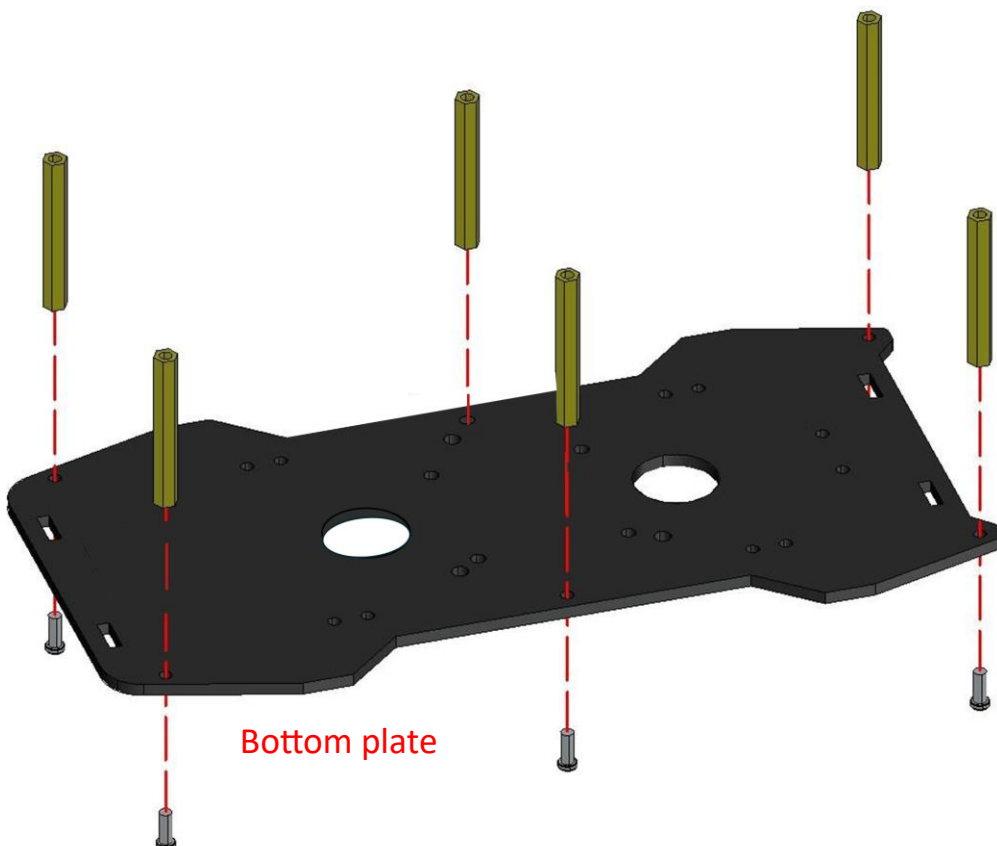
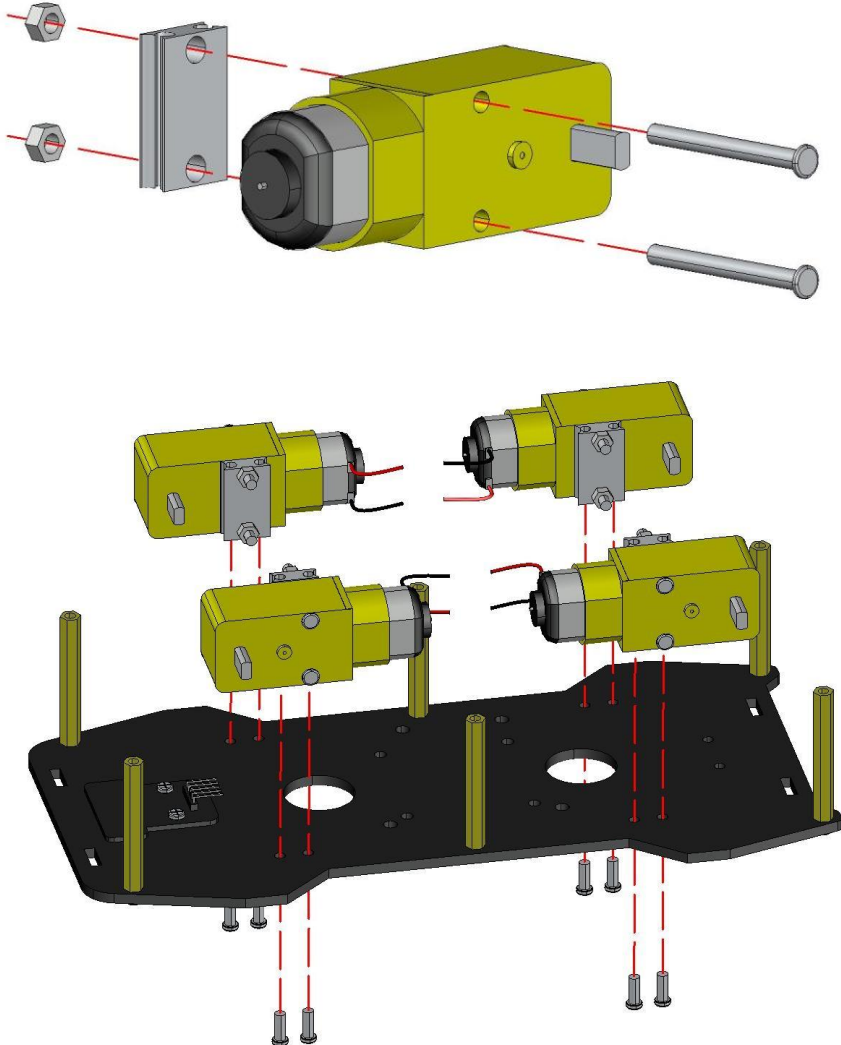
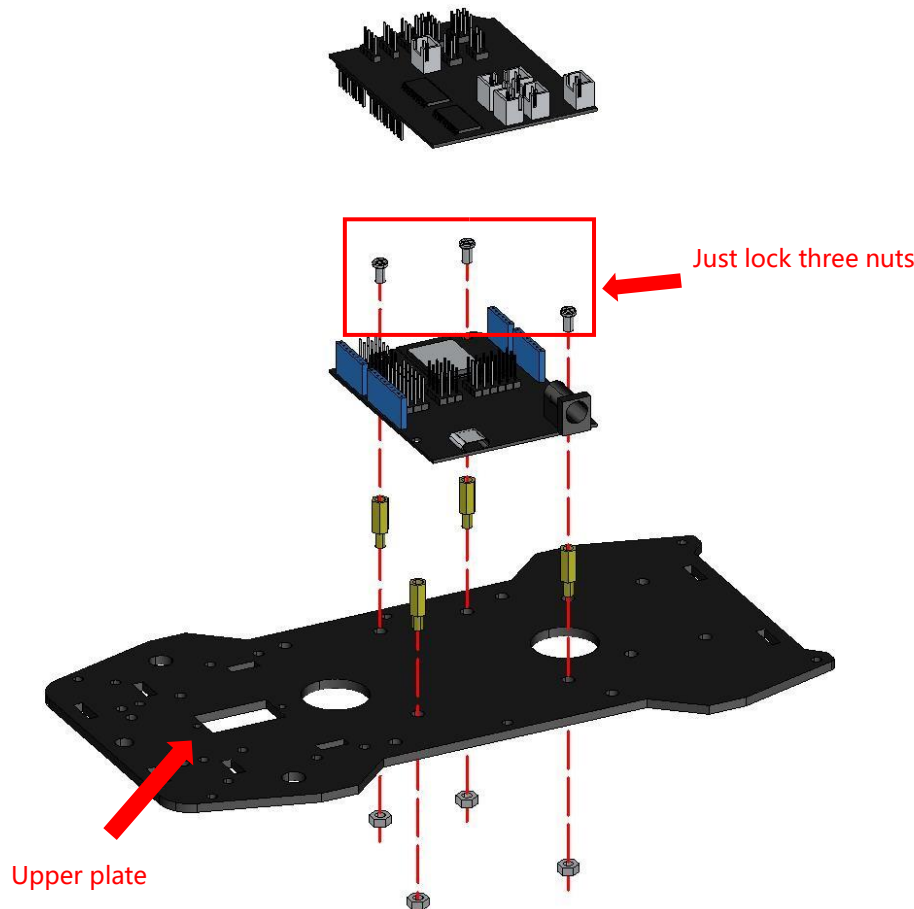


Assembly Instructions – Modified for Ponderosa Hacks Workshop

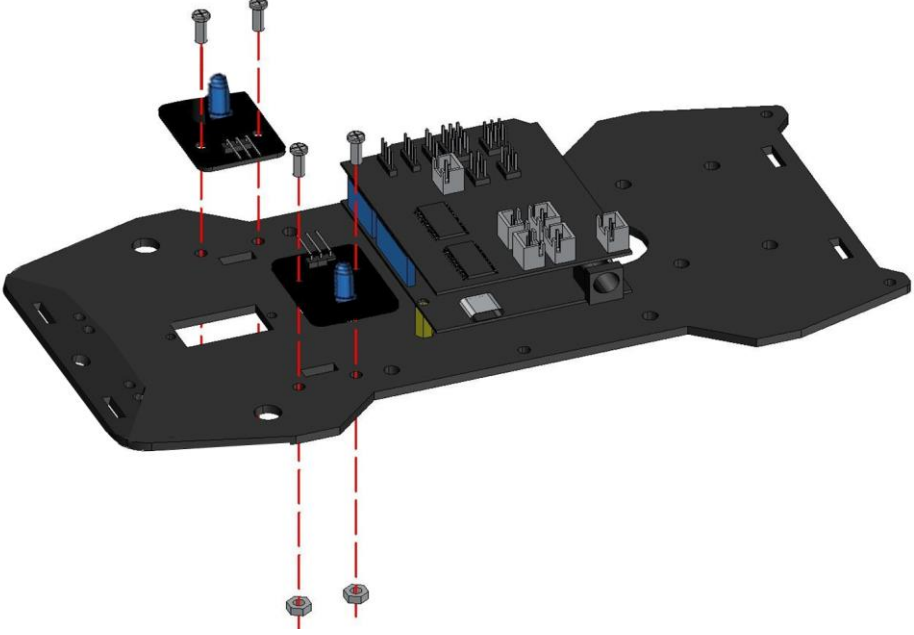
Step 1 Installing the Copper Pillars on the Board		
Parts List	M3*40MM Dual-pass Copper Pillar*6	M3*10MM Round Head Screws*6 M3 Nickel-Plated Nuts*6
Splicing Diagram	 <p>Bottom plate</p>	
Notes	Screw the copper pillar from the bottom of the board.	

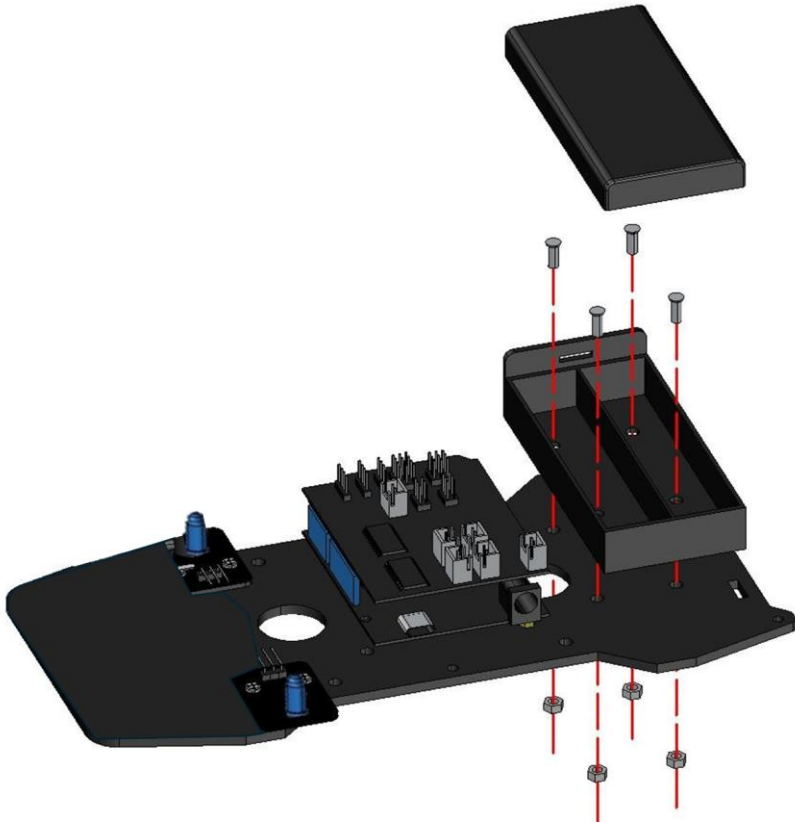
Step 2 Installing Motors			
Parts List	TT DC Geared Motors*4	Motor Brackets*4	M3*30MM Round Head Screws*8
	M3*10MM Round Head Screws*8		M3 Nickel-Plated Nuts*8
Splicing Diagram			
Notes	<ol style="list-style-type: none"> 1. Fix the metal bracket on the motor first; 2. The direction of motor installation should be strictly as shown in the figure, and the end of the motor belt line should be placed inward; 3. When fixing the motor, try to keep the motor level and tighten it to prevent the motor from loosening during movement. 		

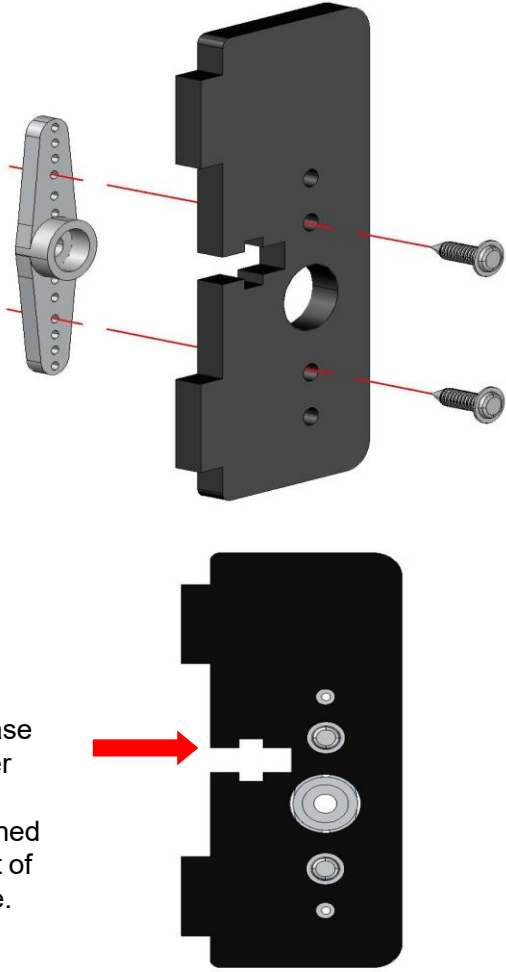
Step 3 Installing Controller Board and Car Shield

Parts List	ESP32 Max V1.0 Controller Board*1	ESP32-Car-Shield*1	M3*14MM Single-pass Copper Pillar*4
	M3 Nickel-Plated Nuts*4	M3*10MM Round Head Screws*3	
Splicing Diagram			
Notes	<ol style="list-style-type: none"> 1. First, the single copper pillar is fixed on the upper board with a nut, which needs to be tightened; 2. Then use screws to fix the ESP32 board on a single copper pillar, only three places can be fixed here as shown; 3. Insert the car expansion board into the ESP32 controller board according to the corresponding pin number. 		

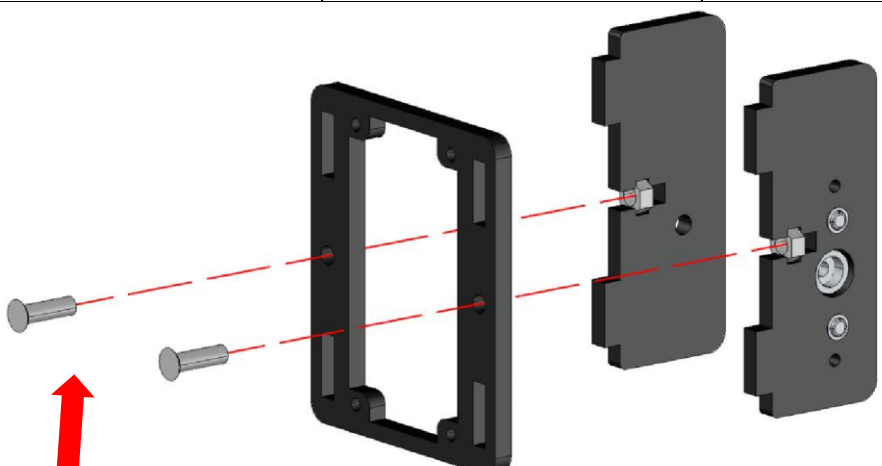
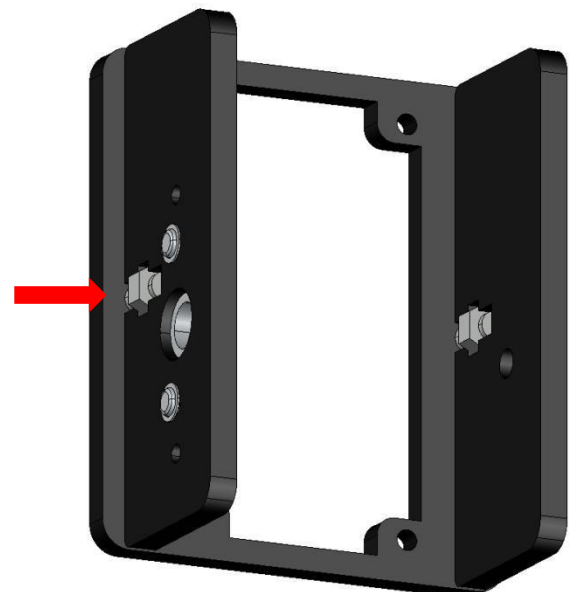
Step 4 Installing Blue LED Module

Parts List	Blue LED Module*2	M3*10MM Round Head Screws*4
	M3 Nickel-Plated Nuts*4	Acrylic Upper Board*1
Splicing Diagram		


Step 5 Installing Battery Holder			
Parts List	18650 Battery Holder*1	M3*8MM Flat Head Screws*4	M3MM Nickel-Plated Nuts*4
Splicing Diagram			
Notes	The screws in the battery case need to be tightened so that the flat head nut fits against the bottom of the battery case.		

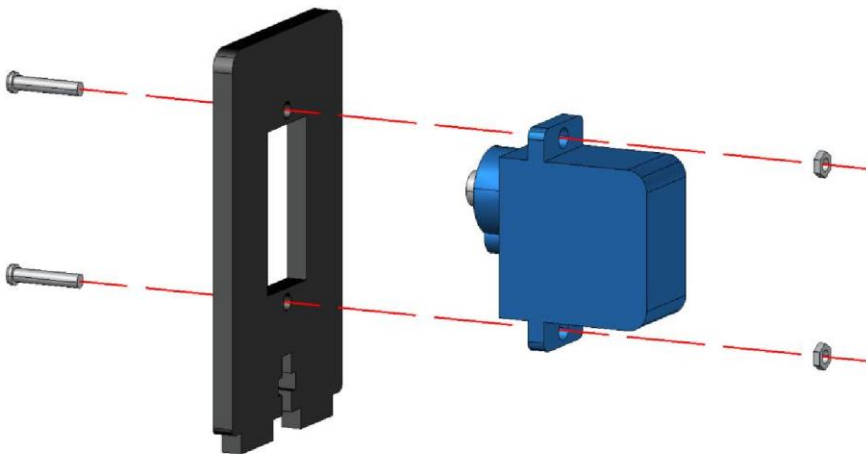
Step 6 Install the camera module structure group (1)			
Part Lists	single-side d servo horn*1	M1.4*5mm Large Round Flat Head Tapping Screws*2	single-sided servo horn acrylic fixed plate*1
Splicing Diagram	 <p>Attention: Please ensure that after installation, this notch is positioned at the upper left of the rudder plate.</p>		
Notes	<ol style="list-style-type: none">1.This step requires tearing off all the film on the acrylic;2.The single rudder plate and M1.4*5mm large round flat head self-tapping screws should be taken from Step 3.		

Step 7 Install the camera module structure group (2)

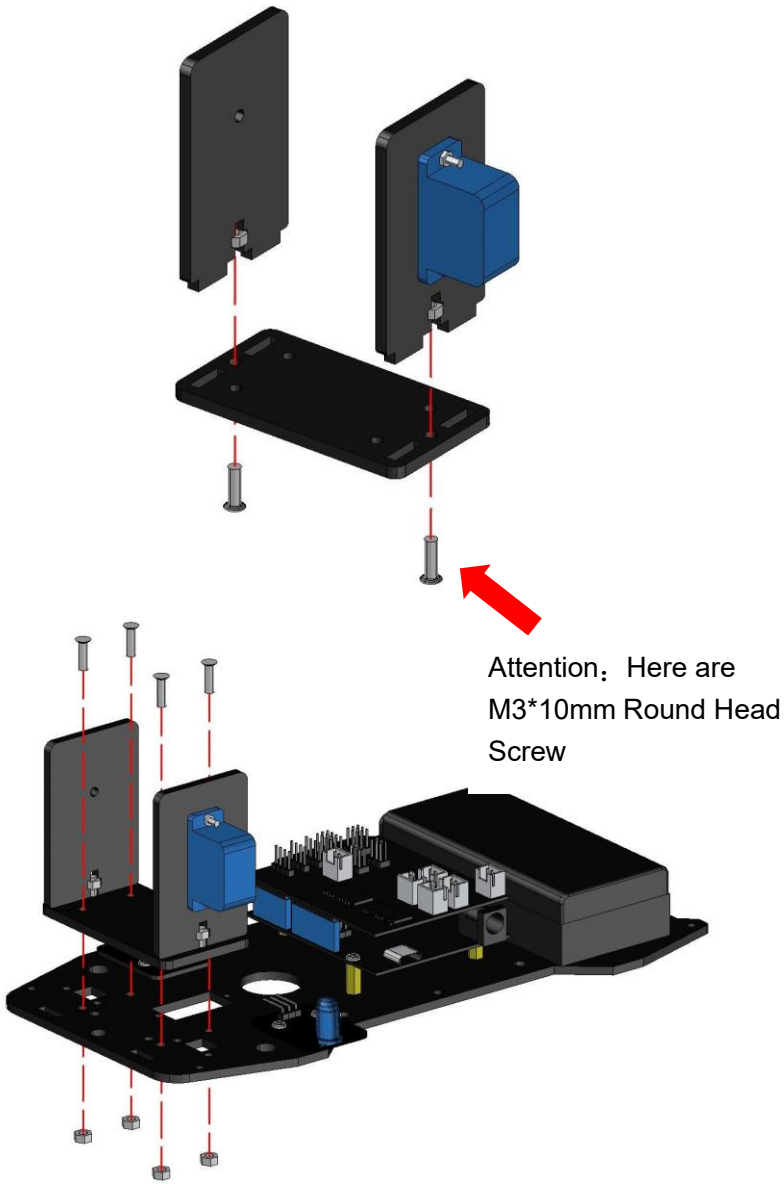
Part Lists	M3*8mm Flat Head screw*2	Nylon lock nut acrylic fixing plate*1	M3 nut*2
	Assembled single-sided servo horn acrylic fixed plate	Camera acrylic fixed plate*1	
Splicing Diagram	 <p>Attention: Here are M3*10mm countersunk screws.</p>  <p>Attention: When installing the screws here, you can use your left and right hands to hold the screw first, then tighten it.</p>		

Step 8 Install the camera module structure group (3)

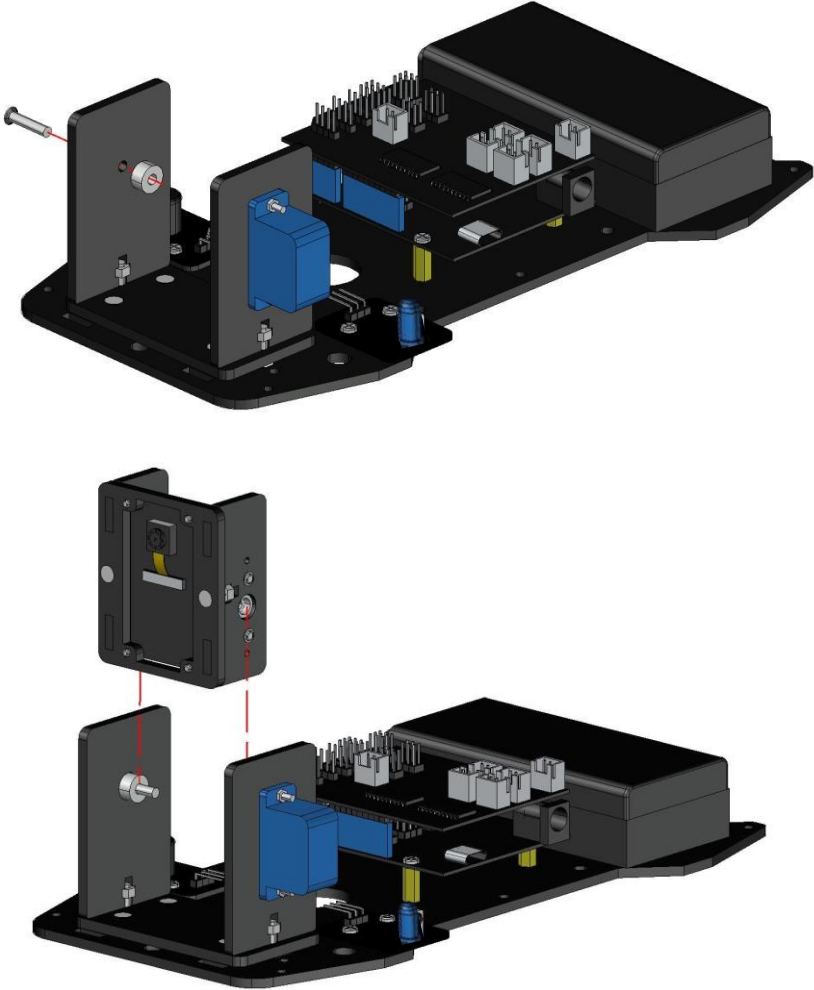
Part Lists	Assembled Camera acrylic fixed plate	Camera module*1	M2*8mm Round Head Screw*4
	M2Nickel-Plated Nut*4		
Splicing Diagram	 <p>Attention: The M2 screws should be installed from the front in this direction.</p>		

Step 9 Install the camera module structure group (4)			
Part Lists	SG90 Servo Module*1	Servo acrylic fixed plate*1	M2 Nickel-Plated Nut*2
	M2*10mm Round Head Screw*2		
Splicing Diagram			
Notes	Servo module, M2*10mm round head screws, and M2 nickel-plated nuts are removed in Step 4. Pay attention to the direction of the servo motor shaft.		

Step 10 Install the camera module structure group (5)

Part Lists	M3*10mm Flat Head screw*2	Square acrylic support plate*1	M3 nut*6
	Bottom acrylic fixing plate*1	Installed steering gear acrylic fixing plate	M3*10mm Round Head Screw*4
Splicing Diagram	 <p>Attention: Here are M3*10mm Round Head Screw</p>		

Step 11 Install the camera module structure group (6)

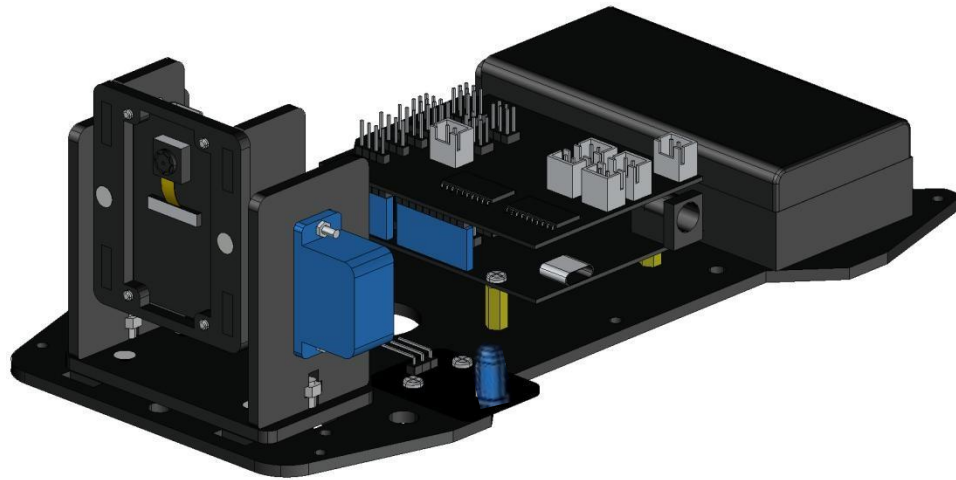
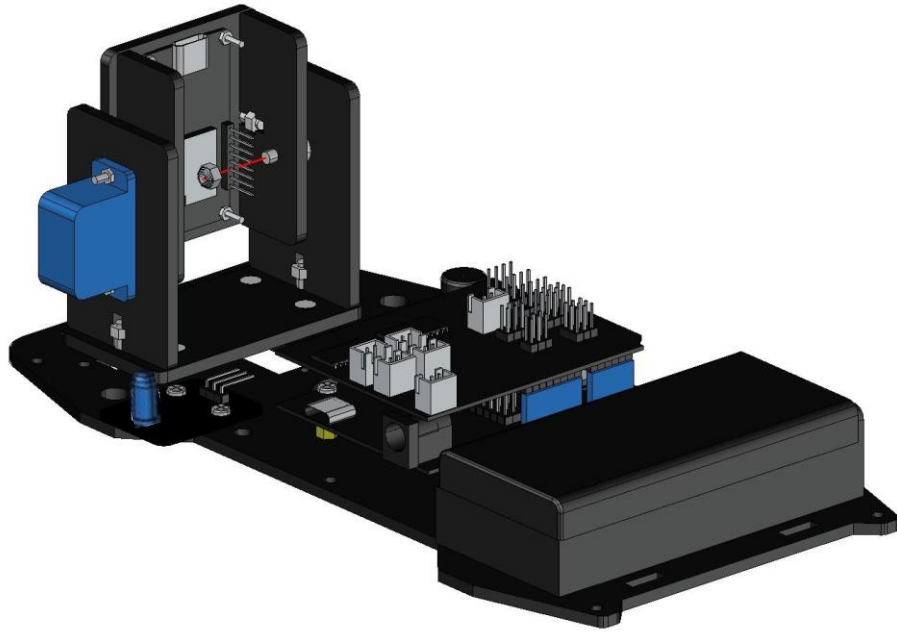
Part Lists	M3*14mm Flat Head screw*1	White ABS isolation column*1
Splicing Diagram		
Notes	<p>First, insert the M3*14mm Flat Head screw partially into the standoffs. Then place the assembled camera structure into position, ensuring the straight servo arm is aligned with the servo motor. The center of the straight servo arm does not need a screw. After aligning the holes, fully insert the screws through the round holes of the anti-loosening nut acrylic mounting plate.</p>	

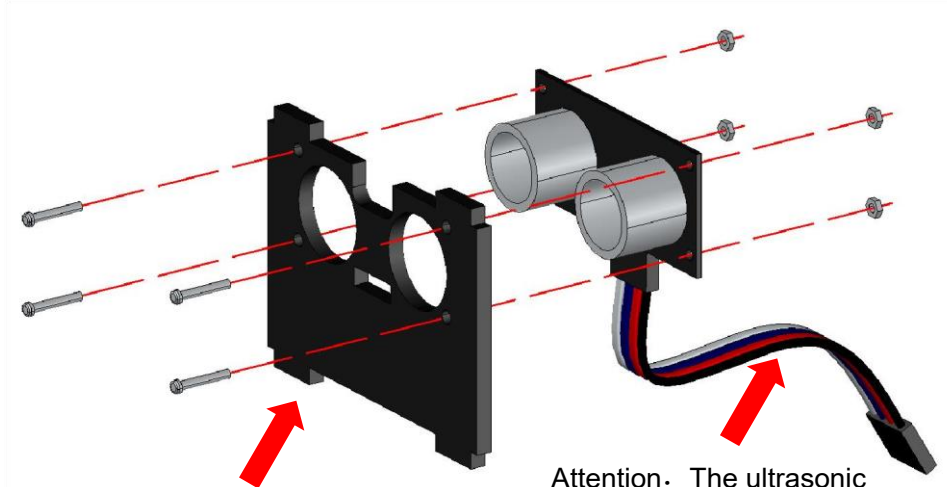
Step 12 Install the camera module structure group (7)

Part
Lists

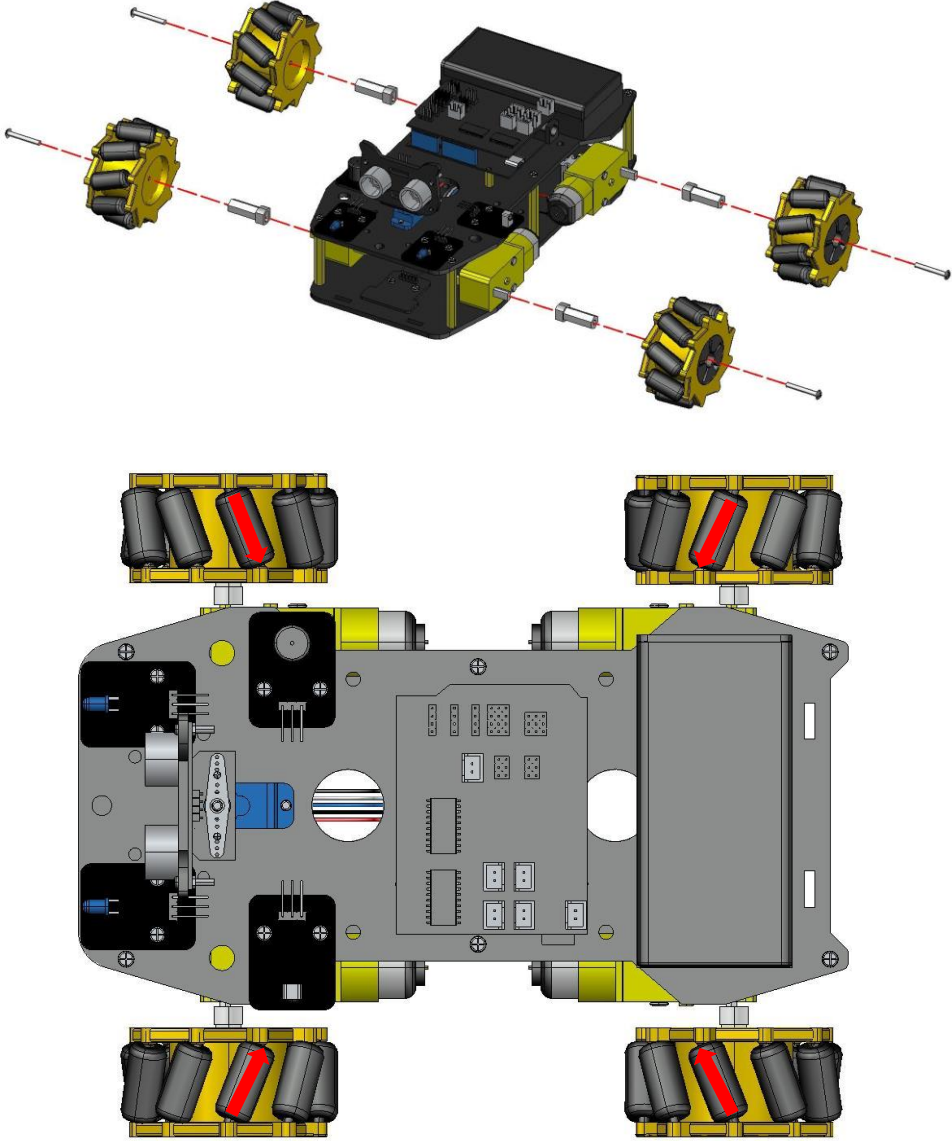
M3 Flat Head screw*1

Splicing
Diagram

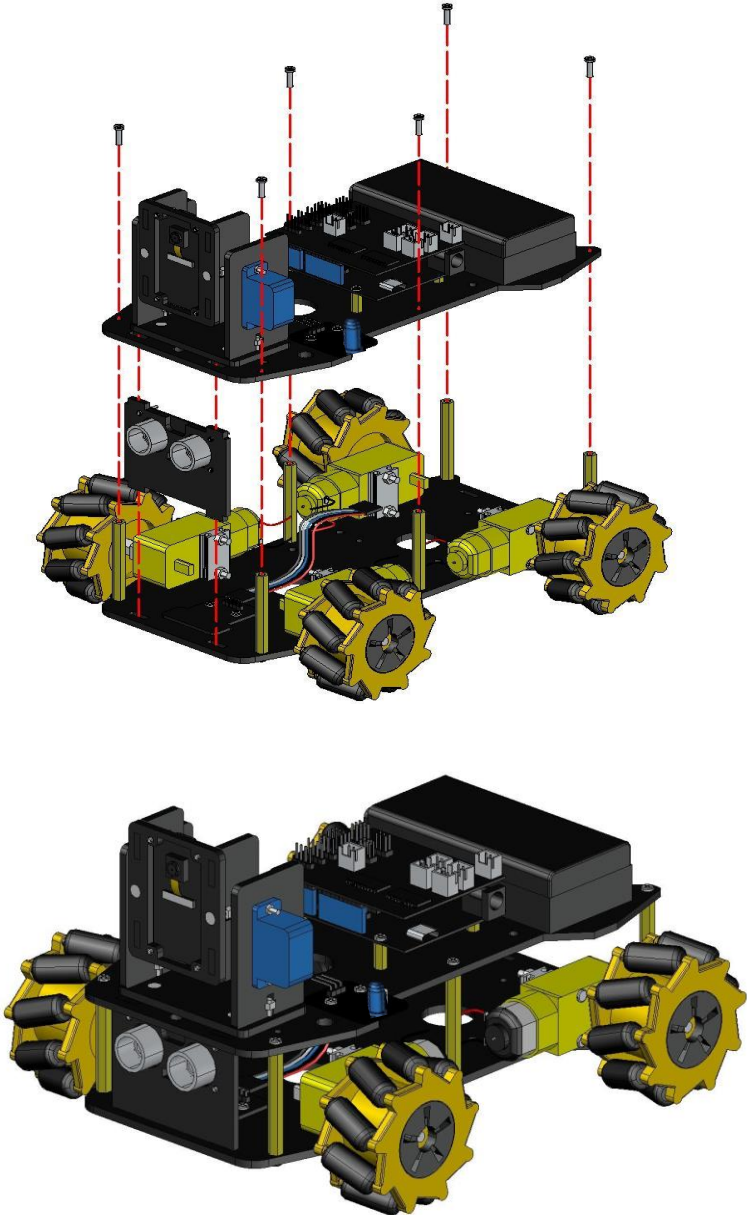


Step 13 Install ultrasonic sensor structure			
Part Lists	ultrasonic sensor acrylic fixed plate*1	ultrasonic sensor*1	M2*10mm Round Head Screw*4
	M2 Nickel-Plated Nut*4		
Splicing Diagram	 <p>fixing plate is facing upward. Attention: The circular hole on the ultrasonic acrylic</p> <p>Attention: The ultrasonic DuPont wire must pass through the threading hole of the upper chassis.</p>		
Notes	The ultrasonic sensor, M2*10mm Round Head Screws and M2 Nickel-Plated Nuts were removed using Step 2.		

Step 14 Installing Mecanum Wheels

Parts List	60MM Mecanum Wheel*4	Mecanum Wheel Couplings*4	M2*25MM Round Head Self-Tapping Screws*4
Splicing Diagram			
Notes	The Mecanum wheels must be installed strictly as shown in the figure. Pay close attention to the slanted direction of the wheels.		

Step 15 Assemble the complete car body

Part Lists	Assembled upper chassis	Assembled lower chassis	M3*10mm Round Head Screw*6
Splicing Diagram	 <p>Pass the connection cable of the upper module on the lower chassis through the round hole on the upper chassis.</p>		

Step 16 Wiring

