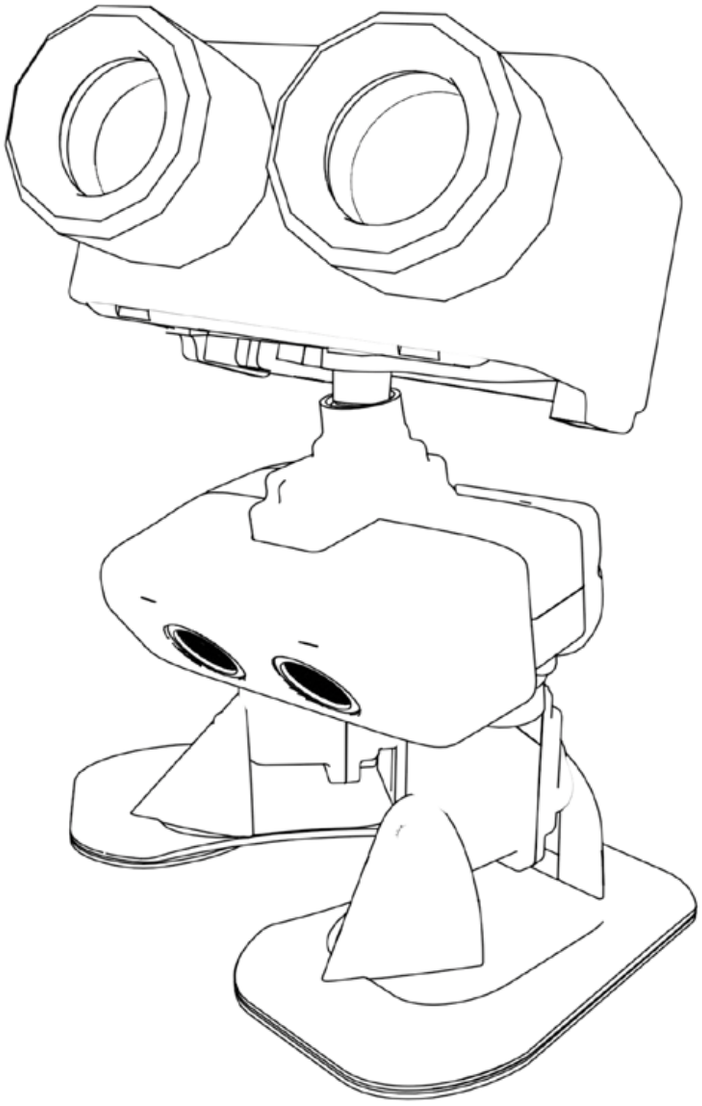
PU

EDUCATIONAL AI ROBOT
PU 1000 SERIES

USER MANUAL



SCAN BAR CODE
FOR MORE INFORMATION

ROBOTGYMS

A LETTER FROM THE TEAM

Thank you for choosing PU !

Thank you for choosing PU, the first educational robot from Robot Gyms Inc.! At Robot Gyms, we believe robots are more than tools—they're gateways to unlocking creativity and inspiring young minds. With PU, we hope to spark curiosity and empower children to learn, build, and share in exciting new ways.

Our team is dedicated to creating innovative products that make learning fun and transformative. We're excited to have you on this journey and can't wait to see what your child will create with PU.

If you ever need help or have questions, our team is here for you at **support@robotgyms.com**. We're just a message away!

Here's to a world of endless possibilities,
The RobotGyms Team

WARNINGS

CHOKING HAZARD

Small parts - Not for children under 3yrs old.

BATTERY

- Do not mix old and new batteries.
- Do not mix alkaline, standard (carbon-zinc) or rechargeable (nickel-cadmium) batteries.

TOOL SAFETY

The provided screwdriver is not a toy. Caregivers shall retain the tool for future use and store it out of reach of children.

FCC WARNING

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

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:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

BEFORE START YOUR JOURNEY...

ACTIVATE YOUR WARRANTY IN 30 DAYS

1. WARRANTY COVERAGE

Robot Pu (the "Product") is covered by a limited warranty provided by Robot Gyms Inc. ("the Company"). This warranty covers defects in materials and workmanship under normal use for a period of one (1) month from the date of purchase ("Warranty Period").

2. WARRANTY SERVICE

2.1 Eligibility

To be eligible for warranty service, the original purchaser must provide proof of purchase and must have registered the Product within 30 days of purchase.

2.2 Coverage

During the Warranty Period, the Company will repair or replace, at its discretion, any defective Product or parts free of charge.

The Company reserves the right to use new or refurbished parts or products for replacements.

2.3 Exclusions

This warranty does not cover:

- Damage caused by accident, misuse, abuse, or neglect.
- Damage caused by modifications or unauthorized repair.
- Normal wear and tear.
- Cosmetic damage, including but not limited to scratches, dents, and broken plastic.
- Damage caused by external factors, such as floods, fires, earthquakes, and other acts of nature.

3. PRODUCT REGISTRATION

To activate your warranty, you must register your product within 30 days of purchase.

- Scan the QR Code: Open the head cover of your Robot Pu and scan the registration QR code.
- Enter the Serial Number: The serial number is located underneath the QR code. Enter it on the registration webpage and follow the instructions to complete the process.

4. HOW TO OBTAIN WARRANTY SERVICE

4.1 Contacting Support

To obtain warranty service, the original purchaser must contact the Company's customer support at support@robot-gyms.com. The customer support team will provide instructions for returning the Product.

4.2 Shipping

The customer is responsible for shipping the Product to the Company. The Company will cover the cost of return shipping for repaired or replaced Products.

5. LIMITATIONS & DISCLAIMERS

5.1 Limitation of Liability

To the extent permitted by law, the Company shall not be liable for any indirect, incidental, or consequential damages arising from the use of the Product, including but not limited to loss of use, loss of data, and loss of profits.

5.2 Implied Warranties

This warranty is in lieu of all other warranties, express or implied, including any implied warranties of merchantability or fitness for a particular purpose. Some jurisdictions do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

5.3 Governing Law

This warranty shall be governed by and construed in accordance with the laws of California, USA, without regard to its conflict of law principles.

6. CHANGES TO WARRANTY

The Company reserves the right to modify this warranty at any time, provided that any such modification will not retroactively affect the warranty terms applicable to Products purchased prior to the date of the modification.

PRODUCT SPECIFICATION

FORM FACTOR

Width x Length x Height	12 x 11 x 16 centimeters
Weight	300 grams

WORKING ENVIRONMENT

Terrain	Indoor. Flat hard surface (<10 degree tilt)
Temperature	1 – 30 °C

PERFORMANCE

Skills	Walk, auto pilot, dance, speak, sing, eye emotions, social
Moving Speed	-3 – 6 cm/sec
Moving Directions	Forward, backward, turn left/right, side step left/right
Operation Mode	Remote control, autonomous
Networking	Robots will talk and interact with each other via radio
Plug & Play Expansion	LEGO pin holes on back and head, spare sensor/motor slots

ONLINE CONTENTS

Education Projects	1. 3D design and 3D printing 2. Software programming (Block, JavaScript, Python, C++) 3. Algorithm design 4. Artificial Intelligence
Hobby Projects	DIY projects on Robot Gyms website with optional senors, AI cameras, solar panels, skating shoes, cross country tank track, etc
Games & Shows	Soccer, maze runner, security patrol, hide and seek, movie star, chorus, group dance, etc
Social Activity	Join Pu Community to allow owners to improve Pu's capability either in hardware or software, and to share experience.

SENSORS

IMU Sensor, Accelerometer	x, y, z
Sonar	1
Thermometer	1
Microphone	1
Compass	1
Touch Pin	1

Buttons	3
Radio Antenna	1

MOTORS AND ACTUATORS

Servos and Motors	6 (supports up to 10)
Speaker	1
Display	5×5 LED lights
RGB LED Lights	4
LED spotlights	2

GAME PAD

Joystick	1
Buttons	8
Speaker	1
Display	5×5 led lights
Vibration motor	1
Radio Antenna	1

ACCESSORIES

Backpack	x 1. To carry light wight items when walking
LEGO Adapter Pins	x 5. To attach other sensors or camera on top of robot head

SAFETY

Tilt Balance	Robot will counterbalance its body tilt
Obstacle Avoidance	Robot can use the sonar to find pathways
Collision Protection	• Shoes auto-detach to avoid servo damages during collision • Soft skull shell to absorb impact shocks
Fall defense	Robot will enter fetal position if it fells

POWER

Batter Type	Lithium-Ion x 1
Battery Capacity	400 mAh
Charging	USB micro cable
Operation Time	20-30 minutes
Charging Time	20-30 minutes

COMMUNICATION

Interface	Radio
Controls	Game-pad

SOFTWARE

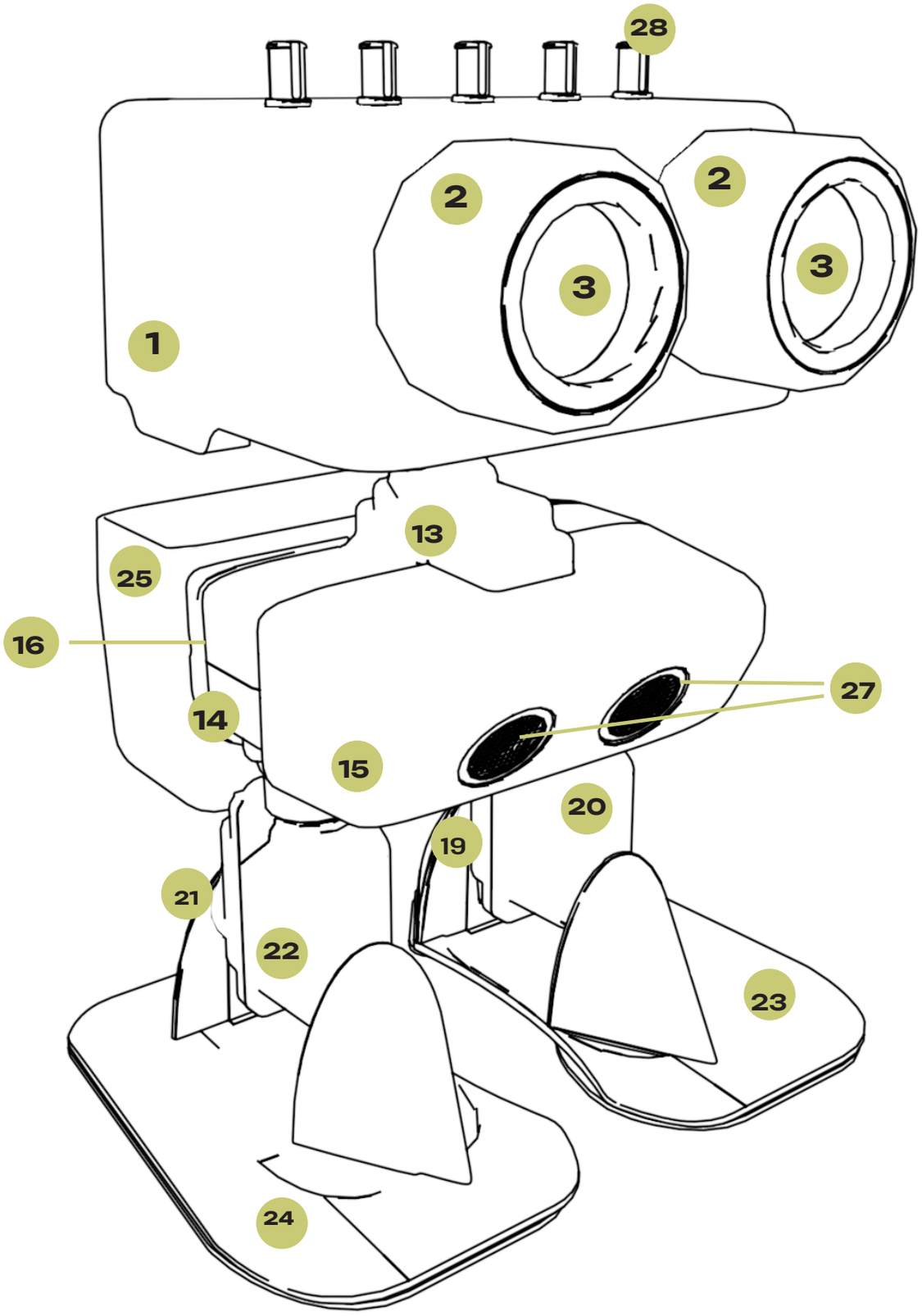
Language	Block, JavaScript, Python, C
Programming UI	Web browser, or other programming tools

CONTACTS

Email	support@robotgyms.com
Social Media	**The Story of Pu** on Youtube, TikTok and Instagram Join our adventure and discover the latest exciting stories of PU! Youtube TikTok Instagram

GETTING STARTED WITH ROBOT PU

Product Layout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1 Headshell x 1

- Hold circuit boards, battery, head servo.
- LEGO pin adapter holes to connect LEGO

2 Lens Bracket x 2

Hold lens and mount to the headshell.

3 Lens x 2

Light effect with LED.

13 Shoulder Bracket x 1

- Hold the neck servo.
- Connect the neck bracket to chest bracket.

14 Chest Bracket x 1

- Hold leg servos.
- Connect the shoulder bracket to leg

15 Front Cover x 1

Hold the sonar sensor and connect to the chest bracket.

16 Back Cover x1

- Arrange and secure wires. Provide LEGO pin holes.
- Connect to backpack and other external LEGO pieces.

19 Left Leg Bracket x 1

Hold the left foot servo.

20 Left Leg Cover x 1

- Protect the left foot servo.
- Connect leg brackets to the

21 Right Leg Bracket x 1

Hold the right foot servo.

22 Right Leg Cover x 1

- Protect the right feet servo.
- Connect leg brackets to the right foot.

23 Left Foot x 1

Connect to left foot servo. Foot movements.

24 Right Foot x 1

Connect to right foot servo. Foot movements.

25 Backpack x 1

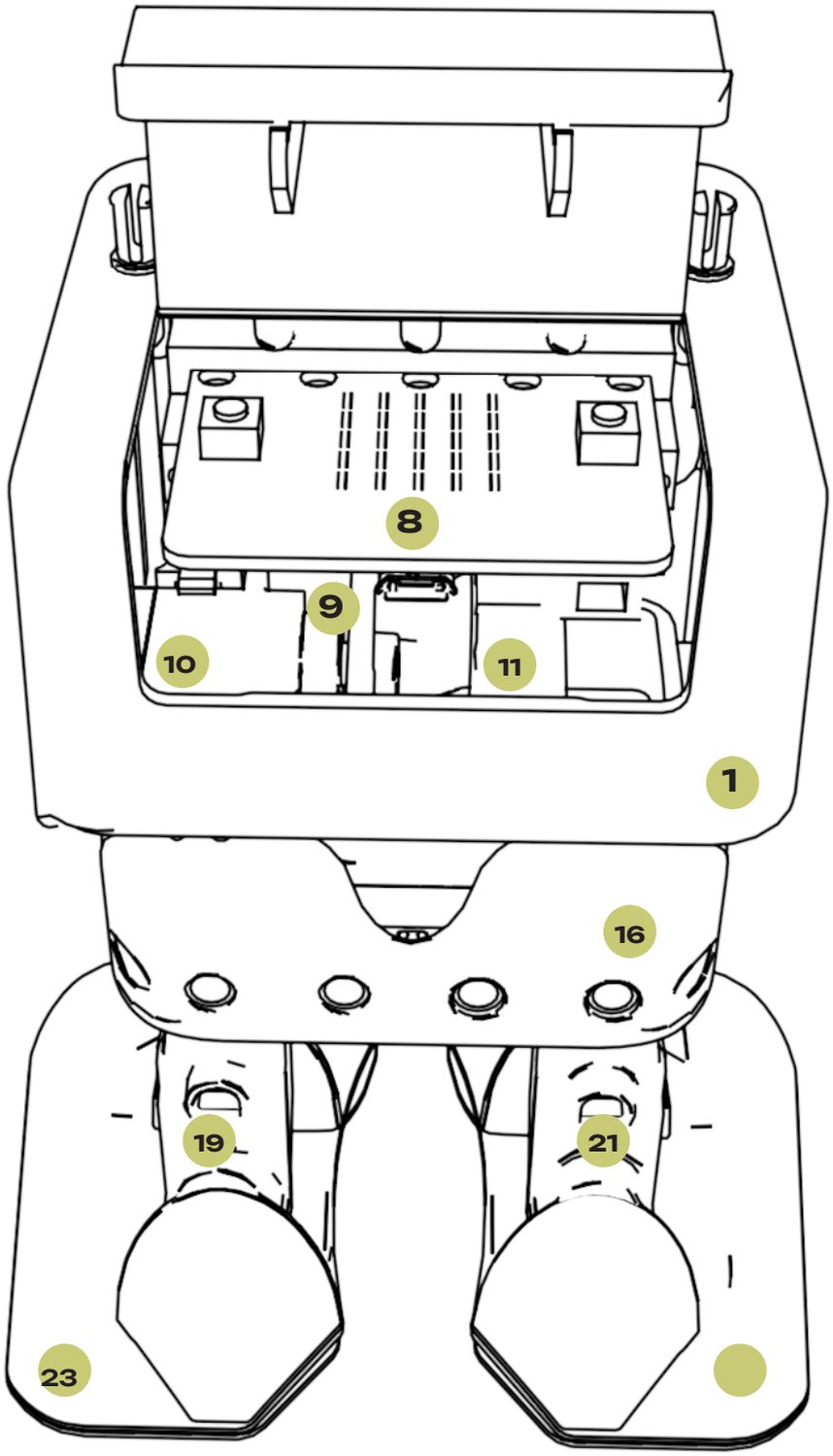
Connect to the back cover. Hold items.

27 Sonar Sensor x 1

Measure the distance to obstacles.

28 LEGO Pin Adapters x 5

Connect the headshell to external LEGO pieces.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1 Headshell x 1

- Hold circuit boards, battery, head servo.
- LEGO pin adapter holes to connect LEGO pieces.

8 micro:bit x 1

Control robots and AI functions.

9 Head Servo x 1

The robot looks up/down

10 Head Servo Bracket x 1

Hold the head servo.

11 Neck Bracket x 1

Connect the neck servo and the head servo to the headshell.

16 Back Cover x 1

- Arrange and secure wires. Provide LEGO pin holes.
- Connect to the backpack and other external LEGO pieces.

19 Left Leg Bracket x 1

Hold the right foot servo.

21 Right Leg Bracket x1

Hold the right foot servo.

23 Left Foot x 1

Connect to left foot servo. Foot movements.

24 Right Foot x 1

Connect to right foot servo. Foot movements.

How to play with PU?

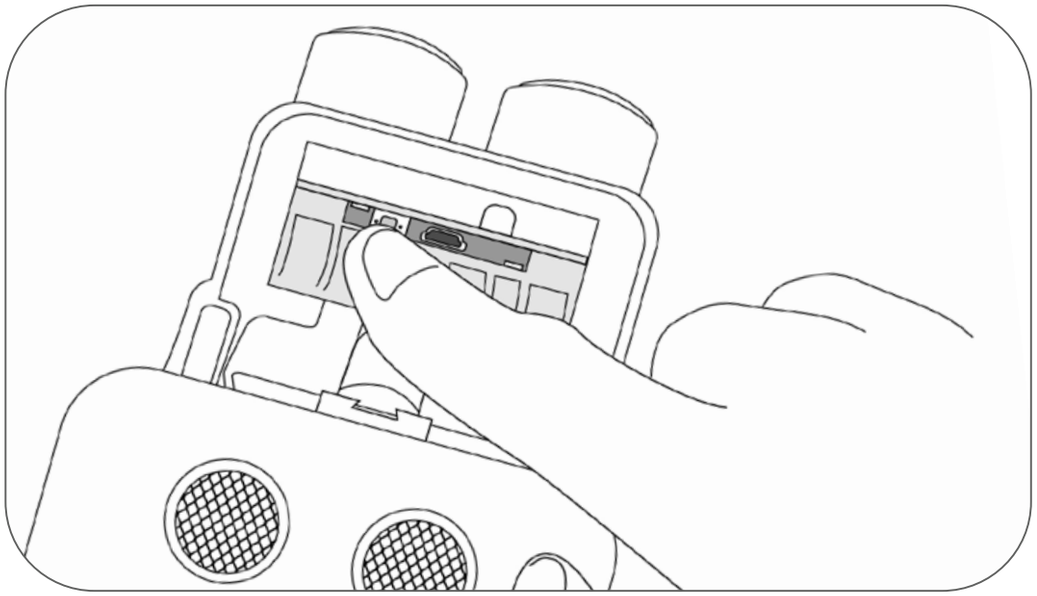
Pu is an incredibly capable AI robot! you can have a lot of fun with him.

Pu is powered by a micro:bit chip in his brain, while the gamepad controller houses another. Together, these two micro:bit chips collaborate to infuse Pu with life and intelligence.

Turning on/off the Robot Pu

To power Pu on, simply click the black button on his chin. Pu will stay in the calibration position for 2 seconds before beginning any actions. The radio control channel number will appear on the micro:bit LED, which you can view by opening Pu's head lid.

To power Pu off, double-click the black power button.



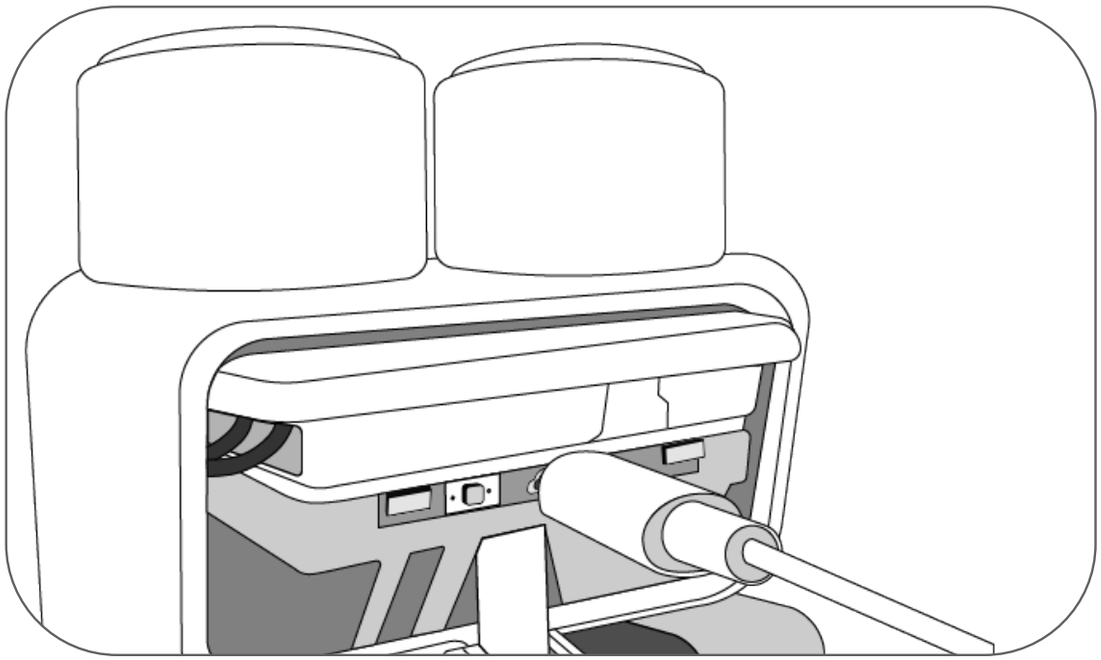
Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

WARNING
When power is on, do not twist Pu's joints by force.
It will damage his motors.

Charging the Battery of Robot Pu

You can charge Pu using a micro USB cable. The charging port is located under Pu's chin. Plug in the USB cable, and the charging LED beneath the black power button will light up blue. A full battery provides around 30 minutes of action time, depending on the diving mode. It takes 20-30 minutes to fully charge.



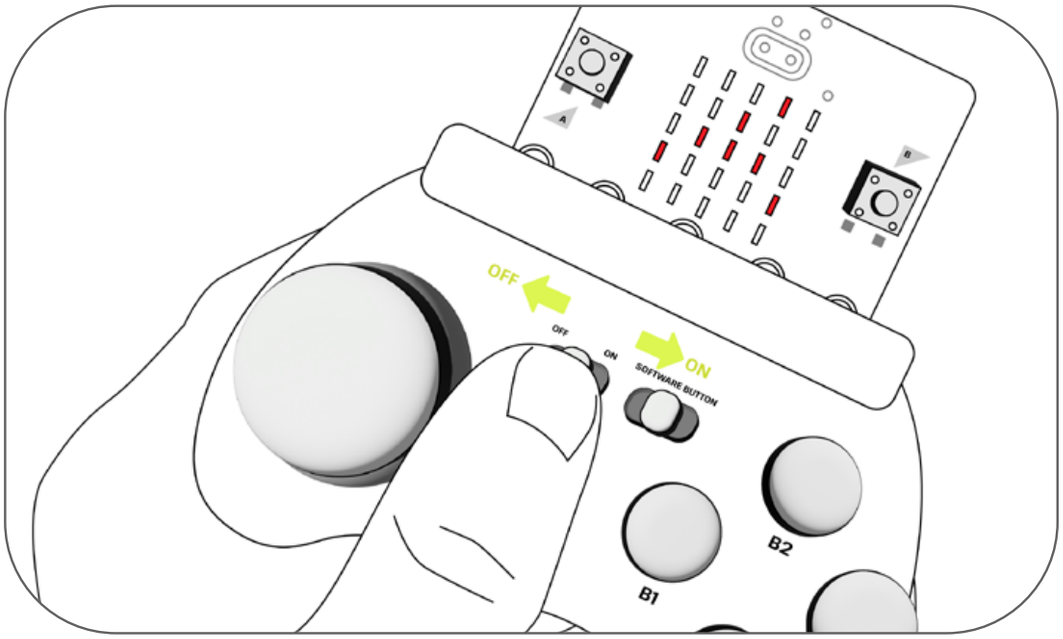
Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Turning on/off Gamepad Controller

Slide the power switch to the 'On' position to turn on the gamepad. The radio control channel number will be displayed on the micro:bit LED screen.

Slide the power switch to the 'OFF' position to turn off the gamepad. Turn off the gamepad to save its battery.

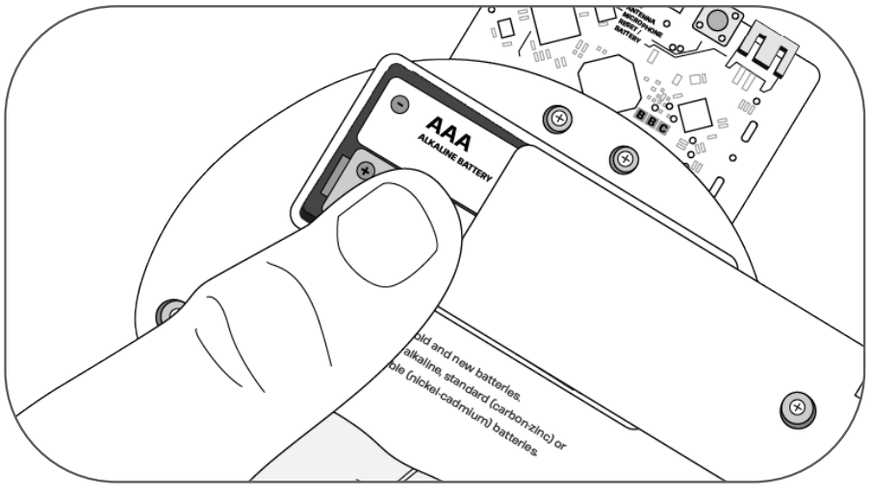


Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Changing the Battery of Gamepad

The gamepad requires 2 AAA batteries, which provide about 12 hours of use. To save power, turn off the gamepad when not in use. To change the batteries, untighten the screw on the battery cover at the back, replace the old batteries with new ones, slide the cover back into place, and tighten the screw securely.



Any questions?

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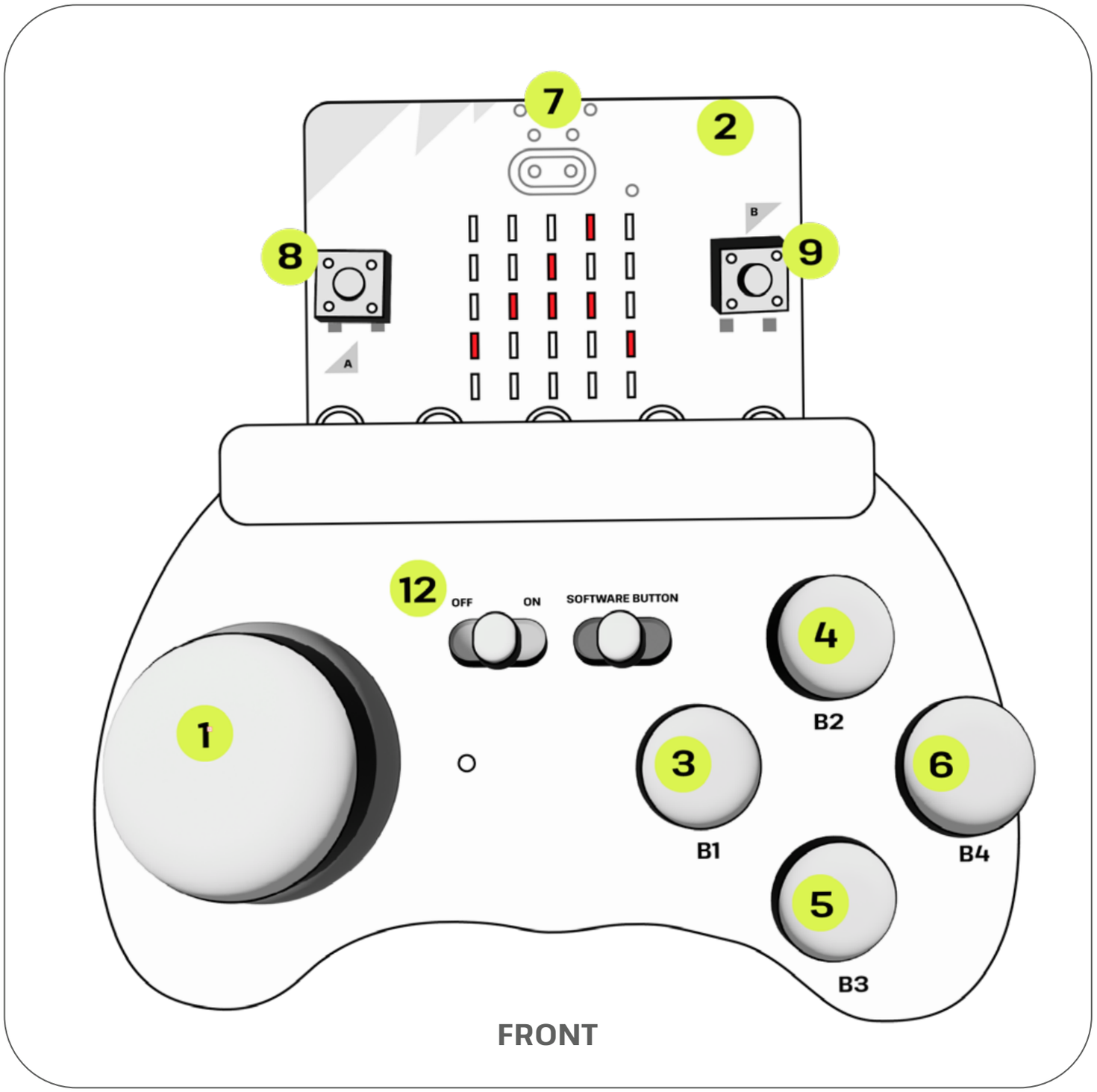
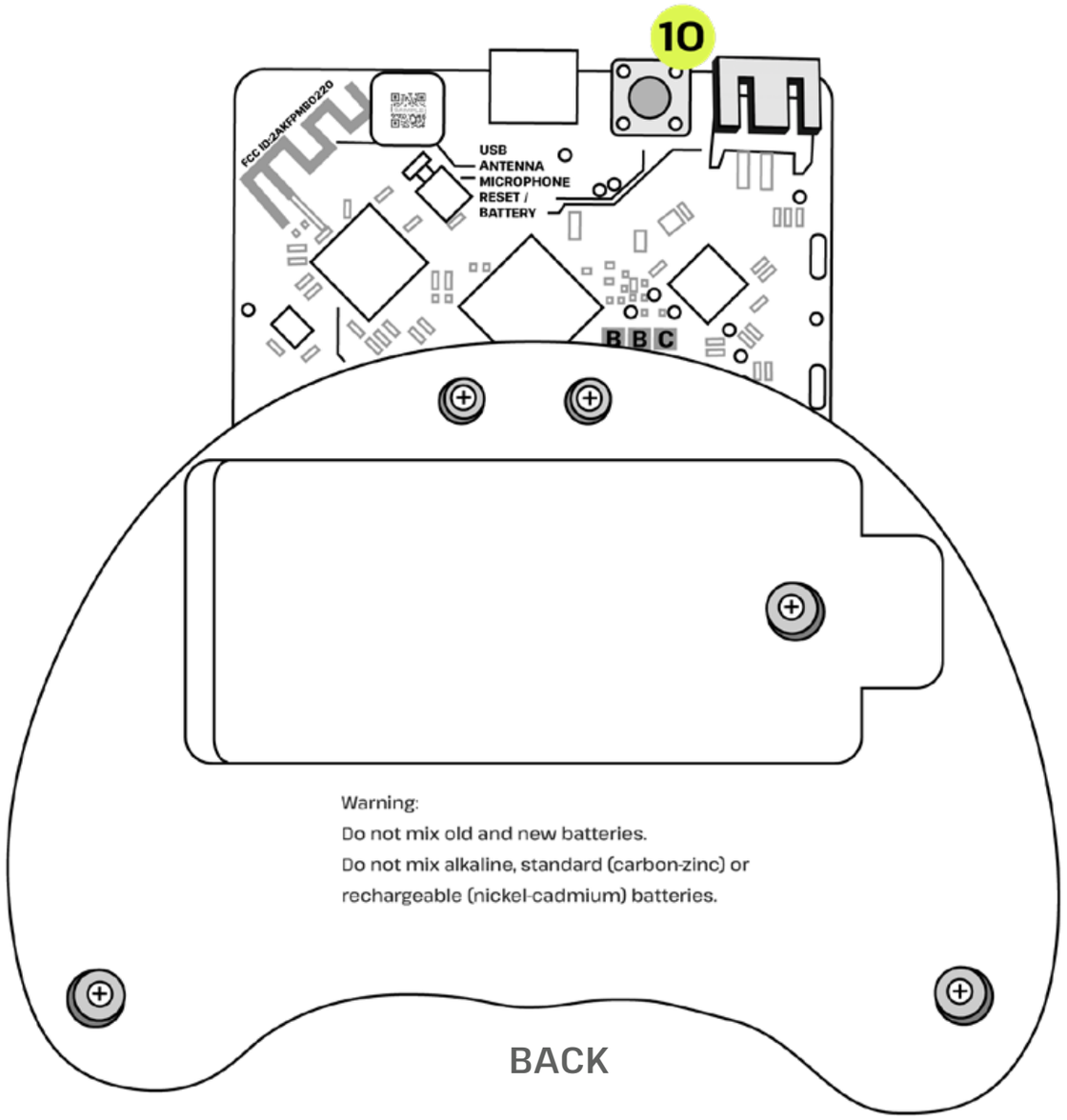
Default Gamepad Controls





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Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

No.	Controls	Functions
1	Joystick	1. Pushing the stick forward or backward makes the robot move in the corresponding direction. The further you push, the faster the robot goes. 2. Tilting the stick left or right makes the robot turn in that direction. The more you tilt, the sharper the turn. 3. Pressing down on the joystick once puts the robot into resting mode. 4. Tilting the stick far left or far right makes the robot perform side steps toward the corresponding direction.
2	Micro:Bit Gesture	When you use the joystick, pitch the gamepad up and down to make Pu's head move up and down. Tilting the gamepad left and right will make Pu turn his head in the corresponding direction.
3	Button B1	Makes robot Pu enter auto-pilot mode. Pu will walk around or explore a maze,
4	Button B2	Makes robot Pu jump, which is useful in soccer games and dance. Do not keep pressing this button. Pu will not perform the next jump until the previous jump is finished.
5	Button B3	Makes robot Pu dance. If you turn on music, Pu will dance to the tempo of your music, and his LED lights will change color based on the beat.
6	Button B4	Makes robot Pu kick, which is useful in soccer games. Do not keep pressing this button. Pu will not perform the next kick until the previous kick is finished.

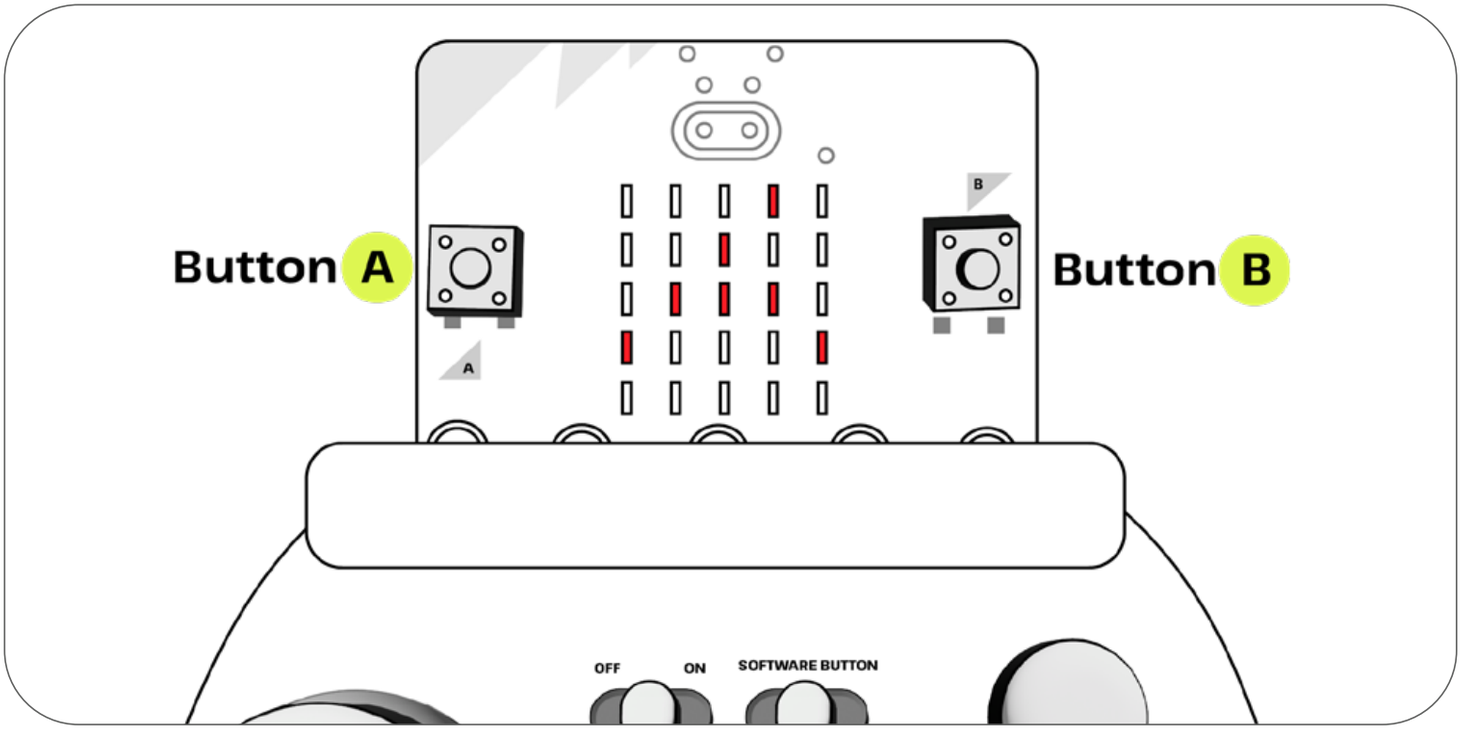
No.	Controls	Functions
7	Microbit Logo	Touching the micro:bit logo will make robot Pu talk or sing randomly. What he says depends on his recent activities. You can program it to change the factory default behaviors.
8	Microbit Button A	Increases the radio control channel. The channel number will be updated on the micro:bit display.
9	Microbit Button B	Decreases the radio control channel. The channel number will be updated on the micro:bit display.
10	Microbit Reset Button	Restarts gamepad control program. The radio channel will be back to the default 6.
11	Microbit Button A + B	Press button A and B at same time. Display the actual radio control channel. The actual radio channel is 160 + the displayed number.
12	Power Switch	Turn on/off the power of gamepad

Adjust Radio Control Channel for Multiple Robots

The gamepad must be on the same radio channel as Pu to control him. In group activities, such as soccer games, robots must be controlled on different channels.

Pu supports up to 256 radio channels, with the default set to channel 6. The current channel number is displayed on the micro:bit screen. You can change the channel using buttons A and B on the micro:bit – one located on the gamepad and the other inside Pu's head.

To increase the radio channel, press button A on the micro:bit. To decrease the channel, press button B. To reset to channel 6, simply power cycle both the gamepad and Pu.



micro:bit

To increase the radio channel, press button A on the micro:bit. To decrease the channel, press button B. To reset to channel 6, simply power cycle both the gamepad and Pu.

You can use one gamepad to control multiple Pu robots as long as they are on the same radio channel. Avoid controlling Pu robots with multiple gamepads on the same channel, as this can cause confusion.

To reduce the chance of control channel collision, it is recommended to use a radio control channel other than the default channel 6.

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

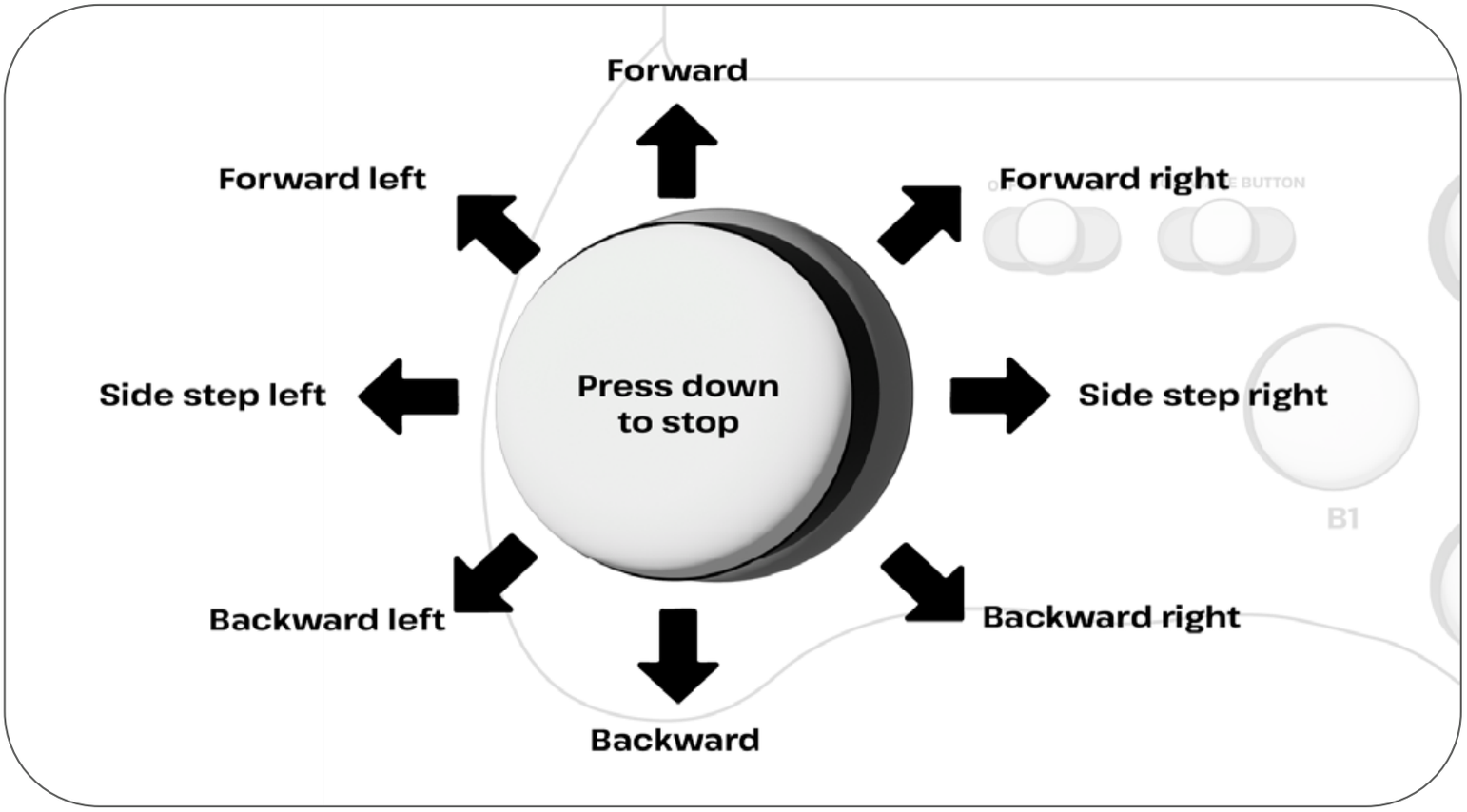
Use Gamepad to Control Walking

Pushing the gamepad joystick forward will make Pu move forward, while pulling it backward will make Pu move backward. The further you push, the faster he goes.

Tilting the joystick left while pushing forward or backward will make Pu turn left; tilting it right will make him turn right.

Tilting the joystick to left most or right most will make Pu do side steps.

Press down the joystick, Pu will stop walking and enter resting mode.



Any questions?

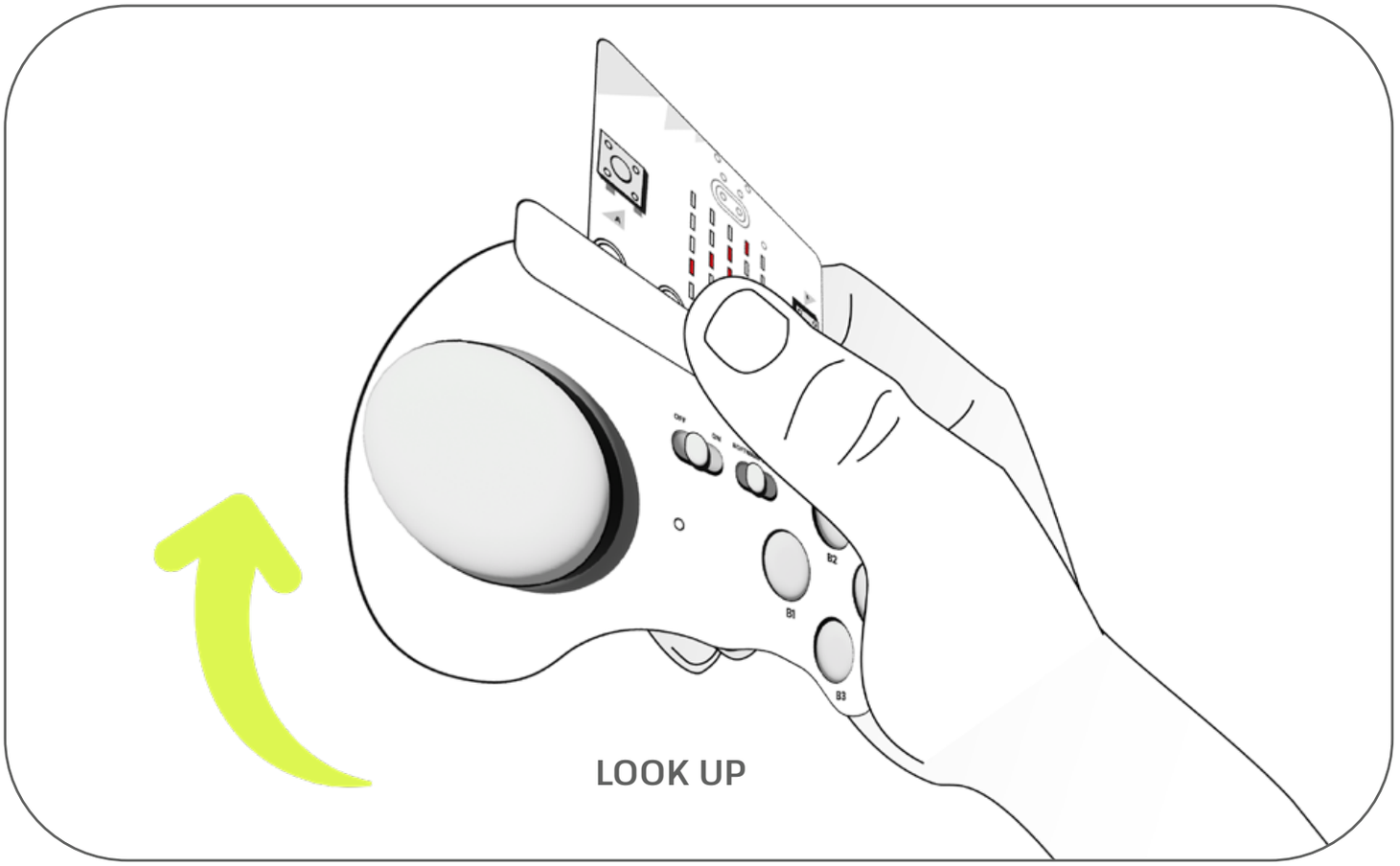
Scan here to watch our step-by-step setup guide on YouTube!

Use the Gamepad to Control Pu's Head

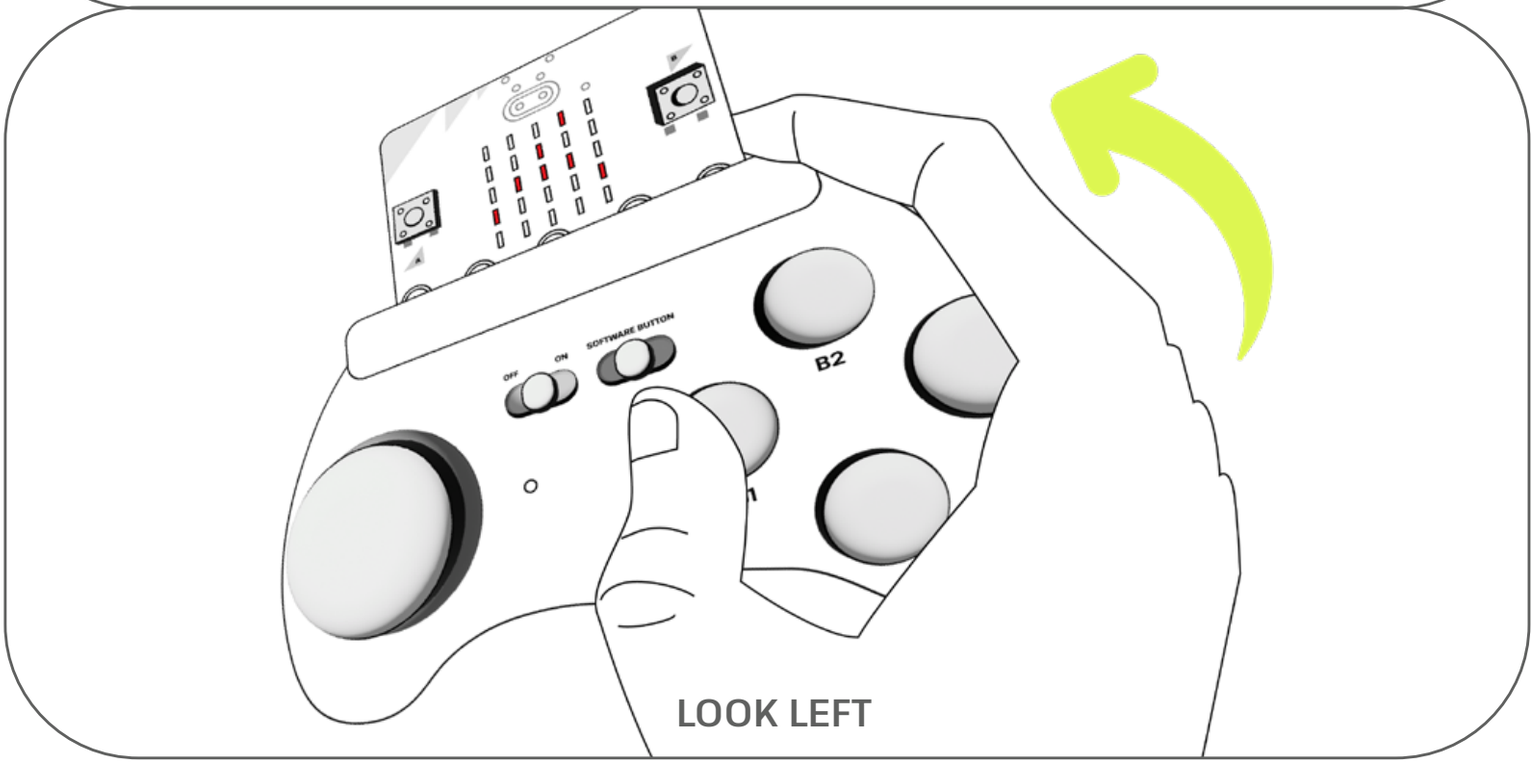
Pu's head movement is controlled by gamepad gestures. Tilting the entire gamepad upward will raise Pu's head, while tilting it downward will lower his head. Tilting the whole gamepad left will turn Pu's head left, and tilting it right will turn his head right.

You may make Pu sneeze by quickly pitching the gamepad up or down close to vertical.

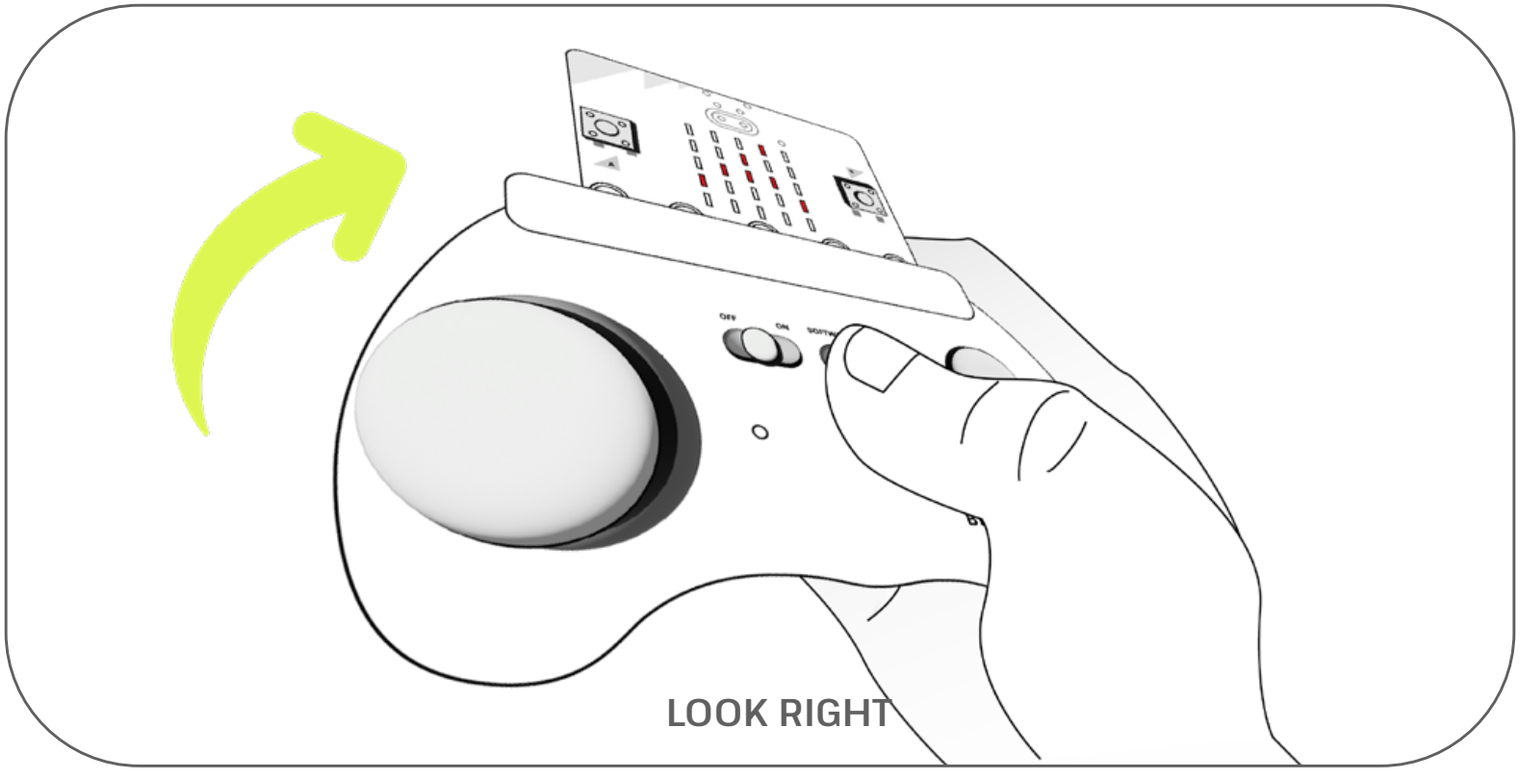
You can manually control Pu's head for dance routines or making movies, since his head movements are so natural.



LOOK DOWN



LOOK LEFT



WARNING

You cannot control Pu's head when Pu is in resting mode, auto-pilot mode, dance mode, or when he is moving, as he needs his head for balancing.

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Auto-Pilot

Clicking the gamepad button B1 will make Pu enter auto-pilot mode, also known as exploring mode. He will walk around, avoiding obstacles and finding safe paths, for example, navigating through a maze.

Moving the joystick will exit auto-pilot mode and allow for direct remote control. If Pu falls during auto-pilot, he will talk and ask for help. Once you put him back on his feet, he will resume auto-pilot.

WARNING

- *Pu cannot detect falling steps, so avoid using auto-pilot mode near edges where he could fall.*
- *Pu cannot detect soft objects such as puff dolls because they do not reflect sound waves.*

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Dancing with Music

Press button B3 to make Pu start dancing. When music plays, Pu syncs his moves to the tempo, especially with strong drum beats like Disco. Without music, he dances at his own pace.

Pu can perform moves like the moonwalk, splits, and hip bumps, creating dynamic routines. You can manually control his dance with the joystick or use Python programming to add more advanced dance routines.

WARNING
Remove extra loads, such as backpacks, before entering dance mode. Dancing requires Pu to be lightweight.

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Self-Balance

Using his IMU sensor, Pu can counterbalance floor tilting up to 20 degrees, using his feet and head. Place Pu on a rolling flat board to observe his balancing movements. Thanks to this balance capability, Pu can traverse uneven terrains with small bumps and debris, and maintain balance while performing complex dance moves.

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Emergency Stop

There are three ways to stop Pu in an emergency:

- If Pu is still under effective remote control, press the gamepad joystick downward. Pu will stop actions and go into resting mode.
- Double-click the power button under Pu's chin to turn off Pu's power.
- Open Pu's head cover lid and pull out the micro:bit chip.

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Protection Functions

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Pu has several features to protect himself.

- Pu's shoes can easily snap on and off, similar to ski boots. During collisions, his shoes may snap off to protect the motors from gearbox damage. You can quickly snap the shoes back on if they come off. This feature is also handy for switching among skating shoes, dance shoes, and walking shoes.

- In the event of a free fall, Pu will enter a fetal position to minimize the impact on his motor gearbox and circuit boards. Any gamepad controls will make Pu exit the fetal position.

Resting Mode

If the gamepad is powered off, there is no gamepad on the same radio channel as Pu, or the joystick is pressed downward, Pu will enter resting mode. In this

mode, Pu will perform various ad-hoc activities:

- Look around
- Engage in cute talk
- Report temperature
- Sing new melodies that he composes on the fly using AI (touching the gamepad micro:bit logo will prompt him to compose music immediately)
- Self-balance
- Go to sleep if the environment is quiet

If you know Python programming, you can add more AI features to enhance his abilities in resting mode.

WARNING
When you turn off the gamepad, Robot Pu will enter resting mode after 2 seconds to prevent him from erring without control.

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Sleep Mode

To save power, Pu will enter sleep mode after staying in resting mode for a while in a quiet environment. In sleep mode, he will stand quietly, and his eye lights will turn off.

He will wake up when there is:

- A loud noise
- Sudden tilting
- Significant vibrations
- A command received from the gamepad

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Talking

Pu would talk in the following situations:

- **Boot-Up**: Says his name.
- **Gamepad Interaction**: Touch the micro:bit logo button to make Pu talk or sing based on the gamepad's pitch and roll. You can customize the content through programming.
- **Resting Mode**: Engages in casual conversation or reports the room temperature. Nearby Pu robots on the same channel communicate with each other.
- **Falling**: Asks for help when he falls and thanks you once upright.
- **Auto-Pilot Mode**: Speech varies based on his recent activities.

Feel free to enhance Pu's talking features further with Python programming.

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Create Melodies & Sing

Pu will compose a new short melody and sing it under the following conditions:

- In resting mode, Pu will sing about once per minute randomly.
- When the gamepad logo is touched, Pu will either sing or talk.

By Python programming using AI algorithms, you can make Pu's melodies more stylish.

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Spotlight Eyes & Emotions

Pu's googly eyes double as night spotlights and express his emotions through blinking and flashing. The blink and flash frequency indicate his current mood.

Emotions are influenced by Pu's status, environment, and your interactions, and cannot be controlled directly.

Emotion Patterns

- **Sleepy**: Dim eyes with slower, more frequent blinks.
- **Anxious/Confused**: Brighter eyes with increased blinking.
- **Emergency**: Eyes flash left and right.

With Python and AI algorithms, you can create more complex eye emotions.

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Playing Soccer

Pu can play soccer with other Pu robots. The gamepad allows you to control Pu's speed and direction, as well as to jump (**B2 button**) and kick (**B4 button**) the soccer ball. Invite your friends for a robot soccer game! Robot Pu has 256 radio control channels, so you can host a 256-Pu robot soccer game.

WARNING

- *Do not press the B2 and B4 buttons in quick succession. Pu has to complete each jump or kick one by one. He will not perform the next jump or kick until the previous one is finished.*
- *Do not make Pu talk during the soccer game, as he will not move while he is talking.*

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Interacting with Other Robots

In resting mode, Pu communicates with nearby robots via radio. If multiple robots are on the same channel, Pu talks more frequently. When Pu mentions

"friends around" or a friend's activity, try to greet nearby Robot Pu units to make new friends.

To connect with more robots, stay on channel 6 (default) or use Python scripts to scan all 256 channels.

Visit the Pu community for group projects like voting for a leader or planning activities.

WARNING

Using the default channel may let others control your robot. If it acts erratically or is slow, another Robot Pu might be nearby. Switch to a different channel if needed.

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Extensive STEM Programs

Pu is programmable and upgradable with a micro:bit chip, widely used in schools worldwide. Access numerous programming examples or create your own to enhance Robot Pu.

Robot Pu includes extra motor, signal, and I2C pins for adding actuators and sensors. LEGO adapters make it easy to attach new parts for STEM projects.

Visit **RobotGyms.com** for:

- 3D Design & Printing
- Programming
- Algorithm Design & AI

Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

Pu Community & Hobby Projects

Pu includes LEGO adapters and extra signal/motor pins for adding sensors and 3D-printed parts to your DIY projects. In the online Pu community, developers share hobby projects that you can follow or enhance:

- Adding tools and toys with LEGO constructions
- Installing skating shoes for skating moves
- Attaching arms to Robot Pu
- Integrating micro:bit for enhanced functionality
- Adding sensors and AI cameras for better environmental awareness
- Enhancing mobility with additional actuators and motors
- Using solar panels for increased sustainability

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Any questions?

Scan here to watch our step-by-step setup guide on YouTube!

You are all set!

How to Protect PU?

Pu is a robot equipped with circuit boards, motors, and a battery. There are several things you should avoid to prevent damage and ensure safety.

Scan here to watch our safety training on YouTube!

Battery Safety

Battery safety in robots is crucial to ensure both the longevity of the robot and the safety of its users.

- **Handle with Care**: Pu uses a lithium-ion battery.
  Do not disassemble, puncture, short-circuit, or set it on fire.
- **Charging**: Follow proper charging procedures. Avoid overcharging and ensure good ventilation to prevent overheating.
  Storage: Keep Pu in a cool, dry place away from direct sunlight, heat sources, and moisture.
- **Inspection**: Regularly check for signs of wear, damage, or malfunction to prevent accidents and extend battery life.
- **Transporting**: Use protective cases to prevent physical damage and short circuits. Keep Pu away from metal objects.
- **Power Sources**: Use only certified USB cables and plug into stable USB power sources.

WARNING
Do not mix old and new batteries.
Do not mix alkaline, standard (carbon-zinc) or rechargeable (nickel-cadmium) batteries.

Mechanical Safety

Mechanical safety procedures for robots are crucial to ensure safe operation and prevent accidents. Here are some key procedures:

- **Safety Barriers:** Keep a safe distance from Pu while it's operating, especially from your eyes.
- **Risk Assessment:** Identify and avoid potential hazards to prevent falls or collisions.
- **Motor Loading Limits**: Do not forcefully twist Pu's head or limbs to protect motor gearboxes.
- **Emergency Stop**: Turn off power or remove the micro:bit to stop Pu. Alternatively, press the gamepad joystick on the correct channel to make Pu stop and stand.
- **Regular Maintenance**: Check mechanical components regularly to ensure they are functioning properly.
- **Training**: Read the manual or watch training videos before operating or maintaining Pu.
- **Proper Installation:** Follow manufacturer guidelines for wiring and safety device connections.
- **Documentation:** Keep detailed records of maintenance and any modifications.

Circuit Board Safety

To ensure the safety of robot circuit boards, several precautions should be taken:

- **Grounding and Shielding**: Proper grounding and shielding help protect the circuit board from electrical noise and static discharge. Do not attach wires to circuit board except using provided pins.
- **Surge Protection**: Follow the manual to ensure correct wiring polarity of power lines and signal lines.
- **ESD Precautions**: Follow Electrostatic Discharge (ESD) precautions when handling the circuit board. Use anti-static wrist straps and mats to prevent static electricity from damaging sensitive components.
- **Regular Inspections**: Conduct regular inspections to check for signs of wear, corrosion, or damage. Early detection of issues can prevent larger problems down the line.
- **Secure Connections**: Ensure that all connections and wires are securely fastened to prevent loose connections, which can cause short circuits or intermittent failures.
- **Use of Protective Enclosures**: do not run robots without its external shells.
- **Proper Labeling**: Label all components and wires clearly to avoid confusion during maintenance and repairs.
- **Adherence to Manufacturer Guidelines**: Follow the manufacturer's guidelines for installation, operation, and maintenance to ensure the circuit board operates safely and efficiently.

By following these precautions, you can help maintain your safety and the reliability of your robot.

How to Upgrade PU?

Why Use Micro:Bit?

The micro:bit was chosen as Pu's brain due to its popularity and its simple yet powerful nature. Using a micro:bit allows for a gentle learning curve while still offering the power for advanced and creative robotics projects. It's an ideal choice for anyone looking to dive into the world of robotics and coding!

Wanna learn more about micro:bit? Scan here to visit the micro:bit website >>>

How to Update Programs for Pu

Play Out of the Box and Easy Updates
Robot Pu comes with pre-installed software, allowing you to start playing with him immediately without any additional software installation.

Thanks to the micro:bit, updating programs for Robot Pu is as easy as drag-and-drop.

Upgrading Pu's Software
You may need to upgrade Pu's software in the following situations:

1. New Software Release: To access new features or bug fixes included in the latest software update.
2. Restoring Official Release: If you've uploaded your own programs to Pu and want to restore the official release.

Important Note on Program Uploading
Be aware that the gamepad programs must be uploaded to the gamepad, and the robot control programs must be uploaded to the robot. Do not mix-use them.

It is a good idea to label your micro:bit boards after you upload programs so that you know which is which.

Wanna update the programs for Pu?
Visit ***https://robotgyms.com/pu/***
for more information! >>>

How to Program Pu?

One of the most enjoyable aspects of Robot Pu is programming. While the software comes pre-installed and ready to play with out of the box, tweaking the program can improve Pu's performance and adding more code can expand Pu's capabilities. This process will also help you gain a better understanding of programming languages, data structures, algorithms, and AI technologies.

Thanks to the micro:bit, programming Robot Pu is simple and productive, with support for multiple programming languages, including Block, JavaScript, Python, and C++.

Wanna add some cool features to Pu?
Visit ***https://robotgyms.com/pu/***
for more information! >>>

How to Re-Assemble Pu?

If you need to re-assemble Robot Pu for hobby projects, follow these steps referring to the online instructions:

1. **Prepare Your Workspace**: Carefully lay out all the components on a clean surface. Ensure you have all the parts and tools listed in the instruction manual.
2. **Identify the Pieces**: To avoid misusing parts, read the online instructions and identify every piece before taking any actions.
3. **Follow Online Instructions**: Respect the assembly sequences and test the robot at each checkpoint.
4. **Test Movements**: Test the robot's movements to ensure all parts are functioning correctly. Make any necessary adjustments to the assembly.
5. **Download Software**: If required, download the pre-installed software or any updates from the official website.
6. **Calibrate Sensors**: Calibrate the sensors according to the instructions to ensure accurate readings.
7. **Final Check**: Perform a final check to ensure all parts are securely assembled and functioning properly.

*Visit **https://robotgyms.com/pu/***
for full step-on-step assemble guide >>>

Trouble Shooting Guide of PU

POWER ISSUES

Observations	Solutions
No lights turn on	**Check Battery**: Ensure the batteries are properly installed and charged. **Power Switch**: Make sure the power switch is in the "on" position. **Connections**: Verify that all power connections are secure. **Assembly**: Make sure the micro:bit chip is plugged in with the correct orientation.
Robot seizure & falls to ground	**Low power**: The battery is about to run out, and there is not enough power to drive all motors. Please charge the battery immediately.

CONTROL ISSUES

Observations	Solutions
No channel number is showing on the micro:bit; instead, it is displaying error codes such as 504 and 502.	The software did not install properly. Please re-upload the hex file to the micro:bit.
The robot cannot be controlled remotely.	**Check Power**: Ensure the gamepad is powered on. **Radio Channel**: Verify that the robot and the gamepad are set to the same radio channel. **Micro:bit Chips**: Make sure that micro:bit chips are plugged in correct orientation and all the way inside the chip socket.

Observations	Solutions
	Micro:bit Programs: Verify that the micro:bit in Robot Pu is running the robot program, and the micro:bit in the gamepad is running the gamepad program, not vice versa.
The robot's remote control is sluggish.	**Multiple Gamepads Interference:** Check whether there are multiple gamepads operating on the same radio channel.
Robot control is not as designed	**Micro:bit chip**: Verify that the micro:bit in Robot Pu is running the robot program. **Software**: If you have modified the code and it's not working, restore the official release program to ensure functionality.
No robot actions when gamepad buttons are pressed	**Low Power**: Check the robot power level and the gamepad power level **Micro:bit Chips**: Are micro:bit chips fully inserted on correct orientation? **Reset micro:bit Chips**: Press the reset button of the micro:bit chip.

STRUCTURAL ISSUES

Observations	Solutions
The robot's feet have detached	This is normal if the robot crashes. The robot's feet are designed to detach to avoid motor damage due to impacts, similar to ski boots. Simply snap the feet back into place.

MOTOR AND SERVO ISSUES

Observations	Solutions
The robot walks at weird paces	**Alignment**: Ensure the servos are installed correctly, and the servo horns are installed at correct angles **Replacement**: Replace the servo if it is damaged. Order new parts from the Robot Gyms website. **Servo Trim**: Adjust the servo trim values in the robot's code.
The robot is in a fetal position	The robot fell and enter protection mode. Move the robot to safe location. Push gamepad joystick to restore control.
The robot cannot walk. Strange motor noise.	The servo motor is damaged. Purchase a new servo from the vendor's website, then follow the manual to replace the servo.

SENSOR ISSUES

Observations	Solutions
Robot cannot do auto-pilot	**Troubleshooting Sonar Issues** • **Check Obstacles**: Ensure that there are no soft objects around that cannot reflect sound waves. • **Inspect Sonar**: Check whether the sonar is damaged. • **Purchase Replacement**: Buy a new sonar from the Robot Gyms website and replace the existing one

PROGRAMMING UPLOAD ISSUES

Observations	Solutions
Cannot upload hex file to micro:bit, showing error codes or error messages	Check whether your program has bugs before uploading again
Computer cannot detect micro:bit as a disk drive	Check the USB cable

PAIR UP WITH YOU

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