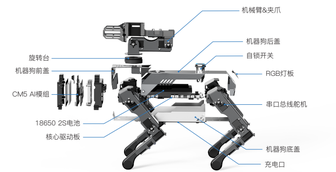
XGO-mini2S

桌 面 级 四 足 机 器 人



XGO-mini2S介绍

XGO-mini2S是一款具有十六自由度桌面级AI机器狗，背部搭载机械臂和末端夹爪，内置树莓派CM5模组实现AI边缘计算应用，采用4.5kg·cm磁编码总线串口舵机作为关节，可实现全向移动、六维姿态控制、机身水平姿态保持、多种运动步态和夹持任务，内部搭载IMU和关节位置传感器，用于内部算法和二次开发。



型号：XGO-mini2S	架构：树莓派CM5+ESP32
尺寸：270 * 150 * 180mm	屏幕：320*240 像素全彩IPS
重量：915g	摄像头：500万像素OV5647
电池：8.4V 3800mAh锂电池	喇叭：8Ω2W腔体扬声器
材质：机身-1mm航空铝材	麦克风：双MEMS数字麦克风
腿部-ABS	存储：32G SD卡
	充电：8.4V4A专用锂电池充电器

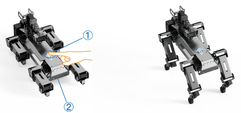
快速使用

❶ 开机、关机、充电

①开机：把机器狗按照卧姿摆放，避免关节卡死，然后按下机器狗背部的电源开关，开关上的电源环形灯快速闪烁后常亮，机器狗缓缓站立，机械臂打开后自动收回，表示开机成功。

③关机：按下背部电源开关，环形灯缓慢闪烁，机器狗缓缓趴下，机械臂收回，然后环形灯熄灭，表示系统完全关机。

②充电：当机器狗电量过低时，机器狗开关按键的环形灯闪烁并趴下，此时代表机器狗需要充电。将充电器DC头插入机器狗腹部的充电口，约2小时可以充满，充电时主板电源指示灯为红色，充满变成绿色。



❷ 快速联网

快捷方法：在路由器或者手机新增加一个SSID，SSID设置为XGO2，密码设置为LuwuDynamics，机器人启动后会自动连接。其余方法请参考XGO官方wiki。
https://wiki.xgorobot.com

❸ LUWU OS操作

LUWU OS是基于树莓派CM5的图形操作系统。用户无需依赖电脑手机，只需观察2.0寸屏幕上的操作指示，通过侧面A/B/C/D四个物理按键进行选择与确认，即可直观地玩转生成式AI、视觉追踪、手势交互和运动控制等功能。

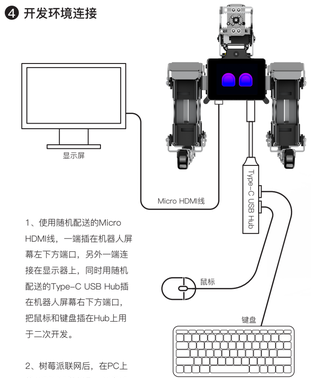




AI智能交互



❹ 开发环境连接



1、使用随机配送的Micro HDMI线，一端插在机器人屏幕左下方端口，另外一端连接在显示器上，同时用随机配送的Type-C USB Hub插在机器人屏幕右下方端口，把鼠标和键盘插在Hub上用于二次开发。

2、树莓派联网后，在PC上使用SSH远程登录，用户名和密码默认都是luwu（PC端和机器狗必须连接在同一个网络下）。

❺ APP下载与遥控

扫描右侧二维码进入下载页面，请根据自身设备型号，选择匹配的APP进行下载安装。



❻ 初始位置标定



注意：本操作不可逆，将覆盖产品出厂设置数据，请认真阅读本说明后使用。

当您发现您的机器狗姿态不正常时，如站立姿态时，某条腿严重偏离导致四条腿无法同时着地，很有可能是由于螺丝松动或舵机滑齿导致初始位置偏离预设值。此时您可以进行初始位置标定，以重新校准机器狗初始位置预设值。

打开XGO APP，点击 ☰ 按钮，以开发者身份运行后返回蓝牙遥控页面，通过蓝牙连接上机器人后，点击 ⇔ 进入标定页面，点击"进入标定模式"，此时机器狗的舵机将不再输出力矩，允许您转动所有关节。

将机器狗按照上图姿势摆放，注意，使每条腿肩部垂直于身体，大腿垂直于地面，小腿垂直于大腿，摆放是否垂直将直接影响机器狗工作时的姿态。摆放标准后，在标定界面中点击"完成标定"按钮，10秒后机器狗将恢复站立姿势。若此时站立姿势仍偏离严重，并且确定您操作无误，则可能是机器狗出现了故障，请联系售后服务。

❼ 使用注意事项

注意事项

1、机器人运行时，务必确保桌面平稳，避免机器人因运动、碰撞等意外从桌面跌落，造成机体损坏。

2、每次使用前检查电池电量，电量不足时及时充电，避免在低电量状态下长时间使用，影响电池寿命。

3、本产品使用时请注意安全，运动过程中避免手指夹伤。

4、机器人运动长时间后舵机可能发烫，属于正常现象，但持续发烫可能损坏舵机性能，因此持续使用时间建议不超过1小时。

保养与运输

1、定期检查螺丝是否松动，并予以紧固。

2、运输或者存储时，请使用机器人专用包装盒，避免发生意外造成损伤；四条腿应当固定，避免晃动引起摩擦碰撞造成损伤。

Technical Support：hello@xgorobot.com

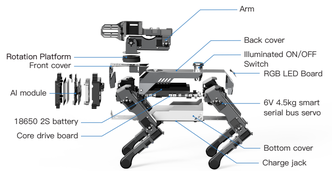
XGO-mini2S

Desktop-grade Quadruped Robot



Introduction to XGO-mini2S

XGO-mini2S is a desktop AI robot dog with 16 DOF and a gripper powered by a Raspberry Pi CM5 module for AI edge-computing applications. With 4.5kg·cm serial servo motors. It supports omnidirectional movement, 6D pose control, horizontal body-posture maintenance, multiple motion gaits and grasping tasks. Integrated IMU and joint-position sensors provide feedback for internal algorithms and secondary development.



Model: XGO-mini2S	Controller: Raspberry Pi CM5+ESP32
Dimensions: 270 * 150 * 180mm	Screen: 2.0 inch IPS 320*240
Weight: 915g	Camera: five-mega-pixel OV5647
Battery: 18650 standard 3800mAh 3C discharge	Speaker: 8Ω 2W chamber speaker
Material: Body- Aviation Aluminum Legs-ABS	Mic: dual MEMS digital microphones
	Storage: 32G SD card
	Charging port：8.4V 4A DC Charger

Quick use

❶ Power & Charging

① **Power on:** Place the robot dog in a lying position to avoid joint jams. Then, press the power switch on the back of the robot dog. After the power ring light on the switch flashes rapidly and then stays on steadily, the robot dog will stand up slowly. After the robotic arm opens, it will automatically retract, indicating that the power-on is successful.

① **Power off:** Press the power switch on the back. The ring light will flash slowly. The robot dog will lie down slowly and the robotic arm will retract. Then, the ring light will go out, indicating that the system is completely powered off.

② **Charging:** When the battery level of the robot dog is too low, the ring light of the power switch button on the robot dog will flash and the robot dog will lie down. At this time, it means that the robot dog needs to be charged. Insert the DC connector of the charger into the charging port on the robot dog's abdomen. It will take about 2 hours to fully charge. When charging, the power indicator light on the mainboard is red, and it will turn green when fully charged.



❷ Quick Network Setup

Quick method: Add a new SSID on the router or mobile phone. Set the SSID as XGO2 and the password as LuwuDynamics. After the robot is started, it will automatically connect. For other methods, please refer to the official XGO wiki.

https://wiki.xgorobot.com

❸ LUWU OS Operation

LUWU OS is a graphical system running on the Raspberry Pi CM5. Following operational prompts on the 2.0-inch screen, users can directly navigate Generative AI, vision tracking, and motion features using four physical buttons (A/B/C/D) for selection and confirmation, entirely free from PCs or phones.



mini2S



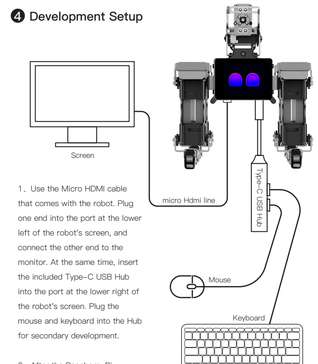
mini2S with LiDAR



AI Intelligent Interaction



❹ Development Setup



1、Use the Micro HDMI cable that comes with the robot. Plug one end into the port at the lower left of the robot's screen, and connect the other end to the monitor. At the same time, insert the included Type-C USB Hub into the port at the lower right of the robot's screen. Plug the mouse and keyboard into the Hub for secondary development.

2、After the Raspberry Pi connects to the network, log in remotely via SSH on your PC. The default username and password are both luwu.(The PC and robot dog must be connected to the same network.)

❺ App Download & Remote Control

For iPhone users, search for 'XGO' in the App Store and download and install it.
For Android users, search for 'XGO' in the Google Play App Store and install it.
Or navigate to Settings → APP Download on the robot dog and scan the QR code to download the APK.



❻ Initial Position Calibration



Caution: This operation is irreversible and the factory settings will be overwritten. Read this manual thoroughly and carefully before you attempt calibration.

When you notice that the posture of your robot dog is abnormal, for example, when it is in a standing posture and one of its legs deviates severely, causing the four legs to be unable to touch the ground simultaneously, it is highly likely that the initial position has deviated from the preset value due to loose screws or gear slipping of the servo motor. In this case, you can perform an initial position calibration to recalibrate the preset value of the robot dog's initial position.

Open the XGO APP, click the ☰ button. Run as a developer and then return to the Remote Control Module. After connecting to the robot via Bluetooth, Click the ⚙ to enter the calibration page. Then click 'Calibrate'. At this time, the servo motors of the robot dog will stop outputting torque, allowing you to rotate all the joints.

Place the robot dog in the posture shown in the above picture. Note that make the shoulder of each leg perpendicular to the body, the thigh perpendicular to the ground, and the calf perpendicular to the thigh. Whether the placement is perpendicular will directly affect the posture of the robot dog during operation. After the placement meets the standard, click the 'Calibrated' button on the calibration interface. The robot dog will resume the standing posture after 10 seconds. If the standing posture still deviates severely at this time and you are sure that your operation is correct, it may indicate a malfunction of the robot dog. Please contact the after – sales service.

❼ Precautions

1、When the robot is running, make sure that the desktop is flat. Avoid the robot from falling off the desktop due to unexpected situations such as movement or collision, which may cause damage to the robot body.

2、Check the battery level before each use. Charge it in a timely manner when the battery is low, and avoid using it for a long time in a low-battery state, which may affect the battery life.

3、Please pay attention to safety when using this product. Avoid getting your fingers pinched during the movement.

4、The servo of the robot may get hot after running for a long time, which is a normal phenomenon. However, continuous heating may damage the performance of the servo. Therefore, it is recommended that the continuous use time should not exceed 1 hour.

Maintenance and Transportation

1、Regularly check whether the screws are loose and tighten them.

2、When transporting or storing, please use the special packaging box for the robot to avoid accidental damage; the four legs should be fixed to prevent damage caused by friction and collision due to shaking.

Technical Support：hello@xgorobot.com