SCUTTLE robot Bill of Materials - Last revised 2019.01.18

Store	category	Part	PN	cost (each)	qty needed	subtotal
		Off-The Shelf: Hardware				
amazon	chassis	Wheel + 2 bearings + 1 spacer, kit (for drivetrain)	B01KH4R6VE	$6.00	2	$12.00
amazon	chassis	Motor, DC 12v with 200 rpm gearbox (for drivetrain)	B072R5QSRG	14.99	2	$29.98
Mcmaster	chassis	Pulley - T5,28mm OD, for motor (for drivetrain)	1428N23	$9.46	2	$18.92
amazon	chassis	Bracket - 90deg aluminum, (for chassis) - includes 2 screw tabs each	B07BQR7WX8	$2.50	4	$9.99
Mcmaster	chassis	Timing Belt, Dust-Free, T5 Series, Trade No. T5-245-10	1679K451	$4.18	2	$8.36
Mcmaster	chassis	Hex Nut, M8 (for axle)	90591A161	$0.05	2	$0.10
Mcmaster	chassis	T-slot Framing - 30mm x 1ft (for chassis)	5537T97	$5.84	4	$23.36
amazon	chassis	Caster wheels (for front)	B01J4FED5E	$1.92	2	$3.83
Mcmaster	chassis	Screws - M8x110mm screw (axles)	91290A470	$1.16	2	$2.32
Mcmaster	chassis	Screws, M6 x 14mm (for motor plates)	91239A319	$0.10	8	$0.82
Mcmaster	chassis	Screws - M6 x 10mm (for casters & chassis brackets)	91239A316	$0.10	12	$1.25
McMaster	chassis	Screw, set screw, M5x0.6 (for motor pulley)	91390A118	0.04	2	$0.08
Mcmaster	chassis	Screw, Flat head, M3x10mm (for motors 6)	92010A120	$0.04	6	$0.27
amazon	chassis	Screw, self-tapping, M2 x 6mm, for plastic (for encdr brkt 4, ultrsnc brkt 4)	B00GMQDSRI	0.01	8	$0.07
amazon	chassis	Screw, self-tapping, M2.5x12mm for plastic (for beaglebone board)	B01KXTTXI2	0.05	4	$0.19
Mcmaster	chassis	Screw, M2.5x10mm countersunk (for battery case)	92010A020	0.04	6	$0.23
Mcmaster	chassis	Screw, M2.5x6mm pan head (for motor driver mount 2, bbb lid 1)	92005A066	0.04	3	$0.13
Mcmaster	chassis	Fastener, T-slot, (includes tab and M6x16 screw)	5537T867	$0.72	12	$8.61
Mcmaster	chassis	Washer, lock washer for M8 bolt (for axles)	92148A200	0.07	2	$0.15
Mcmaster	chassis	Washer, flat washer for M8 Bolt (for axles)	93475A270	0.08	2	$0.16
Mcmaster	chassis	Washer, 6x12mm	93475A250	0.05	8	$0.39
Mcmaster	chassis	Tubing, 6063, aluminum, sold 8ft section, price per ft	1658T32	0.98	1.6	$1.57
Mcmaster	chassis	Threaded insert, M2.5 x 3.4 heat set (btry 2, whlplts 4, bbb brkt 1, m.driver 2)	94180A321	0.10	9	$0.93
					Subtotal	$123.71
		Off-The Shelf: Electronics				
mouser	MPU	BeagleBone Blue	95Y0640	82.00	1	$82.00
amazon	Sensors	Motor Driver Board with Twin H-Bridges (HW-231 model)	B078TFLD7Q	18.99	1	$18.99
amazon	Sensors	Camera, Microsoft HD 3000	B008ZVRAQS	23.99	1	$23.99
amazon	Sensors	Ultrasonic distance sensor	B06XBV54WF	1.599	1	$1.60
digilent	Sensors	Compass Sensor - PMOD CMPS2	410-355	7.99	1	$7.99
amazon	power	Battery cell, Panasonic 18650 or other brand	B00GS48XRE	7.48	3	$22.45
mouser	Sensors	Encoder circuit boards - AMS	990600491	15.75	2	$31.50
powerwerx	connectors	Anderson PowerPole Connectors, 30amp	WP30-100	1.15	8	$9.24
digikey	power	Battery Case BK-18650-PC6	BK-18650-PC6	5.89	1	$5.89
mouser	power	Switches - rocker, SPST 10A BLK ON-OFF Symbols (for battery case)	SRB22A2FBBNN	0.95	1	$0.95
amazon	power	Terminals - 22-16 AWG Insulated Female Quick Connect Terminal	B06XCWFTJ9	0.13	2	$0.26
amazon	power	Power Wire - 18 AWG (black/red pair), price listed per meter	B07428NBCW	0.69	1	$0.69
amazon	Wiring BBB	Connector - JST SH 1.0mm 4-Pin with 100mm cable (for ultrasonic, encoders)	B01DUC1M2O	0.40	2	$0.80
amazon	Wiring BBB	Connector - JST ZH 1.5mm 2 pin (for motor driver)	B074CFF5MT	0.27	2	$0.53
amazon	Wiring BBB	Connector - JST SH 1.0mm 6-pin with 100mm cable (for ultrasonic sensor)	B0762K143K	0.73	1	$0.73
amazon	Wiring BBB	Connector - barrell, 5.5x2.1mm, power (for beaglebone)	B076JCNFMP	0.50	1	$0.50
					Subtotal	$208.11
		Fabricate				
McMaster	mill	Wheel Plate 1 (for motor and axle), from 6.35mm aluminum bar	8975K514	3.53	2	$7.06
Amazon	laser cut	Wheel Plate 2 (for axle), from 6.36mm acrylic (material cost shown)	B00844SOSE	0.62	2	$1.24
Amazon	3D Print	ABS 3D PRINTING MATERIAL (price per kg listed)	B07D6BG8FR	18.99	0.424	$8.06
					Subtotal	$16.36
		3D Print (mass in g listed in price column @ 45% infill)				
CAD Model	3D Print	Bracket, Battery	3D Print	61.3	1	61
CAD Model	3D Print	Lid, Battery Bracket	3D Print	44.0	1	44
CAD Model	3D Print	Bracket, Camera	3D Print	15.4	1	15
CAD Model	3D Print	Bracket, Encoder	3D Print	9.9	2	20
CAD Model	3D Print	Bracket, Compass	3D Print	5.5	1	6
CAD Model	3D Print	Pulley, wheel (designated 3d printed part)	3D Print	23.2	2	46
CAD Model	3D Print	Spacer, wheel	3D Print	3.9	2	8
CAD Model	3D Print	Spacer, wheel plate	3D Print	4.0	2	8
CAD Model	3D Print	Pulley, motor (alternative to aluminum part)	3D Print	5.2	2	10
CAD Model	3D Print	Bracket, Beaglebone	3D Print	52.5	1	53
CAD Model	3D Print	Lid, beaglebone bracket	3D Print	22.7	1	23
CAD Model	3D Print	Bracket, Universal Dovetail (prints with supports)	3D Print	8.0	3	24
CAD Model	3D Print	Bracket, Rail-holding (prints with supports)	3D Print	11.9	4	48
CAD Model	3D Print	Bracket, Motor Driver PCB	3D Print	27.6	1	28
CAD Model	3D Print	Bracket, Ultrasonic Sensor	3D Print	31.3	1	31

	Grand Total	$348.17