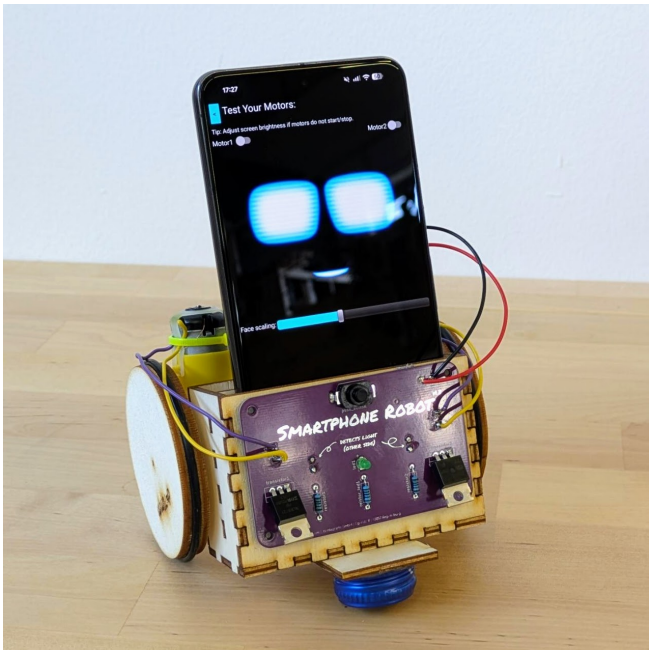
Smartphone Robot



Quantity	Name	Description	Label/Color Code
2	transistor	IRLB8721 transistor	
1	led1	green LED 3 mm	
1	pushbutton	switch	
2	LDR light sensor		
2	motor	motor	
1	battery	3xAA battery holder	
2	resistor	Resistor 10 kΩ	BR BK BK RE BR
1	resistorled1	Resistor 1 kΩ	BR BK BK BR BR
2	cable ties		
2	30 cm cable		
13	wooden parts		
2	58 mm rubber ring		
1	Smartphone Robot circuit board (PCB)		
1	bottle cap (not included)		

Difficulty: ●●○○○ Build-Time: 90 – 120 Minutes

Farblegende: SI = silber; GO = gold; BK = schwarz; BR = braun; RE = rot; OR = orange; YE = gelb; GR = grün; BL = blau; VI = violett; GR = grau; WH = weiß

Safety Information

- ATTENTION: Not suitable for children under 3 years, choking hazard due to small parts that may be swallowed.
- We recommend: Supervision of the assembly and soldering process by an adult.
- Keep these operating instructions in a safe place for later use! It contains important information.
- If the battery is empty, replace it only with a new battery with the same values.
- When soldering, the soldering iron, the solder and also the components being soldered become very hot.
- Always wear safety glasses when soldering and assembling the kit.
- Always use a fire proof soldering pad when soldering! This prevents the components from slipping away.
- To keep the soldering iron safe during assembly, always use a suitable soldering stand.
- The kit is designed for battery operation only.
- CAUTION: Never connect the kit to 230 V mains voltage! There is an absolute danger to life!
- Please take the device to appropriately certified disposal companies at the end of its service life. This is good for the environment and ensures correct disposal.
- Subject to changes and errors.

Disposal

This appliance is labelled in accordance with the European Directive 2012/19/EU on waste electrical and electronic equipment (WEEE). The directive provides the legal framework for the take-back and recycling of waste equipment throughout the EU.

- **packaging**: The packaging is made of environmentally friendly materials and is therefore recyclable. Dispose of packaging materials that are no longer needed accordingly.
- **waste equipment**: Old appliances often still contain valuable materials. Therefore, hand in your old appliance to your retailer or a recycling centre for reuse. Please ask your retailer or your local authority for the current disposal routes.

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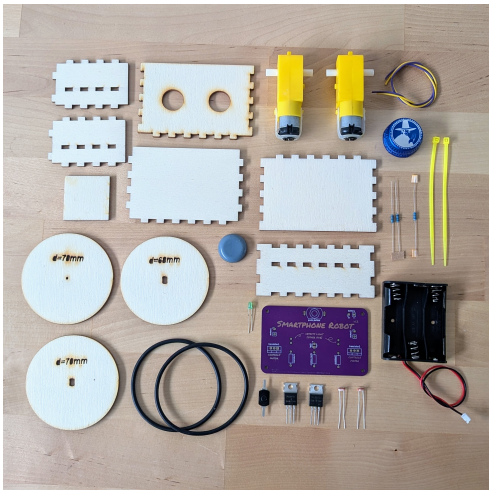
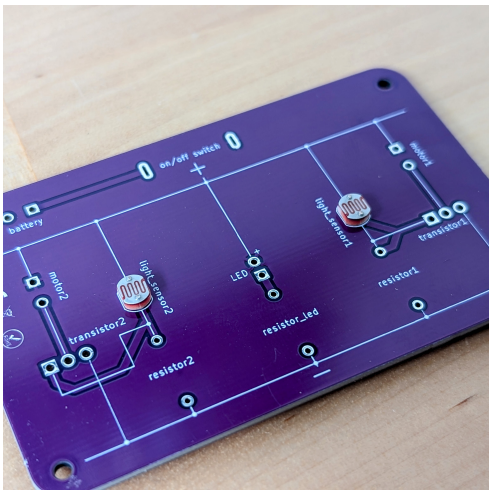
Step 1

a) Check your components to make sure they're all there.
b) Sometimes a small part is hidden in the bag. Take a close look here.
c) The colors or the number of bands on the resistors may vary. We use components from various manufacturers.
d) Tip: These are exclusively THT (through-hole) components. Insert the components through the circuit board from the top and solder them in place from the other side. You can gently bend the legs on the back as you insert them,so the parts stay in place and are easier to solder.



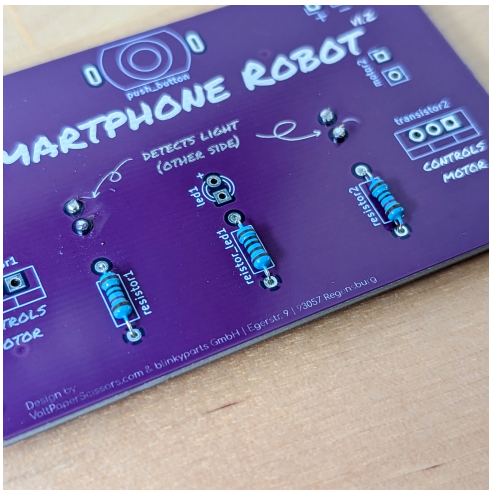
Step 2

a) Flip the circuit board over to the back (the text "Smartphone Robot" is printed on the front).
b) Insert the two LDRs into the light_sensor1 and light_sensor2 sockets and solder them in place. The LDR sensors are not polarized.
c) Trim the excess wires.



Step 3

a) Flip the circuit board back to the front.
b) Solder the resistors resistor1 + resistor2 BR BK BK RE BR and resistor_led1 BR BK BK BR BR in place. The color code shows you the resistance values. Alternatively, you can measure the resistance values with a multimeter.
c) Trim the excess wire on the back.
d) Caution: When cutting, the leads tend to fly around and can pop into your eyes. Wear safety goggles!

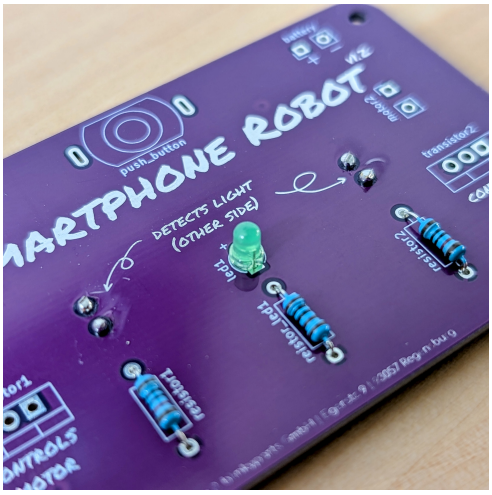


Step 4

a) Now solder the led1 in place.

b) Caution: LEDs are directional. The long leg is the '+' side. A hole on the circuit board is also marked with a plus sign. Insert the long leg through the hole on the circuit board marked with a +.

c) After soldering, trim the excess wires on the back.



Step 5

a) Now insert the push_button switch. To do this, bend the solder tabs down 90°.

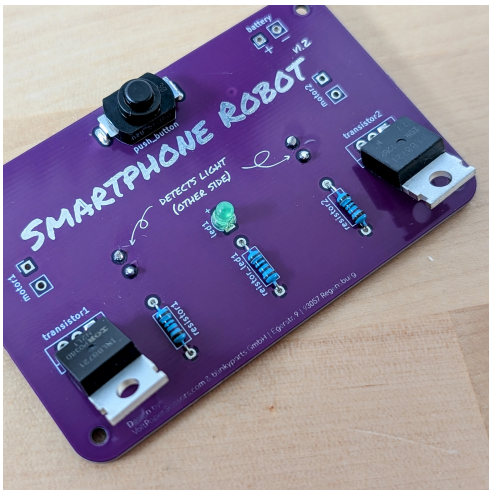
b) Then solder the tabs securely on the other side.

c) Trim the excess wire.

Step 6

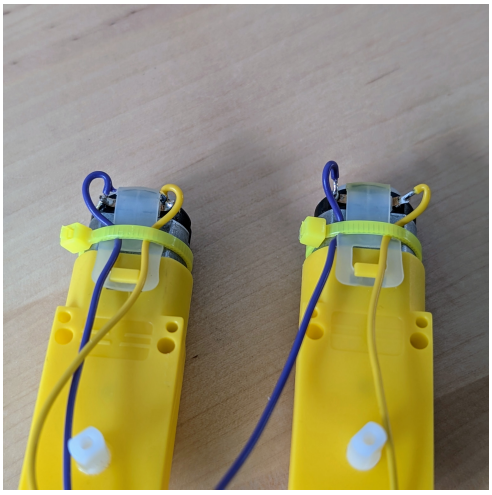
a) Insert the transistors into the circuit board from the front. The black part must face the "Smartphone Robot" label. Solder each of the three legs in place.

b) Cut off the excess wires.



Step 7

a) If you have motors without wires: Solder the wires to the motors. One color on the left and one on the right. This way, after soldering, both motors will have the same color on the left and the same color on the right.
b) Secure the wires with a cable tie.

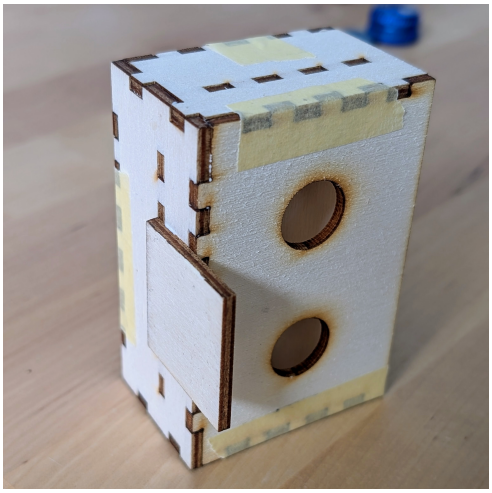


Step 8

a) Gather the round wooden discs.
b) Take a d=70 disc with a small hole.
c) Glue the D=68mm disc onto it, centered.
d) Then glue a d=70mm disc with an oval hole onto the d=68mm disc, centered.
e) Once everything is dry and secure: Thread a rubber band onto the rim.
f) Repeat this for the second rim.

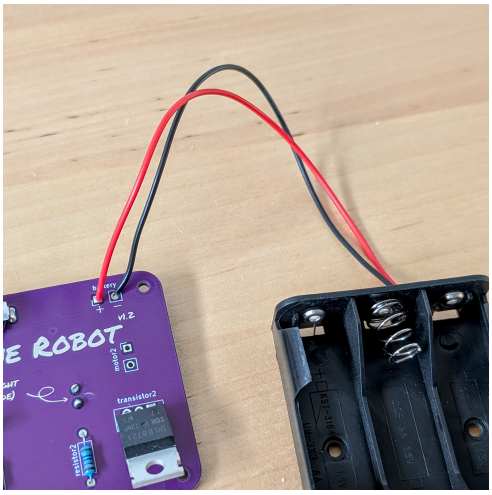
Step 9

a) Now glue the remaining wooden pieces together. Make sure the small compartment is at the front near the holes and the large compartment is at the back with the label.
b) Place the square wooden board centered on the bottom so that half of it extends toward the circular holes.
c) Tip: You can secure the wooden pieces with masking tape until the wood glue dries.



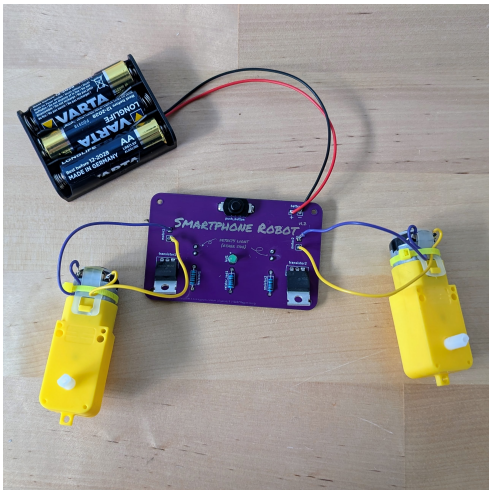
Step 10

a) Now cut off the plug at the end of the battery holder cable.
b) Strip about 5 mm of insulation from the wires.
c) Then tin the ends with solder.
d) Next, solder the black wire to the negative (-) terminal and the red wire to the positive (+) terminal.



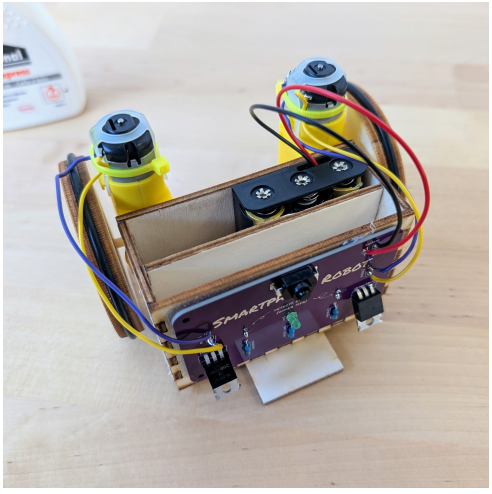
Step 11

a) Now solder on the motors.
b) Caution: Look closely at the picture. If the wires on the motors are facing toward you (yellow part at the bottom), the left wire must go into the hole on the circuit board that is closer to the “Smartphone Robot” label.
c) The right wire then goes into the other hole.



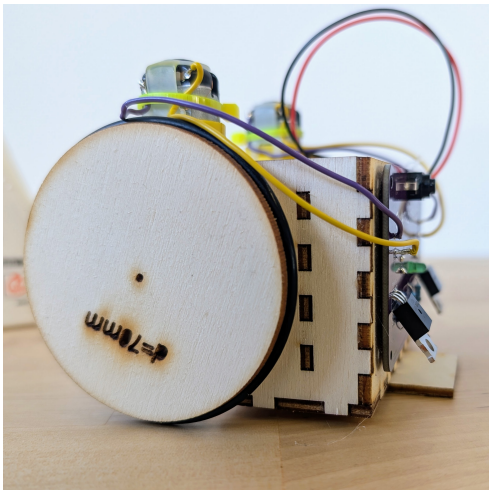
Step 12

a) Now attach the tires to the motors.
b) The motor wires must point to the left later (see photo).
c) Push the tires firmly onto the axle.
d) Glue the circuit board to the front at the marked spot.
e) You can insert the battery compartment into the rear compartment right away.
f) Tip: In the photo, you can already see where the motors should be glued. But be sure to check out the next step before gluing them in place.



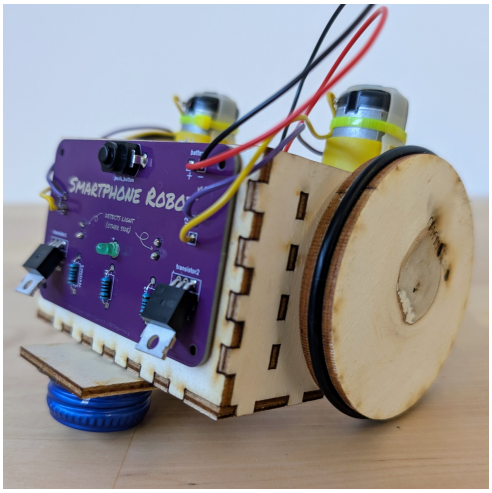
Step 13

a) Now glue the motors in place. The tires should be low enough that the square plate stands upright on the table.
b) Use some hot glue to secure them.
c) Glue the motors to the back sides of the wooden box (see photo from the previous step).



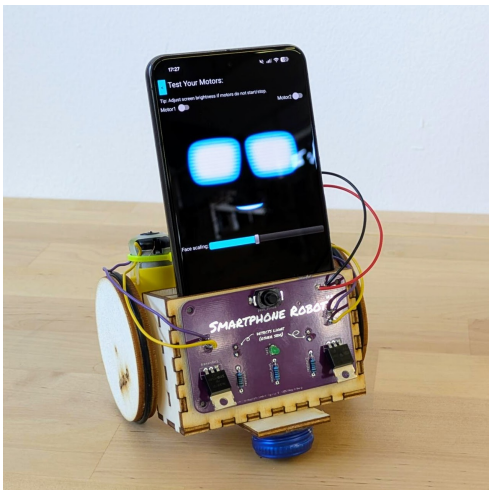
Step 14

a) Now glue a bottle cap (either metal or plastic) onto the square wooden plate.
b) This will cause the robot to tilt back slightly.



Step 15

a) You're done!
b) Insert the batteries.
c) Turn on the robot. If you shine a flashlight into the front compartment, the motors should start turning.



Step 16

a) To find out what to do next, visit `https://wiki.blinkyparts.com/de/Bausaetze/SmartphoneRobot`.