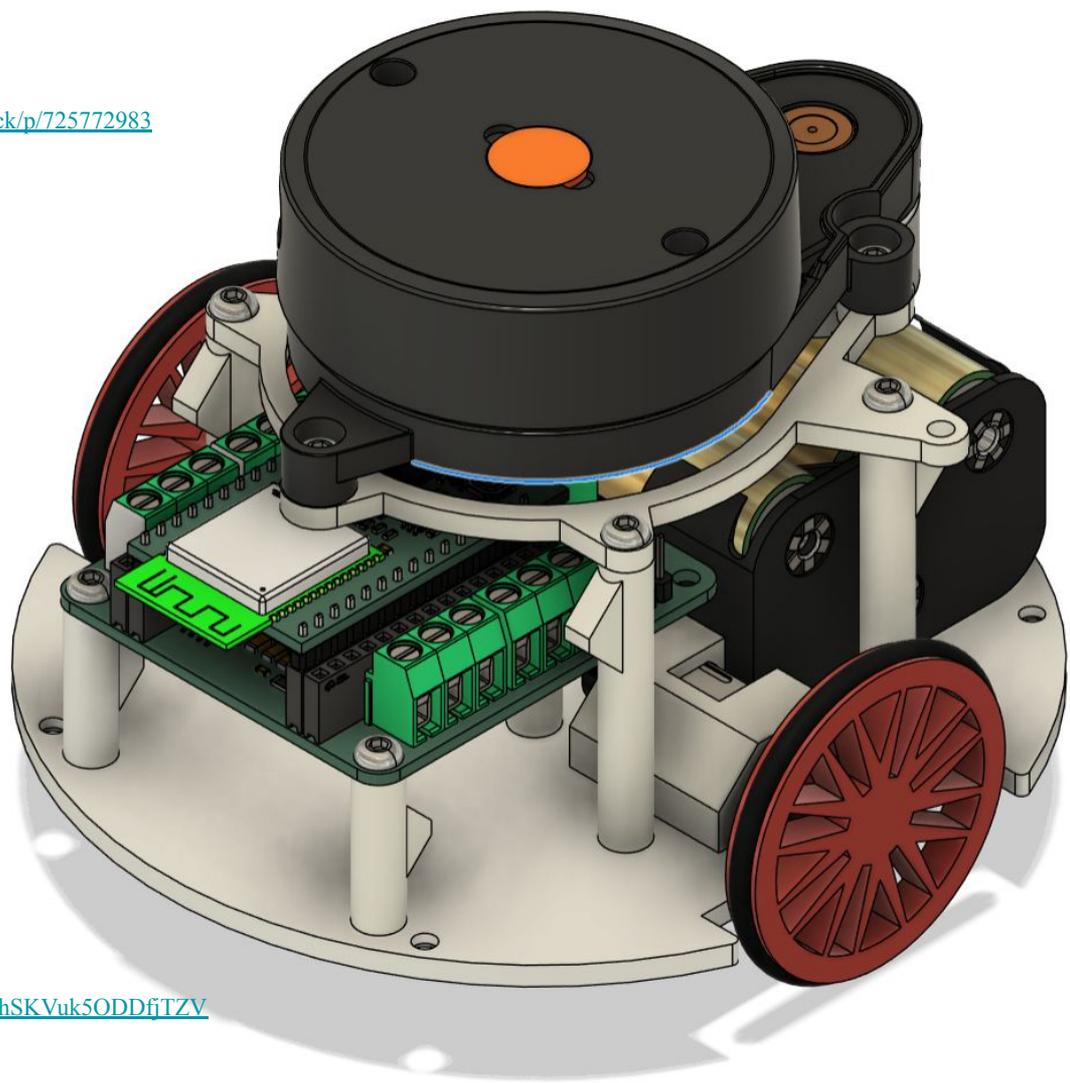
<https://makerspet.com/blog/BLD-120MM-PACK/>

## Support Forum

<https://github.com/makerspet/support/discussions>

## Video Instructions

<https://www.youtube.com/watch?v=6GtjAB19GP8&list=PLOSXKDW70aR8uA1IFahSKVuk5ODDfjTZV>





ROS2	✓	✓
LiDAR	✓	✓
IMU	-	✓
Color Camera	-	- (Optional)
Compute	ESP32 MCU	Raspberry Pi 4 (4GB) + OpenCR 1.0 MCU

# Compatible LiDARs

LDROBOT LD14P YDLIDAR X2L

YDLIDAR X4

YDLIDAR X3 PRO

Neato XV11

3irobotix  
Delta-2A

Delta-2G

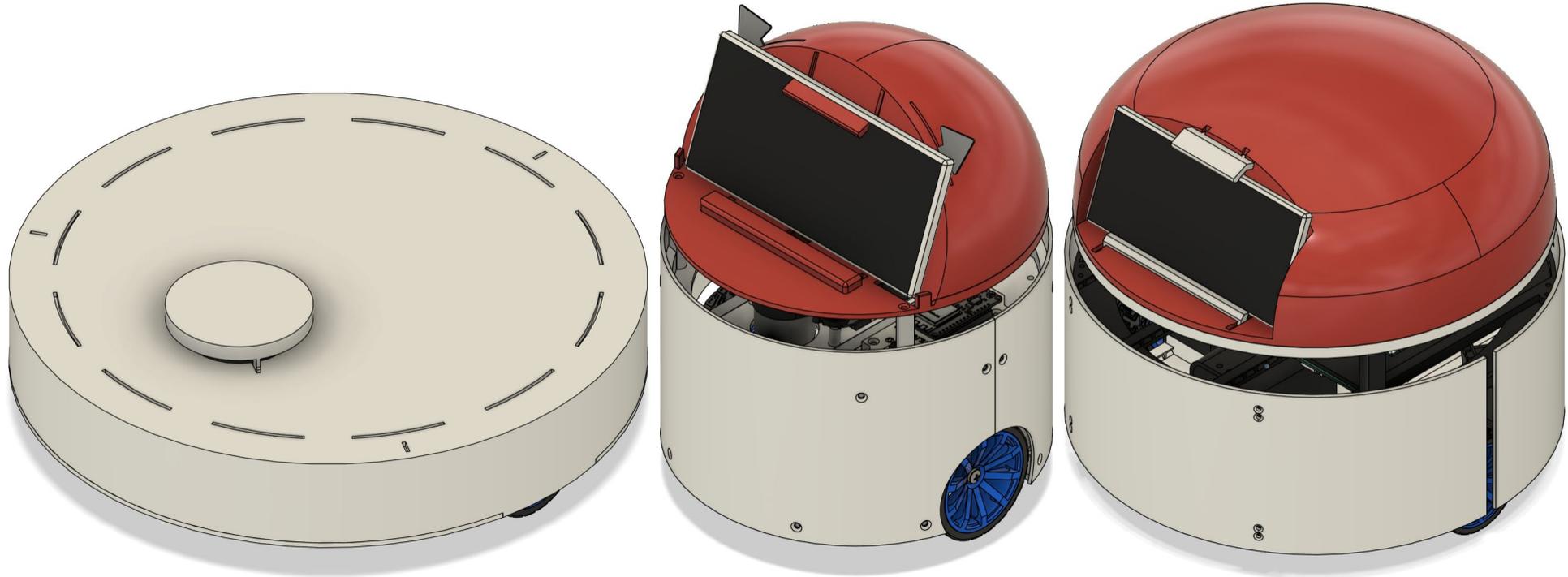
Hitachi LGHLS-LFCD2 Camsense X1

RPLIDAR A1

Xiaomi LDS02RR

Xiaomi LDS01RR

# Base Alternatives\*



\*Firmware supports BLDC motors

# Apps for Robots



# Apps Platform



<https://github.com/remakeai>



# 5 GAMES

To Play with Vacuum

# Apps for ROS2

ROS2 apps SDK

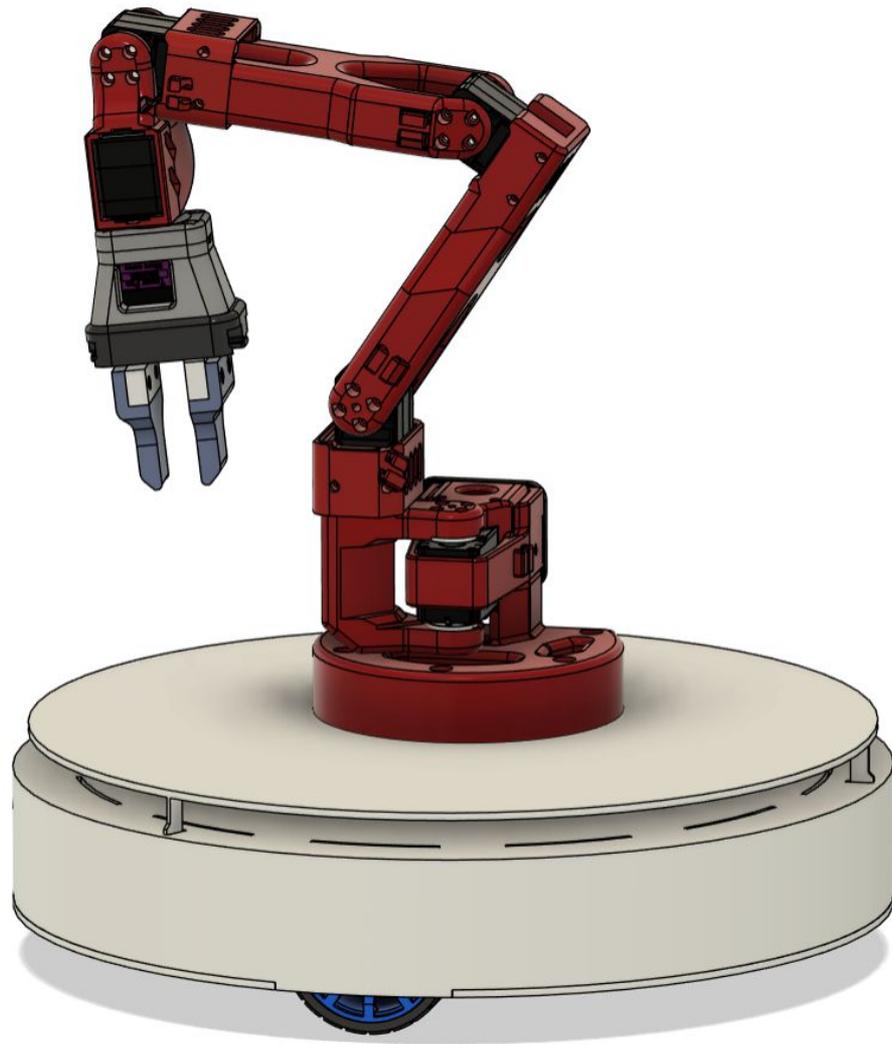
LeRobot apps SDK (TODO)



<https://remake.ai/developers/>



<https://github.com/remakeai/remake-ros2>





Thank you!

