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AELOS^{LITE}

Product Standard: Q/SZLJ 001-2020



User Manual

Welcome to use your EDUcation ROBOT-AELOS EDU.

The manual gives an introduction of AELOS EDU the robot's basic functions and precautions to guide you in quickly familiarizing you with the robot. Lets begin!

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Packing List

AELOS LITE	1	Sensor	
Mechanical Gripper	Optional	IR Distance Sensor	1(Built-In)
Mechanical Gripper Assembly Instruction	Optional	6 Axis Gyroscope	1(Built-In)
Controller	1		
Power Adaptor	1		
Micro USB Cable	1		
User Manual	1		
USB Flash Drive	1		
Extended USB Cable	1		

Product functions

AELOS LITE is a programmable humanoid robot with 17 degrees of freedom (DOF), which is capable of dancing, boxing, playing football and Multi-task operation. Robot software installation package, courseware systems with PPT format are also provided. You may install our Blockly programming software in the computer, and learn about programming in accordance with our supporting robot relevant courseware. It is important to learn the robot control principles, have a deep understanding of the robots structural design. Further to learn basic programming knowledge for enhancing the comprehensive abilities of practice, thought, team cooperation, thinking and solving problems.

Precautions

1. The product is not intended for use by children without direct adult supervision.
2. Please keep a proper distance from the robot while operating it, to prevent from personal harm due to drastic motion of the robot.
3. Do not disassemble the robot. The robot should be properly repaired in accordance with warranty provisions.
4. Please keep the robot away from water or fire, to prevent any damage to it. The robot should be operated in a flat and smooth surface.
5. Please prevent the robot from strong impact during use. Shut down the robot in case of abnormal motion, to prevent damage to it.
6. Don't break off the robot joints during its normal operation, to prevent damage to its servo and main control board.
7. Position the robot in a flat surface or the center of a table, to prevent its fall from heights.
8. The charging time of the battery is about two hours. Please charge the robot with original adapter.
9. Overheating of the servo due to long-time use of the robot is a normal phenomenon. Please shut down the robot. Don't use it until the servo cools down.
10. Please power off the robot for fault detection immediately in case of smoke or smell of burning during its operation.
11. Please power off the robot for fault detection immediately in case of water or foreign matters into it.

12. Please reset the robot or recharge the robot to full battery and try it again when the robot does not receive signals. Don't hit it hard.
13. In case of damage to the servo due to a long-time service, please detect the faults and replace the servo immediately, to prevent other problems for other parts caused by servo faults.
14. The robot is a precision instrument. Please take adequate protective measures during transportation to avoid damage.
15. The quick walking time of the robot may not be above three minutes during its operation, or the servo may be destroyed.
16. Don't connect sensors of other types not provided and manufactured by our company to the sensor interface, to prevent damage to the robot. Don't connect the sensor interface with conductors, to prevent unknown failure to the robot.
17. As the display at the robots back is a fragile part, don't contact it with something sharp, to prevent wrong display of sensor data.
18. The optimal operating temperature of the robot is -5°C and above. Please use the robot in a suitable environment.

Product Introduction

Hei

Hello, I am AELOS, a smart robot. My name originates from the God of Wind in Greek mythology - Aeolus, meaning the beauty of being swift and agile.




1.The robot' s main body,as shown in images 1-1.



Images 1-1

2.Battery

The battery is built in the robot' s belly. Do not remove it!
Charge the battery fully prior to use of the robot.

ATTENTION


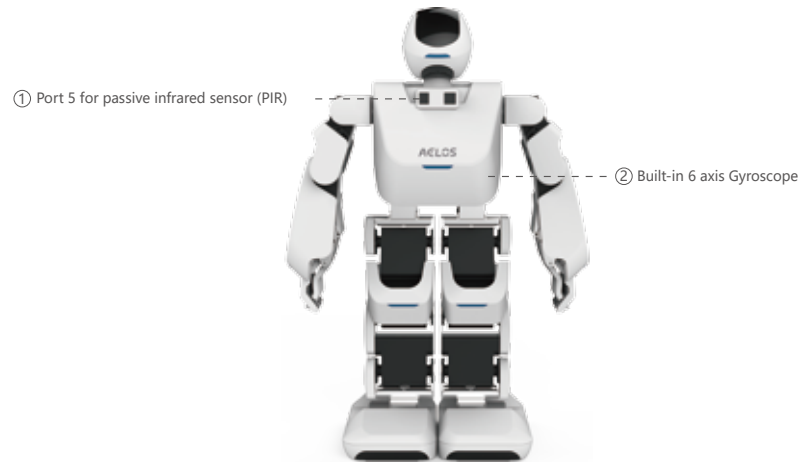
Please charge the robot with original adapter! Connect one end of the adapter to the charging port of the robot, and the other end to the input port of 100-240 V AC power supply, with the charging indicator being red. After charging for about two hours, the indicator light becomes green, and the battery is fully charged. Remove the adaptor from the robot and power supply, to stop charging. The robot may be put into normal use after the battery is fully charged. When the robot is in low power status, the robot will give a voice prompt-"low battery, please charge!". Don't charge for a long time, to prevent damage to the battery due to long-time charging

3. Main control board

The main control board is at the robot' s back.Don' t let foreign matters into the main control board ,to prevent damage to the robot.

4. Sensor interface

The robot has 2 built-in sensors.



5.Controller

The remote controller is an important tool to send signals to the robot. After programming of the robot with software, the controller will send signals upon power on and the robot will motion in accordance with the preset program after receipt of the signal from remote controller.

6.Robot programming software

Open the U-disk in the package, and install the software. With graphical programming interface for the software, programming thoughts, logic judgment and other elements are integrated into the program, which allows the user to exercise and enhance logic thinking ability during learning, and promotes completion of several tasks and exploration of the robot's potential by programming the robot with such software.

7.Expandable modules

The robot can execute the grabbing action through programming as well as pairing it with the expandable module (Mechanical Gripper).

Software introduction

The Aelos EDUcation software is a block-based programming software based on Blockly. Users can create applications using graphical objects, where each object is a coding block that can be interlocked to design simple functions, and these simple functions can be connected to create a program.

1. Launch the software and enter the main interface, as shown in images 1-2:



Images 1-2

- Click "New" on the menu bar and select "aelos edu pro" as the save path, as shown in images 1-3.
- Click "Serial Port" on the upper right-hand corner of the interface and select the serial port in the drop-down list. When the robot is successfully connected, there will be a pop-up window that shows "Serial Port has been opened." Next, choose the type of program on the command bar, drag-and-drop the code block to the coding area and begin designing the program. In images 1-3 it shows a simple program that commands the robot to lift its left hand.



Images 1-3

The programming modules in the command bar are divided into the following classes:

Loop modules, which realize loops and bifurcation jumps.



Control modules, which realize remote control and sensor control.



Base modules, which realize basic actions of the robot.



Boxing modules, which realize boxing actions of the robot.



Football modules, which realize football actions of the robot.



Custom modules, which add external actions to the robot.



Music modules, which play music for the robot.



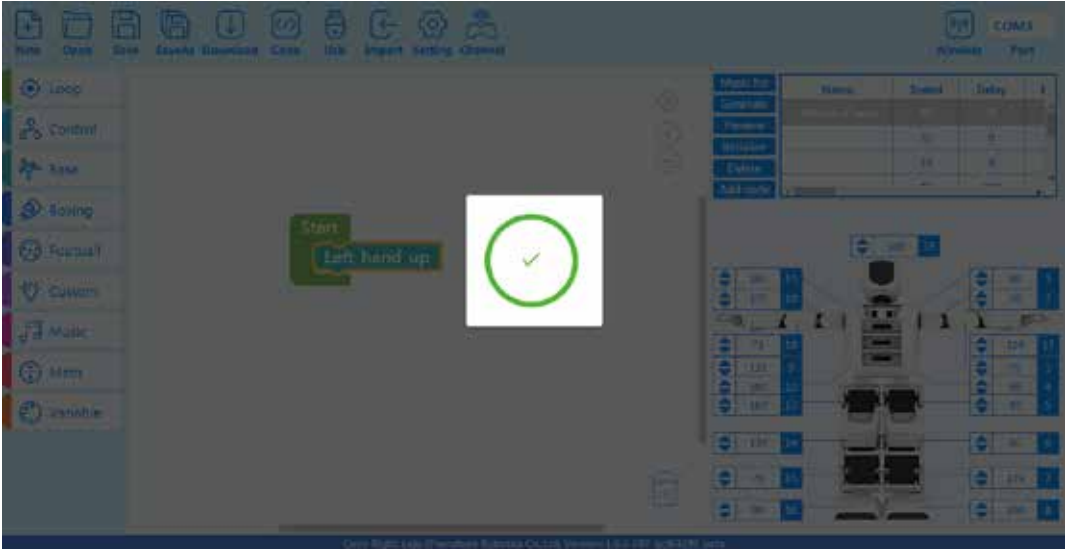
Math modules, which realize number definition.



Variable modules, which define variables.



4. After programming, click "Download" on the menu bar to download the project to the robot,as shown in images 1-4.



Images 1-4

Built-in files description

The default package of the AELOS robot includes a U-disk, which contains relevant files for use of and instruction on the robot. The U-disk built-in files are introduced as follows.

1. The PPT folder includes courseware and PC software package.
2. You may operate the robot after decompression and installation of the software.
3. You may also download relevant documents from the official website of Leju Robotics (www.lejurobot.com/support-->download module).

U-disk built-in files introduction

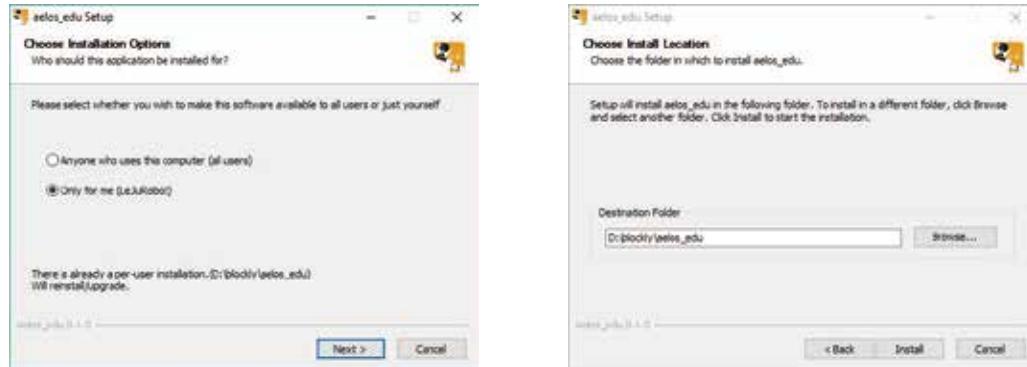
Read the U-disk files, including one folder.

Software Installation

Note: The robot software only supports Windows (Windows7 above) and Mac OS version. Here take the installation of Windows as example.

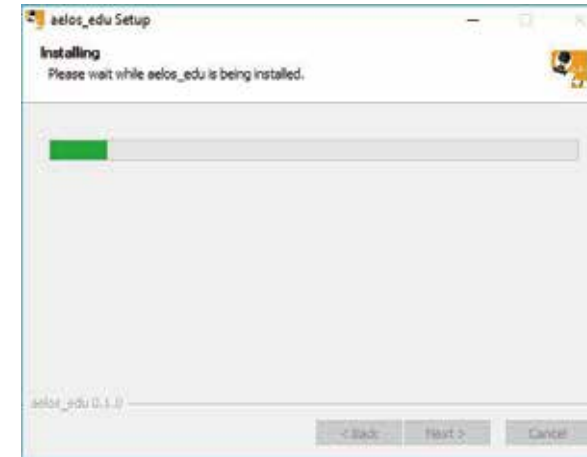
Aelos_edu software installation(Windows OS)

Install the EDUcation software by double-clicking the file `aelos_EDU_stable`. In the install wizard, select "Only for me " and click "Next" to select the installation path.



Note: If the operating system of your PC is MacOS, please double click the "aelos_edu_stable", and then drag "aelos_edu" icon to the "Applications" folder.

Click "Install" to enter the installation progress screen.



After completing installation, you can begin to make programming based on Aelos EDU hardware and software , even courseware.

How to use the controller

The controller is an important tool to control the robot. The user may enable one-to-one and one-to-more-control by setting the signal channel for robot and remote controller, and let the robot complete various motions through combination of software programming and the remote controller. For the user's convenient control to the robot, we have set the remote controller and Robot's signal channel before it ship out from the factory. To set the controller, please refer to "Controller User Guide".



Introduction of expandable modules

There are two main types of 3 expandable modules. The robot has 2 in-built sensor input modules that are installed on the chest area of the robot, which are the 6-axis sensor and the infrared distance sensor. Besides these 2 modules, a basic introduction will be provided for the third module that is used for the external grabber hand.



Mechanical Gripper

The robot can execute the grabbing action through programming as well as pairing it with the expandable module (Mechanical Gripper).

FAQs

Q1: Why is the robot not found after the serial port is connected?

- a. Check whether power of battery is sufficient.
- b. Check whether the robot is powered on.
- c. Check whether the serial port driver is installed.
- d. Check whether USB connecting port is damaged.

Q2: The robot has no motion

- a. Check whether power of battery is sufficient.
- b. Check whether motions of the robot are configured.
- c. Check whether the handle matches the robot.

Q3: The robot's motions are not stable

- a. Low power for the robot
- b. There is deviation in servo correction value. Please use zero-point adjustment tool for zero-point correction.
- c. Wear of the servo circuit. Check whether there is open circuit or short circuit.

Q4: The output module doesn't work

- a. Check whether the output modules are positioned at the designated output port.
- b. Check whether the robot program contains output command, and confirm that the command is correct.
- c. Check the contact of the output modules and the robot port. The output modules may not be worked due to poor contact.

Q5: Robot can't stand well ?

- a. Make sure Robot is with full battery Volume.
- b. Servo damaged, pls connect with local distributor to replace and repair.



Q6: Fail to install software .

a.Try to install software driver which can be downloaded from the link:
www.lejurobot.com/support

Warranty Policy

More detailed warranty terms, pls contact
with your local distributors on your market.

Special remind

1. The following circumstances can not enjoy free warranty services.

If you buy the product belongs to any of the following circumstances, the company/or distributor has the right to refuse providing free service but you can choose paid services:

- overdue for the free warranty services;
- Failure to use, maintain, keep the robot or related accessories in accordance with the requirements of the product manual;
- Without valid warranty certification and purchase invoice;
- Alter warranty certificate information and commodity information, which does not according with the actual fact
- Warranty certification, proof of purchase or sales invoice severely be damaged;
- Other non-product design, technology, manufacturing, quality and other issues caused by failure or damage;
- A failure or damage caused by force majeure,
- non-authorized dismantle or dismantle of the company' s after-sales staff,

2. The moment of purchase, please help the vendors complete this warranty card at the end of page about the sales information, and confirm with sales. Ask for a valid proof of purchase to the seller at the same time (with the official seal of the invoice seller).

3. Purchase vouchers, warranty certificates are important documents for you to enjoy the after-sales service, please keep and carry on each time when you need the service. If you can not show valid warranty certificates and valid purchase documents, the fault equipment is not within the scope of free service.

--In return, if unable to provide valid proof of purchase and warranty of evidence, proof of purchase and warranty certificates damage or unauthorized alteration, the robot shell has obvious trauma, scratches or drop traces, the package is damaged, the attachment is not complete and so on, the product does not return the goods in the range of services.

--For the discontinued products, Leju (Shenzhen) Robotics Co. Ltd, or related local distributor, can provide the replacement of Robot after confirmed with user consultation(not less than the original product performance) Keep the way for your fault belong to the scope of warranty products provide warranty service. For the replacement of the product by this way, the warranty period with the original product.

--Leju(Shenzhen)Robotics Co.Ltd, or local distributor, only provide repair service for all the products sold by the company, shall not provide door-to-door service and does not bear the transportation costs incurred in the process of repair.

--When you need the repairing service for your product, please leave your contact information, so that after the repair we or our local distributor can contact you in time. Please receive the notification within one week to the point of receipt, more than two months did not receive the product, Leju(Shenzhen)Robotics Co., Ltd will no longer bear the responsibility of keeping.

The above-mentioned terms, Leju(Shenzhen)Robotics Co., Ltd distributor has the final right of interpretation.

FCC Caution:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC 's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.

