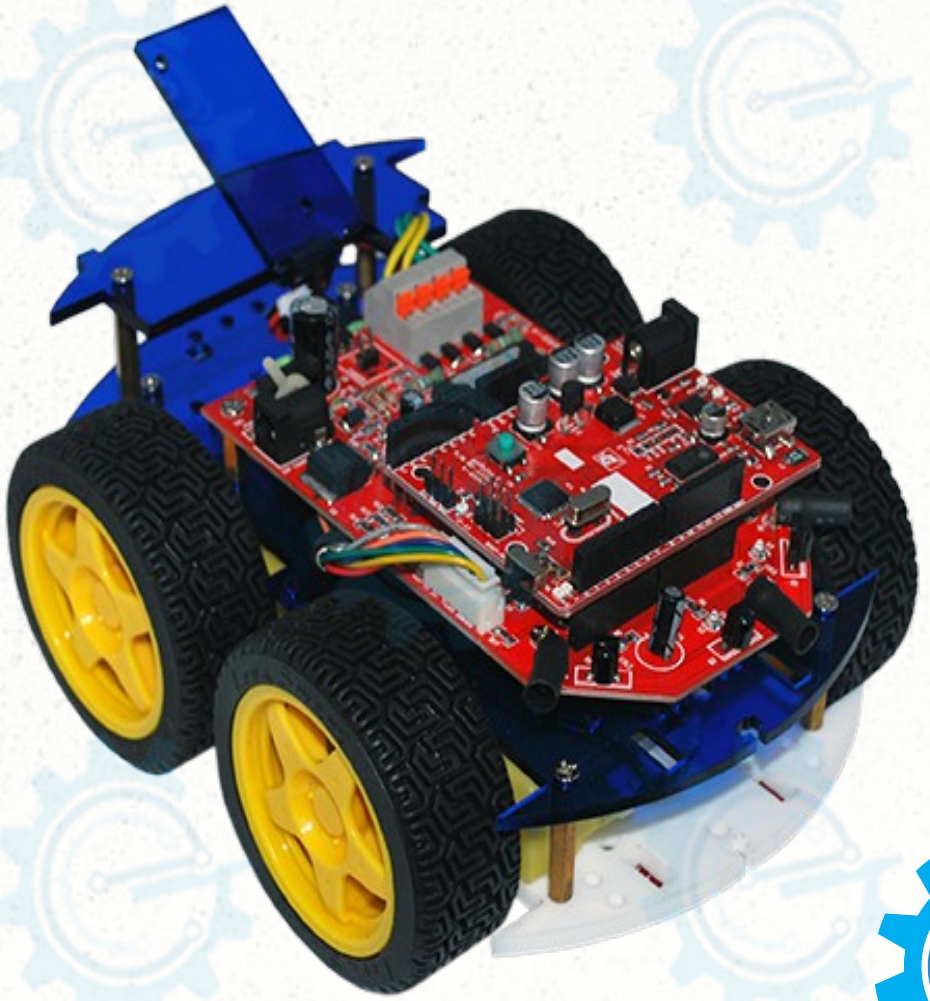
e-Gizmo
MECHATRONIX CENTRAL

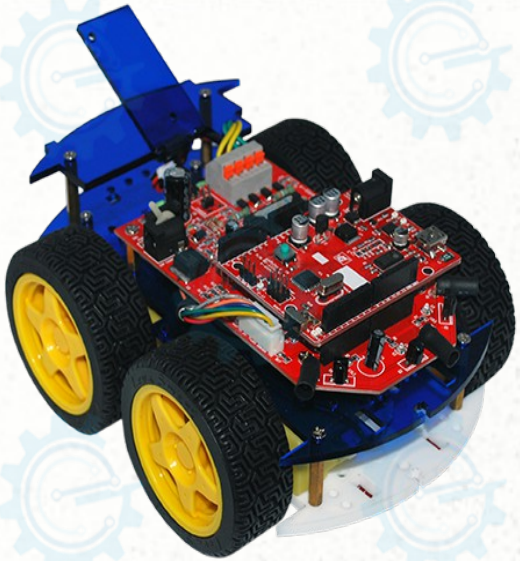
E-BOT TECHNICAL MANUAL

ARDUINO
OPEN-SOURCE
COMMUNITY

ARDUINO



Getting Started in Mobile Robot



Standard

- Line Tracker
- Obstacle avoidance
- 4-wheels

The e-Gizmo e-BOT 4x4 Standard or Line Follower

an Entry-Level Mobile Robot

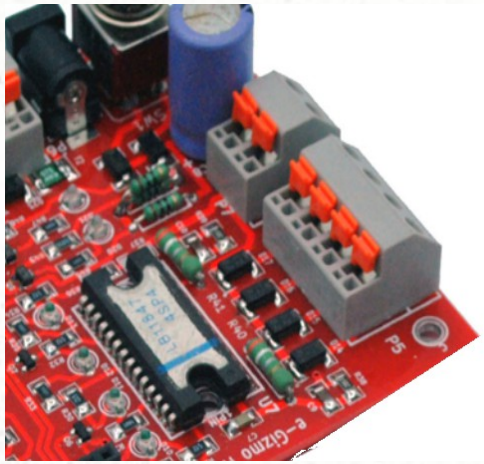
Easy-to-use, in All-in-one Function on Programmable Robot (PBot) board a mobile robot platform to interact with the real world. Can senses object near by using the proximity sensors, a microcontroller to run/stops its motors and then following the line track.

Proudly Designed and Made in the Philippines
by e-Gizmo Mechatronix Central

PBOT ON BOARD FEATURES:

3-Channel IR
Line sensors

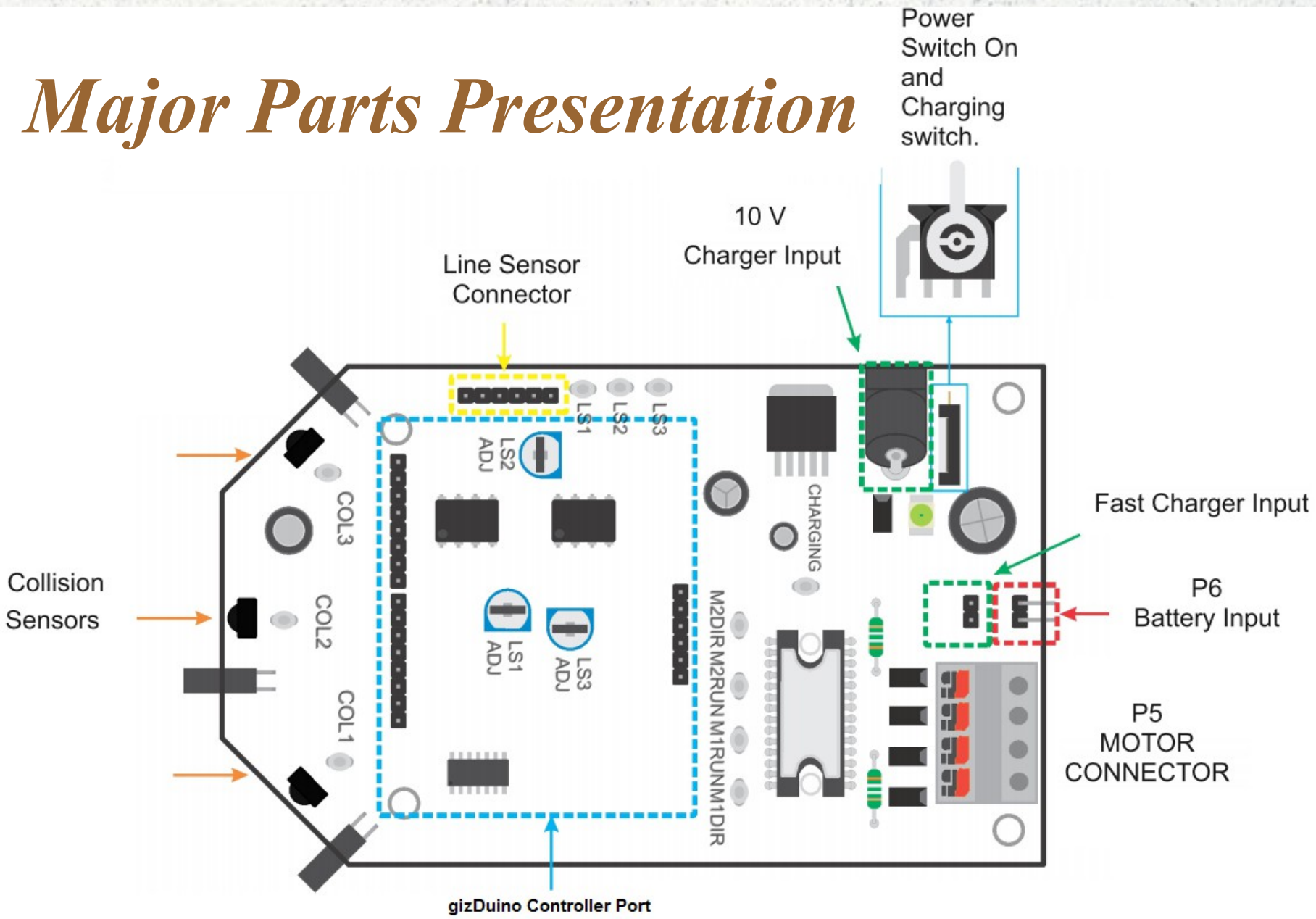
3-Channel Collosion
IR Proximity Sensor



2-Channel
Motor Driver

Standard

Major Parts Presentation



Standard

ILLU switch

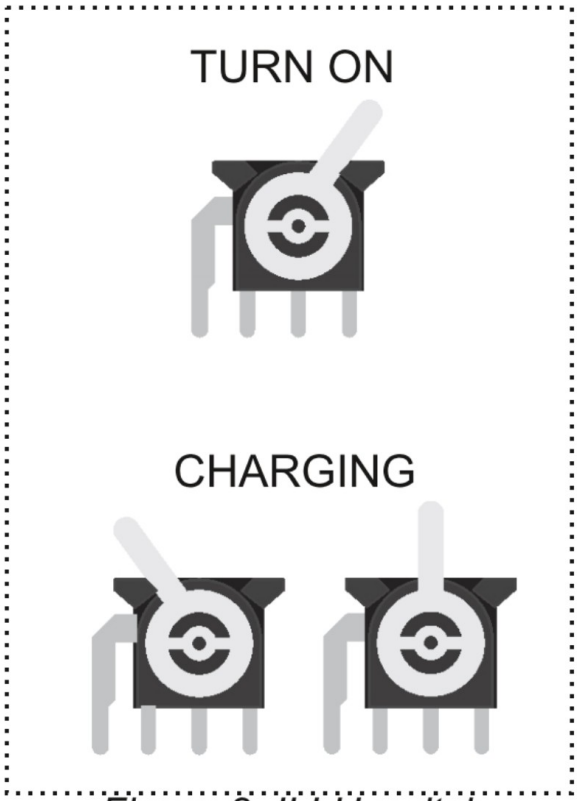


Figure 2. ILLU switch Illustrations:

Standard

Wiring connections

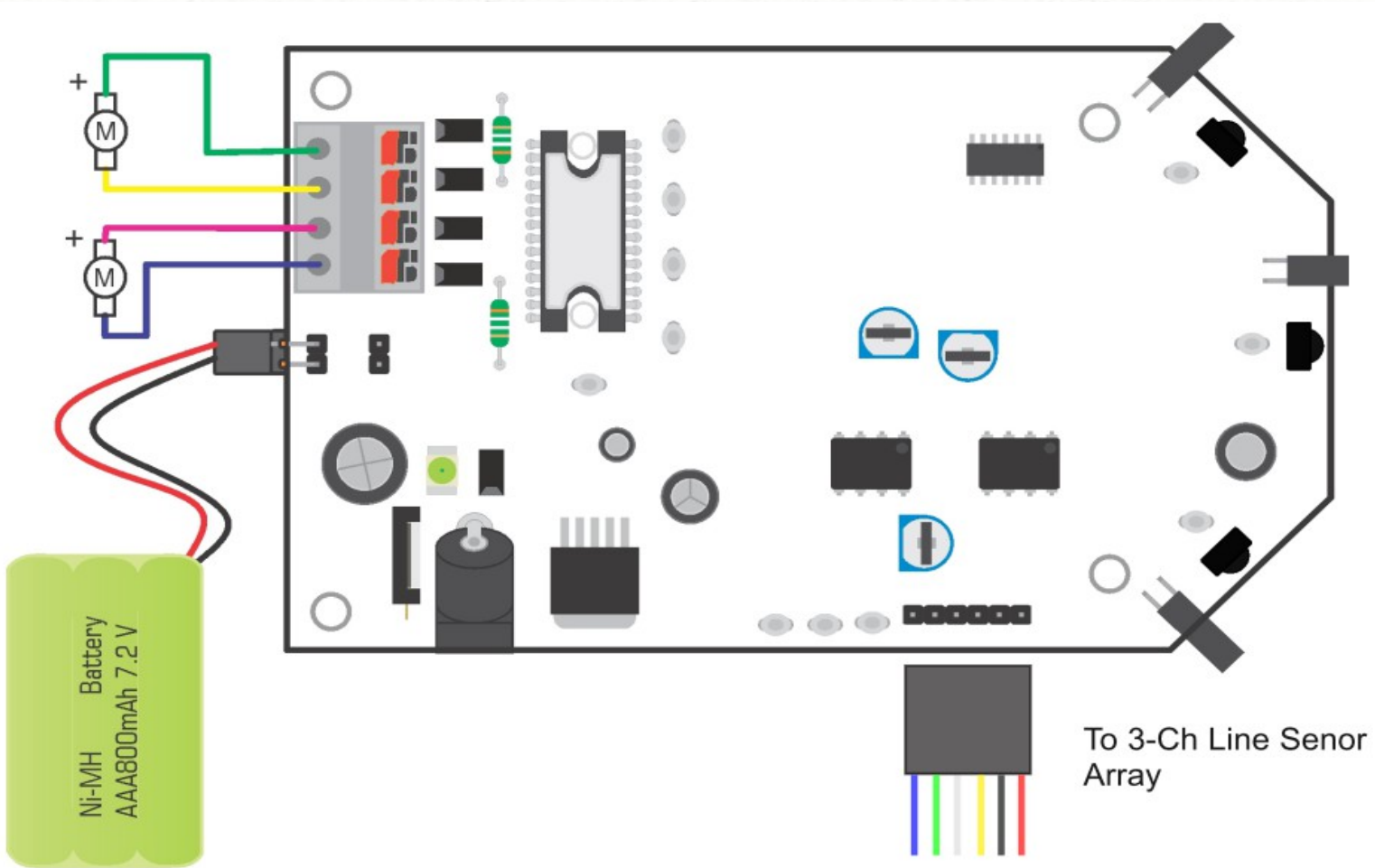


Figure 3. Motor and Battery Wiring Diagram along with the line sensor array connection illustration

Standard

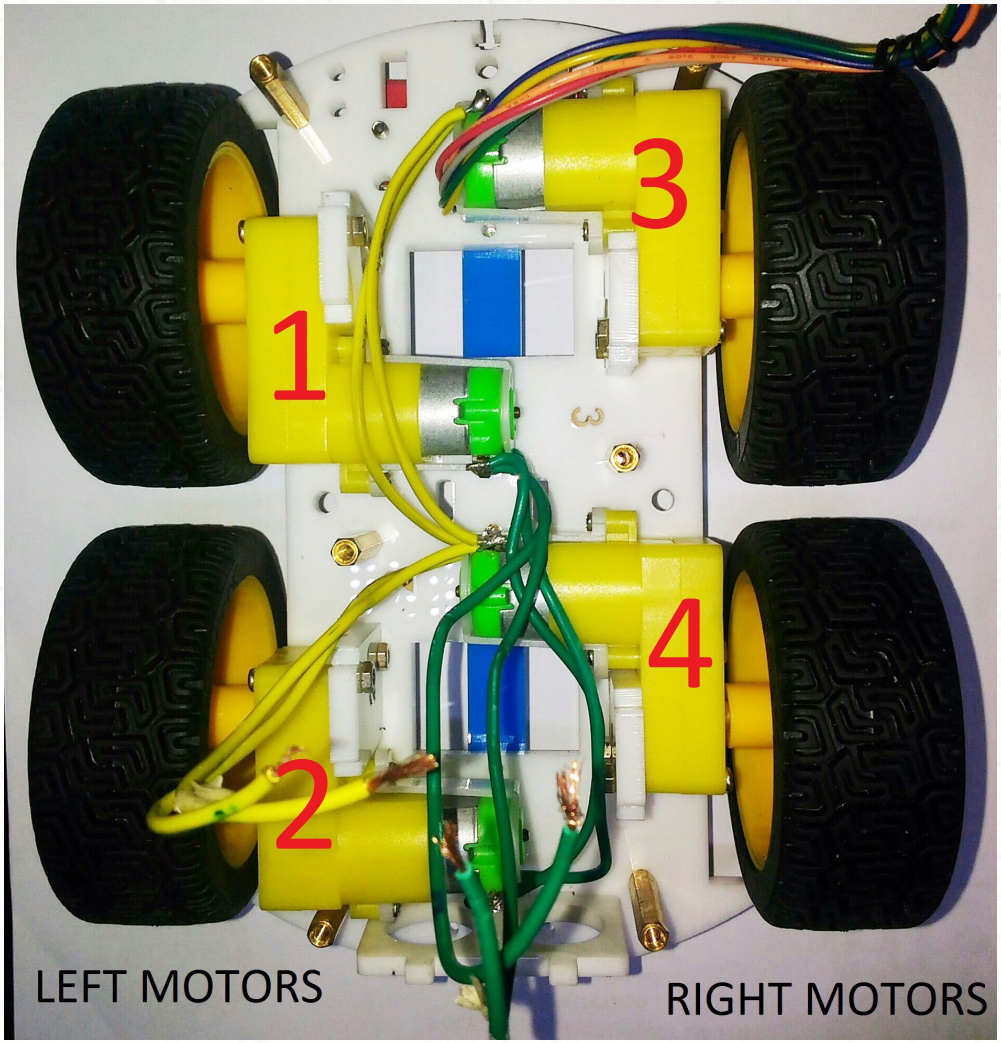
I/O Usage for Motor control

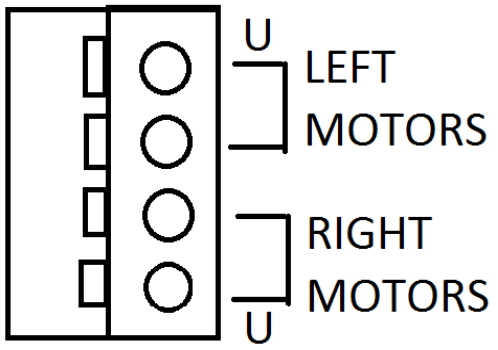
- -motor control output (default PBOT pin)
- 8 - m2dir as output high=fwd (Motor1)
- 9 - m2run as output (Motor1)
- 11 - m1dir as output high= fwd (Motor2)
- 10 - m1run as output (Motor2)

NOTE: Motor 1 is the **LEFT** motor; Motor 2 is the **RIGHT** motor.

Standard

Motors





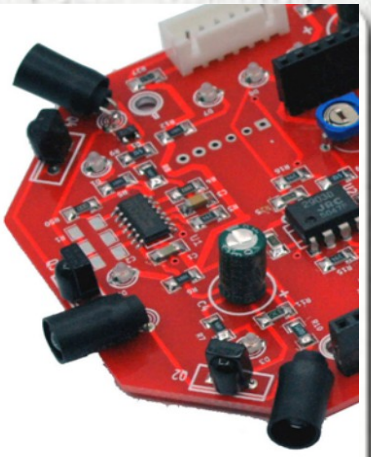
U – buttom pin wire
of a motor

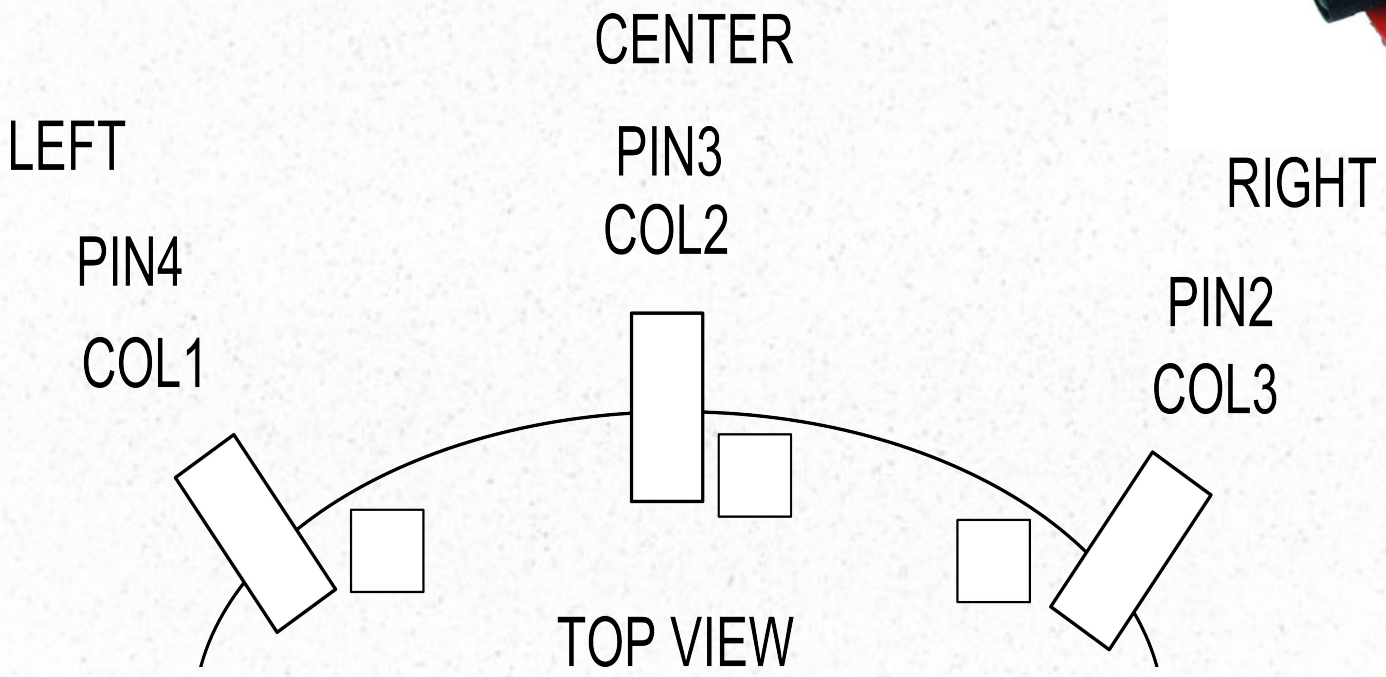
I/O Usage for Collision sensors

- I/O Usage
- - collision sensor inputs (not used in this demo)
- 2- colision1 as input
- 3- colision2 as input
- 4- colision3 as input

Standard

Collision Sensor





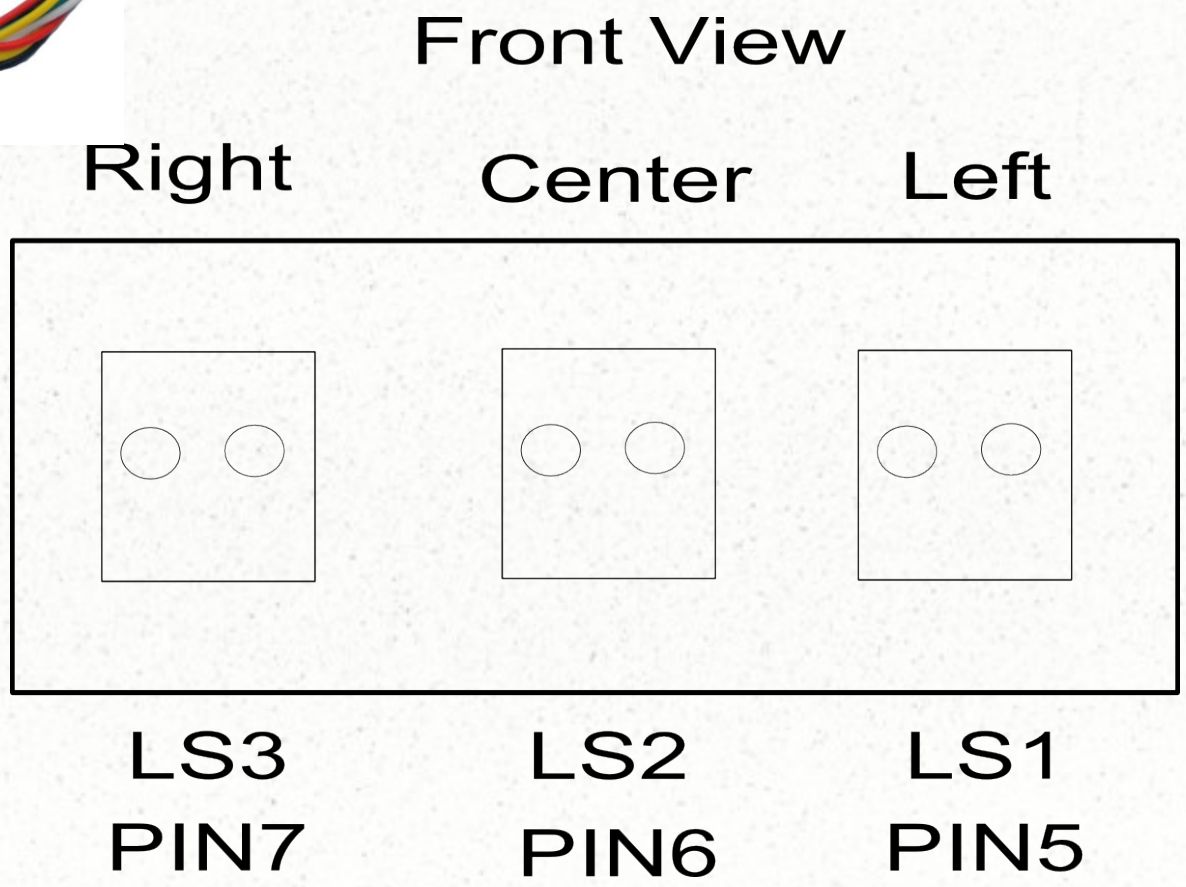
Standard

I/O Usage for Line sensors

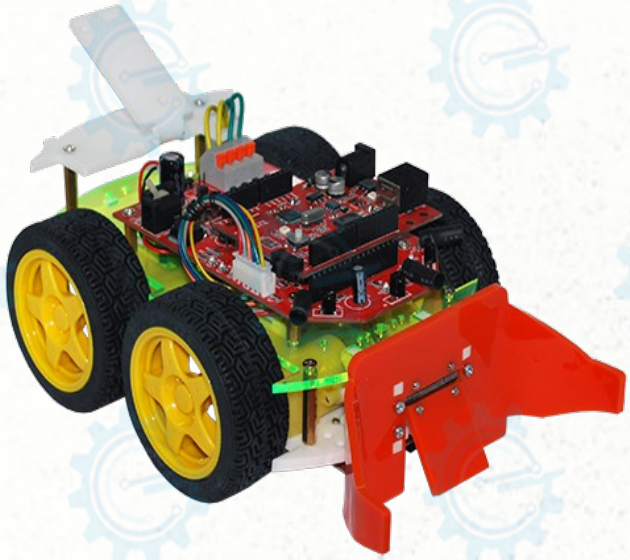
- -line sensor inputs
- 5- linesense1 as input low on black
- 6- linesense2 as input
- 7- linesense3 as input

Standard

Line Sensor



Standard



Soccer bot

- Line Tracker
  - 4-wheels
- Kick the ball

The e-Gizmo e-BOT 4x4 Soccer bot

an Entry-Level Mobile Robot

Easy-to-use, in All-in-one Function on Programmable Robot (PBot) board a mobile robot platform to interact with the real world. Can control using PS2 Controller with UHF STD RX and transceiver, gizDuino MCU through Serial Communication. With servo SG-90 for kicking the ball. You can download the mobile apps in google play store SOCCER_BOT.

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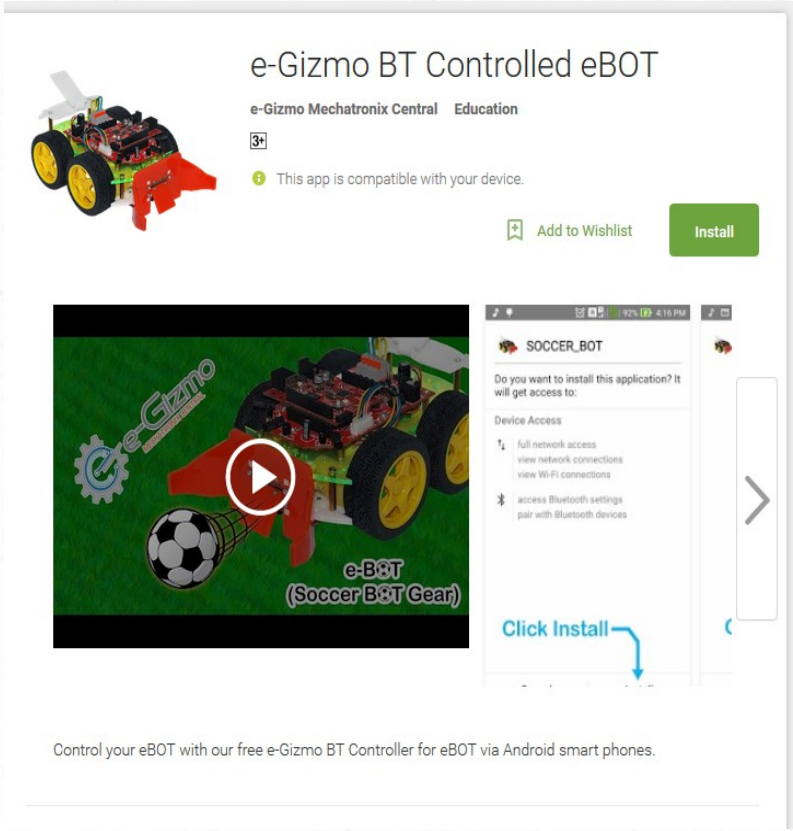
Soccer bot Bluetooth controlled apps



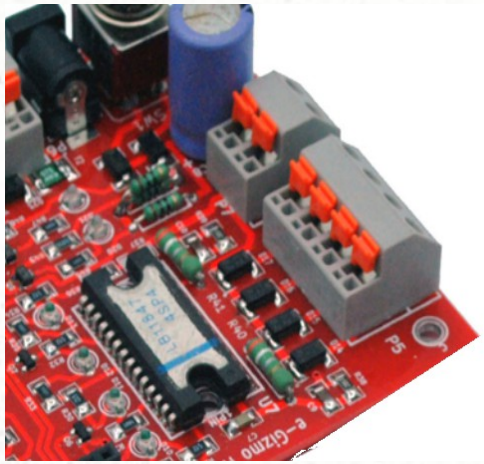
https://play.google.com/store/apps/details?id=appinventor.ai_letsplaygizmobots.SOCCER_BOT

Soccer bot

MATERIALS:

3-Channel IR
Line sensors

3-Channel Collosion
IR Proximity Sensor



2-Channel
Motor Driver

SG-90 servo motor
160 degrees w/
Soccer bot
accessories

MATERIALS: (optional) For Wireless controller

PS controller

- With UHF STD TX.

UHF STD Rx Only

-

Soccer bot

I/O for UHF wireless Receiver

- GizDuino >>> UHF EX/STD (RX)
- 0- RX >>> TX
- 1 – TX >>> RX
- GND – GND >>> GND

I/O Usage for Servo motor (KICK)

- -Servo pin assignment (For Kick)
- 6 – Signal Output

Sumo bot

Line Tracker
4-wheels
Ultrasonic Distance Sensor

The e-Gizmo e-BOT 4x4 Sumo bot

an Entry-Level Mobile Robot

Easy-to-use, in All-in-one Function on Programmable Robot (PBot)
board a mobile robot platform to interact with the real world.
With servo SG-90 for rotating 0 – 160 deg and
attached with US-100 distance
sensor for searching other opponents to push outside the ring.
Sumo bot accessories included.
. You can download the mobile apps in google play store SUMO_BOT.

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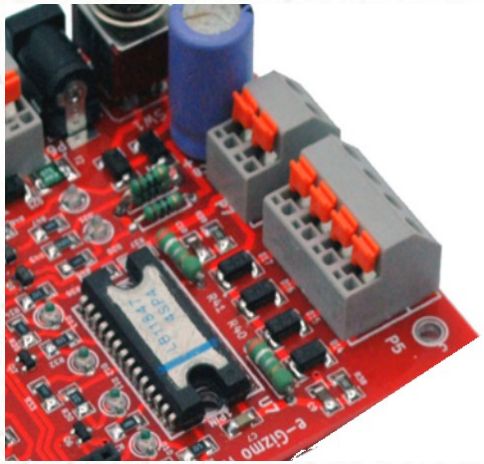
Sumo bot

MATERIALS:

3-Channel IR
Line sensors

3-Channel Collosion
IR Proximity Sensor



2-Channel
Motor Driver

SG-90 servo motor
160 degrees w/
Soccer bot
accessories

US-100

Ultrasonic Sensor

- Distance sensor

MATERIALS: (optional) For Wireless controller

PS controller

- With UHF STD TX.

UHF STD Rx Only

-

Sumo bot

Adding a Library

- (if you want to make it automatically searching for opponents and depends to your program)
- It is required to add the library for SUMOBOT
- Add ***SM.h*** and ***NewPing.h*** library (For State Machine and US-100)
- To add goto **My documents>Arduino>libraries>(paste it)**

I/O for UHF wireless Receiver

- GizDuino >>> UHF EX/STD (RX)
- 0- RX >>> TX
- 1 – TX >>> RX
- GND – GND >>> GND

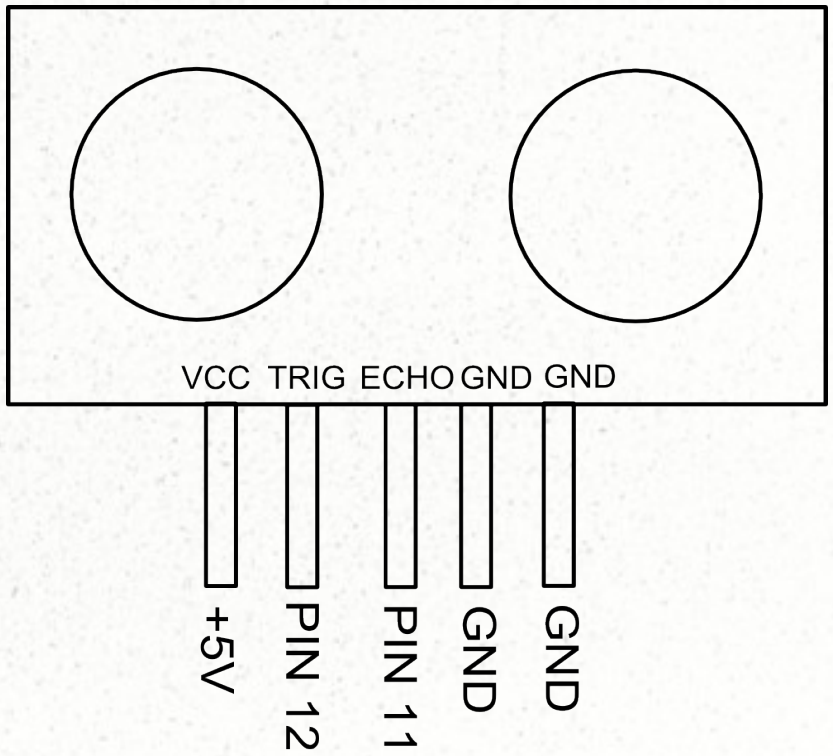
I/O Usage for Servo motor

- -Servo pin assignment
- 7 – Signal Output

I/O Usage for US-100 distance sensor

- -US-100 pin assignment
- 12 – Trigger
- 3 – Echo
- Vcc - +5V input supply
- Gnd - Ground

Ultrasonic sensor



Gripper bot

Line Tracker
4-wheels
To grab an object

The e-Gizmo e-BOT 4x4 with Gripper bot

an Entry-Level Mobile Robot

Easy-to-use, in All-in-one Function on Programmable Robot (PBot) board a mobile robot platform to interact with the real world. Can control using PS2 Controller with UHF STD RX and transceiver, gizDuino MCU through Serial Communication. With 2 servos SG-90 for rotating 0 – 160 deg (twisting) and (grabbing/holding).

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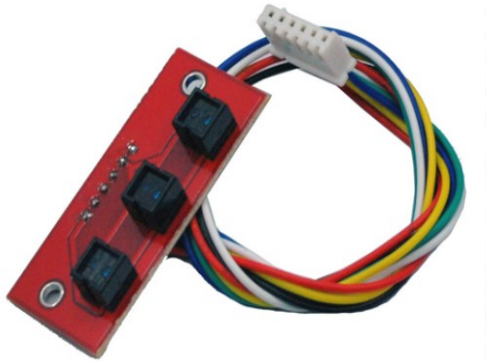
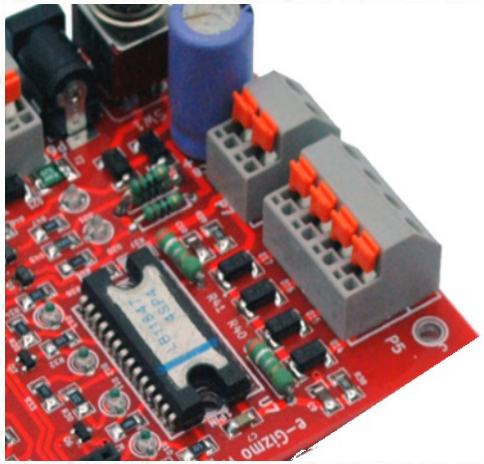
Gripper bot

MATERIALS:



3-Channel IR
Line sensors

3-Channel Collosion
IR Proximity Sensor

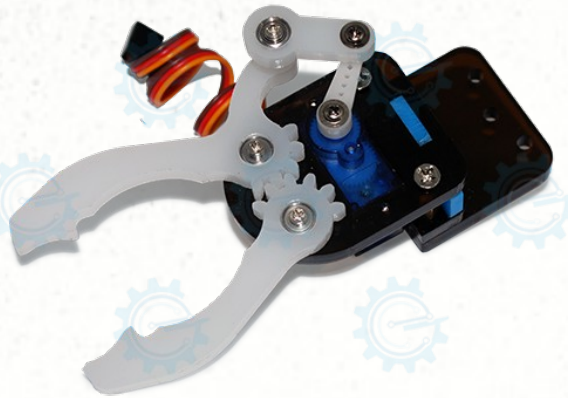


2-Channel
Motor Driver

SG-90 servo motor
160 degrees w/
Soccer bot
accessories

Gripper with

- SG-90 servo 160 deg



MATERIALS: (optional) For Wireless controller

PS controller

- With UHF STD TX.

UHF STD Rx Only

-

Gripper bot

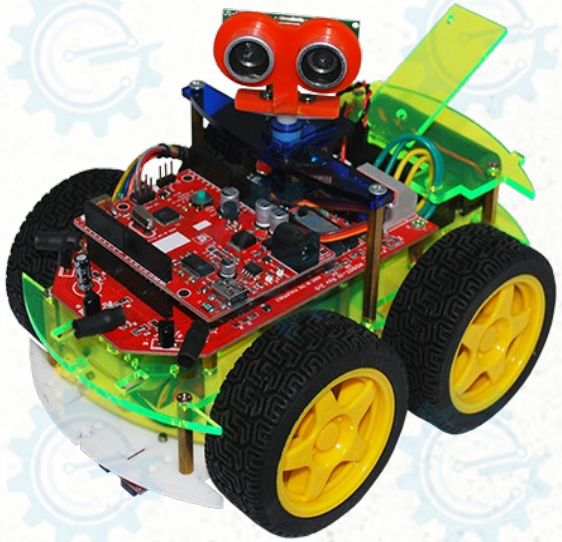
I/O for UHF wireless Receiver

- GizDuino >>> UHF EX/STD (RX)
- 0- RX >>> TX
- 1 – TX >>> RX
- GND – GND >>> GND

I/O Usage for Servo motor

- -Servo pin assignment
- 4 – Signal Output (For Gripper)
- 5 – Signal Output (For Twist)

Gripper bot



Maze bot

Line Tracker
4-wheels
Obstacle avoidance

The e-Gizmo e-BOT 4x4 Maze bot

an Entry-Level Mobile Robot

Easy-to-use, in All-in-one Function on Programmable Robot (PBot) board a mobile robot platform to interact with the real world. With servo SG-90 for rotating 0 – 160 deg and attached with US-100 distance sensor for searching other opponents or avoiding objects.

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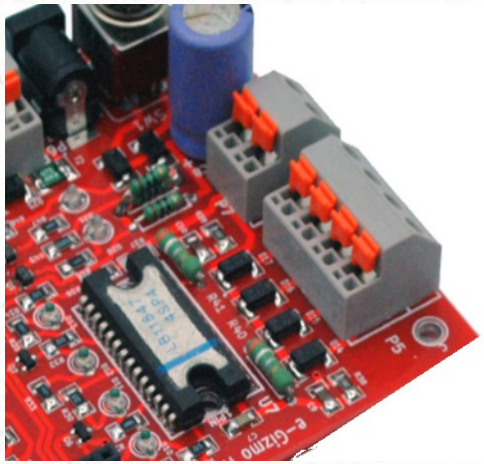
MATERIALS:

3-Channel IR
Line sensors

3-Channel Collosion
IR Proximity Sensor



2-Channel
Motor Driver

SG-90 servo motor
160 degrees w/
Soccer bot
accessories

US-100

Ultrasonic Sensor

- Distance sensor

MATERIALS: (optional) For Wireless controller

PS controller

- With UHF STD TX.

UHF STD Rx Only

-

Maze bot

Adding a Library

- (if you want to make it automatically searching for opponents and depends to your program)
- It is required to add the library for SUMOBOT
- Add ***SM.h*** and ***NewPing.h*** library (For State Machine and US-100)
- To add goto **My documents>Arduino>libraries>(paste it)**

Maze bot

I/O for UHF wireless Receiver

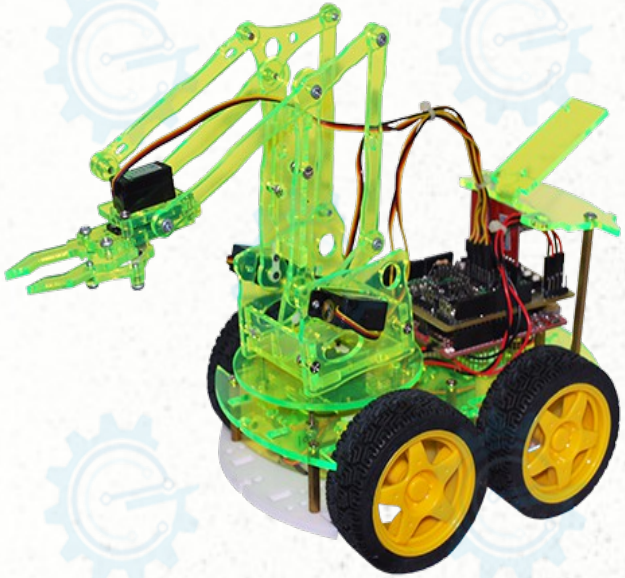
- GizDuino >>> UHF EX/STD (RX)
- 0- RX >>> TX
- 1 – TX >>> RX
- GND – GND >>> GND

I/O Usage for Servo motor

- -Servo pin assignment
- 6 – Signal Output

I/O Usage for US-100 distance sensor

- -US-100 pin assignment
- 12 – Trigger
- 3 – Echo
- Vcc - +5V input supply
- Gnd - Ground



E-Bot with EGRA Robotic

4-wheels
EGRA Robotic Arm
(For Pick and Place)

The e-Gizmo e-BOT 4x4 with EGRA Robotic Arm

an Entry-Level Mobile Robot

Easy-to-use, in All-in-one Function on Programmable Robot (PBot) board a mobile robot platform to interact with the real world. Can control using PS2 Controller with UHF STD RX and transceiver, gizDuino MCU through Serial Communication. With EGRA Robotic ARM for Pick and Place the objects.

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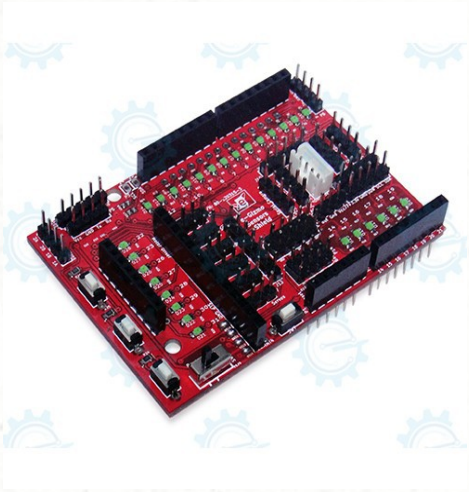
MATERIALS:

2channel Tiny motor driver

GizDuino PLUS w/

- ATmega644P



Sensor shield

EGRA Robotic ARM

E-Bot with EGRA Robotic

MATERIALS: (optional) For Wireless controller

PS controller

- With UHF STD TX.

UHF STD Rx Only

-

E-Bot with EGRA Robotic

I/O for UHF wireless Receiver

- GizDuino >>> UHF EX/STD (RX)
- 0- RX >>> TX
- 1 – TX >>> RX
- GND – GND >>> GND

I/O Usage for Motor control

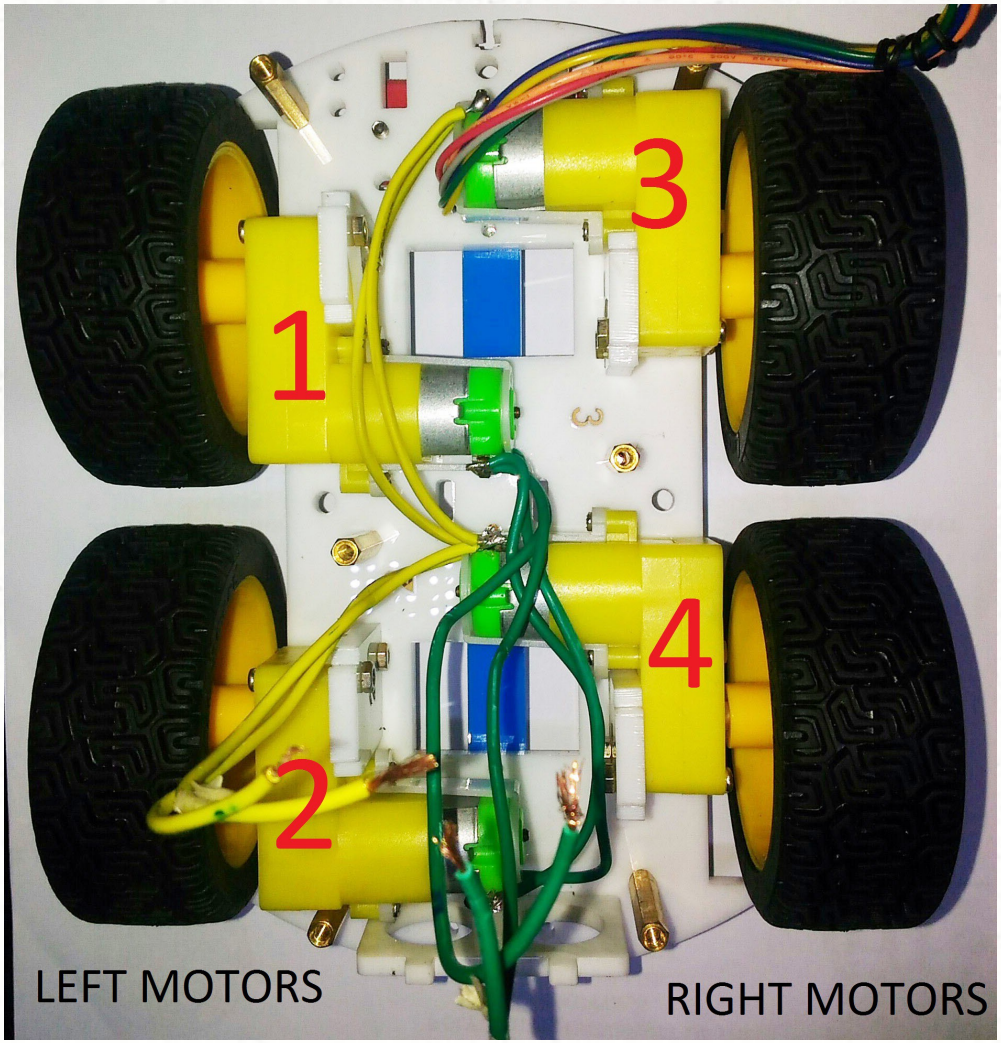
- -motor control output (default PBOT pin)
- 8 - m2dir as output high=fwd (Motor1)
- 9 - m2run as output (Motor1)
- 11 - m1dir as output high= fwd (Motor2)
- 10 - m1run as output (Motor2)

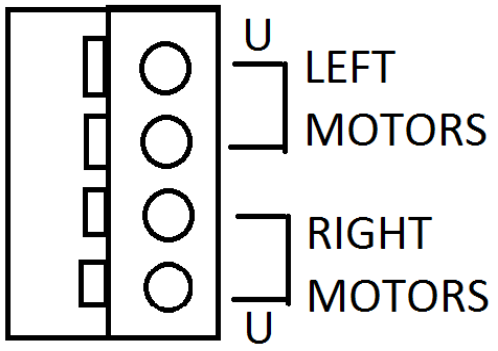
E-Bot with EGRA Robotic

NOTE: Motor 1 is the **LEFT** motor; Motor 2 is the **RIGHT** motor.

E-Bot with EGRA Robotic

Motors





U – buttom pin wire
of a motor

I/O Usage for Servo motors

- Using gizDuino PLUS MCU Board
- 3 – Servo1 (for Gripper)
- 5 – Servo2
- 6 – Servo 3
- 7 – Servo 4 (for base)

Thank you!

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