

PHASE ONE: *Projected completion by Mar 2, 2024*

The deliverable/objective of phase one is to complete a demonstration showing compliance between a motor controller and brushless dc motor. The objective is to write/implement the code required to allow for torque control on a teensy microcontroller. Must include bidirectional communication between microcontroller and motor controller such that the microcontroller uses the torque output to calculate a change in force applied by the motor.

Measure the torque applied by the motor on an actuator linkage. Demonstrate that a force of a specific magnitude can be generated.

This phase may be designed with the use of a harness as a power source instead of a battery.

This phase may include some 3D printing in order to build a linkage/joint. This phase require the design of the 3D printed linkages required to build the robot leg.

COST:

Part Name	Quantity	Unit Price
<u>RM-C610 Brushless Motor Controller</u>	1	\$39.00
<u>RM-M2006-C610 Brushless Motor</u>	1	\$55.00
<u>Teensy 4.1</u>	1	\$34.60
<u>6656K118 Ultra Thin Ball Bearing</u>	2	\$15.65
<u>Skate Bearings</u>	1	\$8.99
TOTAL		\$169.89 + tax/shipping

PHASE TWO: Projected Completion May 1, 2024

The deliverable is a complete robot leg. This leg will be composed of 3 motor/controller pairs each with torque control.

Demonstrate implementation of a walking algorithm successfully actuating the leg.

This phase will include the 3D printing of the parts required to build BOTH robot legs and the parts required to join the robot legs. This phase may include the design of the power electronics to operate the legs independently of a benchtop supply or may continue to use a benchtop supply.

COST: (ADDITIONAL PARTS TO PURCHASE)

Part Name	Quantity	Unit Price
RM-C610 Brushless Motor Controller	2	\$39.00
RM-M2006-C610 Brushless Motor	2	\$55.00
6656K118 Ultra Thin Ball Bearing	2	\$15.65
Skate Bearings	1	\$8.99
TOTAL		\$228.29 + tax/shipping

PHASE THREE: Projected Completion TBD

Build a second leg. Use both legs together in order to demonstrate a functioning bipedal robot.

COST: TBD