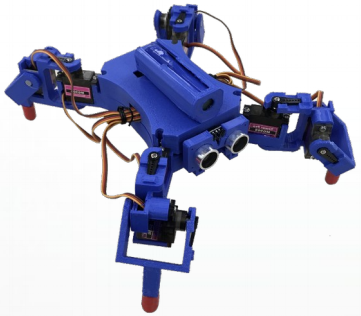
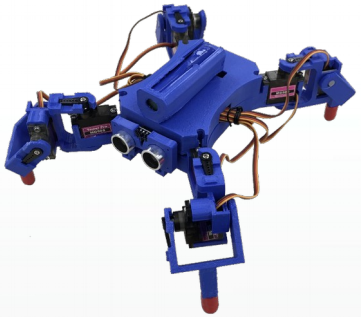
THE UNIVERSITY OF HONG KONG

DEPARTMENT OF
COMPUTER SCIENCE

CreepBot - Low Cost 3D Printed Robot Kit for STEM

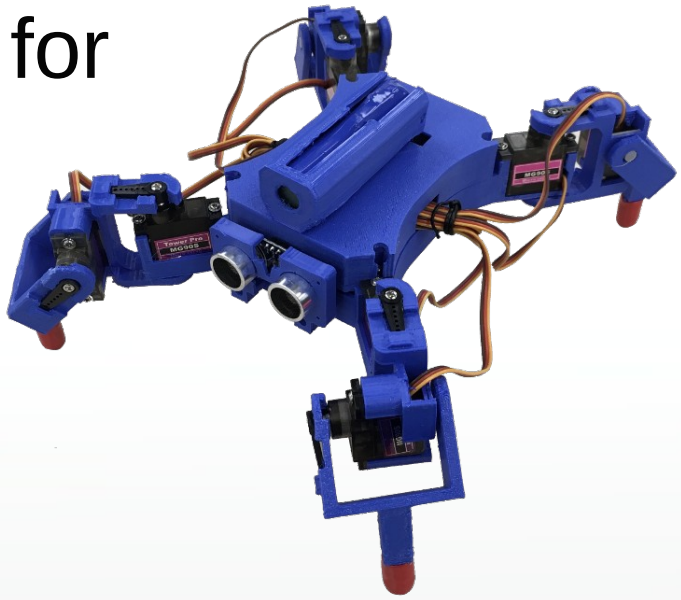


by David Lee

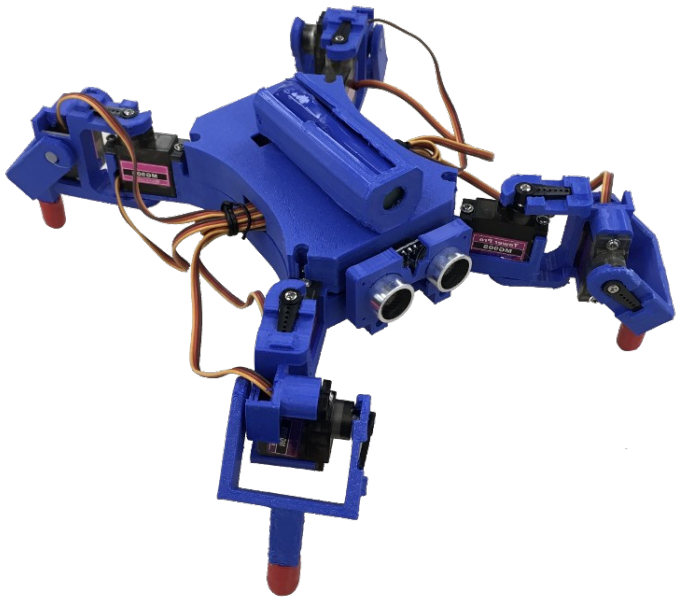


Introduction

- Motiviation of design
  - Similar robot kit in market is expensive;
    - We want a kit to be affortable to all students
  - 3D printer is cheap;
- As teaching materials for
  - 3D Printing
  - Programming
  - Robotics



CreepBot

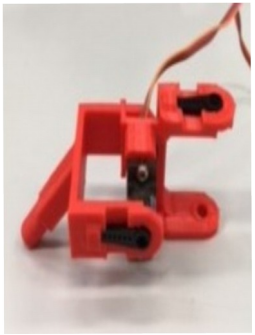
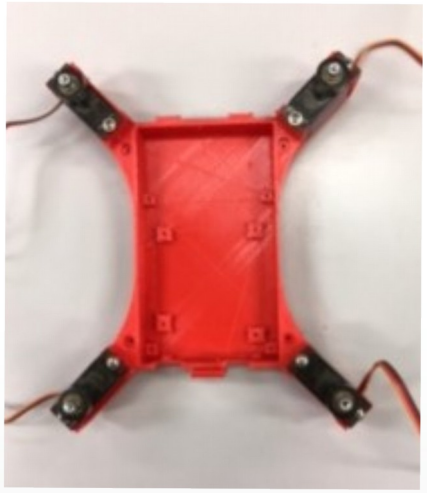
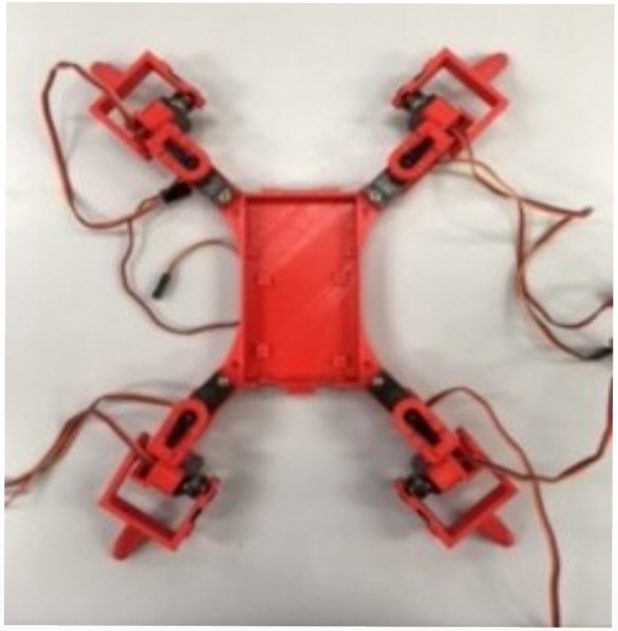


- It is a quaduped robot;
- It is a custom made and lower cost using 3D printed;
- It is control by the smartphone app
- Commuication Link – Bluetooth
- Configuration -
  1. 8 DOF actuators – Servo Motors
  2. Ultrasonic sensor
  3. Buzzer
  4. Bluetooth module

CreepBot Components

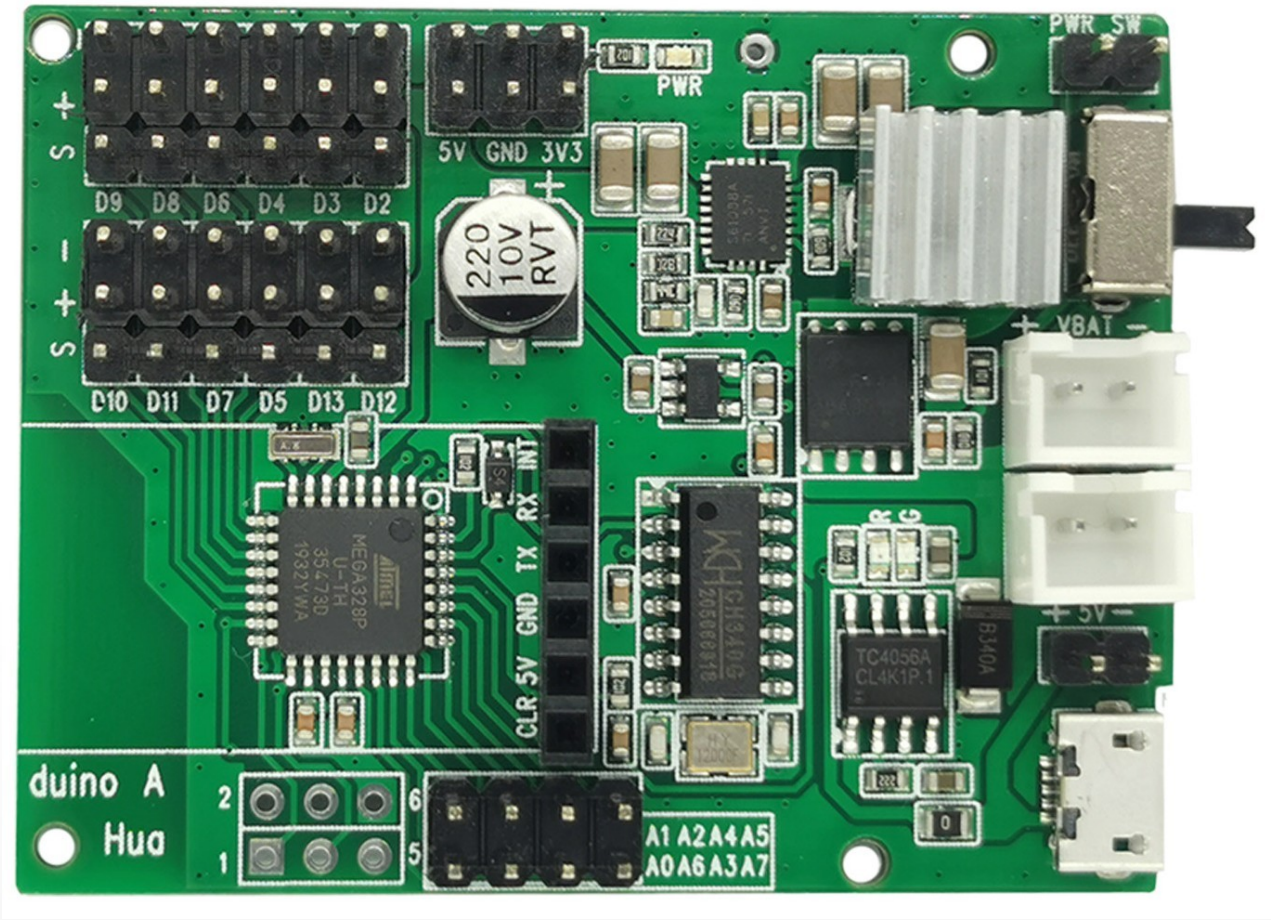
- 3D Print Models – some of examples



CreepBot Components

- MCU board



CreepBot Components

- Actuators of creepbot - 8 of MG90S servos

Signal Pins -

Left Front Limb	Right Front Limb
hip – D10	hip – D9
leg – D11	leg – D8
Left Back Limb	**Right Back Limb**
hip – D7	hip – D6
leg – D5	leg – D4

Wire – Yellow (Signal), VCC(+), GND(-)

CreepBot Components

- Buzzer

Pins – Red (A0), Gnd

- Ultrasonic Distant Sensor

Pins - VCC(+), Trigger(D2), Echo(D3), GND(-)

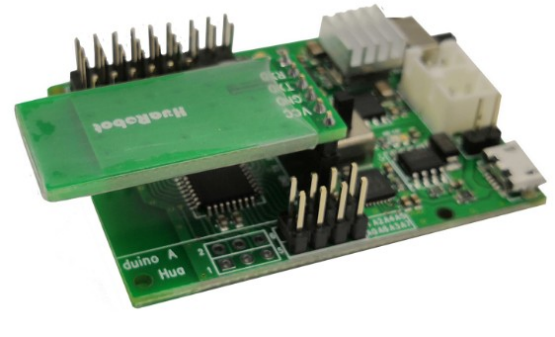
- 18650 lithium battery

Pins – Positive, GND(-)

CreepBot Components

- Bluetooth BLE Module for goBLE smartphone app
- To distinguish each module among others, a number is assigned to it, marked on the back;
- A string prefix “BT05-” assoicateed the number form the name of the module e.g BT05-01;

Plugs into 6 pin female connector



CreepBot - Building Guide

- Video - https://youtu.be/LDjwKNZhbA8