

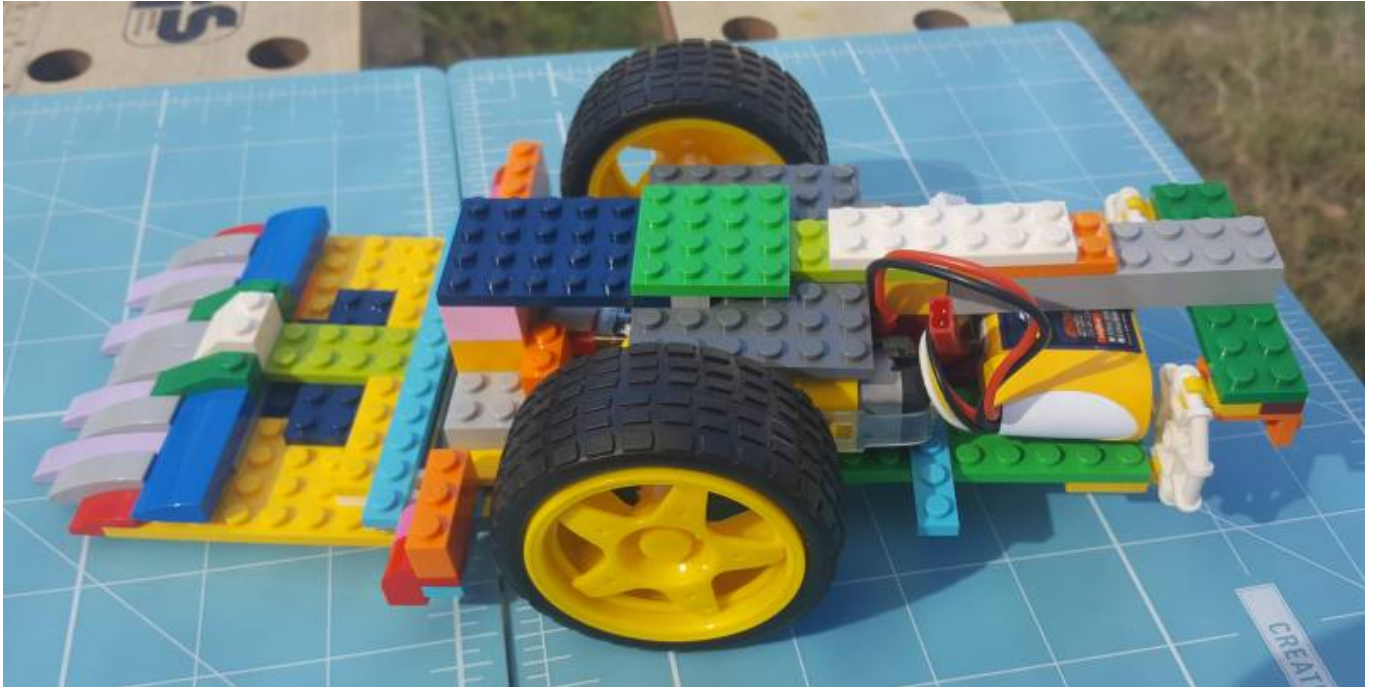


Brick Battle Bots

SLQ Wiki Fabrication Lab 2024/10/02 22:10

Brick Battle Bots

aka. **Brick Battle Block Bots Bash Bonanza**



Intro

Lego. Electronics. Arena. Fun!

Materials

LEGO!



Tools

- Your hands.
- A desire for flying LEGO pieces.
- Shoes. (LEGO is dangerous after all!)

RULES

- Draft -

NOTE: Any and all rules can be changed up until the moment of the first round.

- Bad sportsmanship, such as fighting with the Judges, sabotaging competitors, willful cheating, etc will result in automatic forfeit.
We are here to have fun after all!
- 8 to 14 teams. (Final number to be decided)
- Double-elimination. (Less teams but more battles)
- Arena is 3x3 meters, roughly 300mm high walls, made from plywood with traps and zones for House Robots.
- Each round is between 2 and 3 mins long.
- Three judges. The judges rulings are always final.
- Winner is by disabled(Counted as unable to move outside it's own turning circle.) or judges call after timeout.
- Each Bot Team will have 2 to 4 members. Teams can decide if just one or if all are the pilots during the battles, however only team member can pilot.

- Each Bot will have a maximum weight of 400g (Subject to change) including all electronics, batteries, 3d printed, laser cut and other custom made parts at start of battle.
- Limited amounts of 3D printed and laser cut parts are allowed. (See below)
- Limited amounts of rubber bands, string and similar if used for energy storage, tyres, control lines or similar.
(This limit is at the discretion of the organisers and judges)
- No reinforcing allowed!

IMPORTANT: EVERY CRITICAL JOIN SHOULD BE A LEGO JOIN.

The spirit of using LEGO is to make for a frangible(breakable) robot and thus cannot be held together with any adhesives, solvents, tapes, or binding that would cause the LEGO bricks to be unfairly joined.

The sole exception is to attach LEGO parts to non-LEGO parts. For example, using double-sided tape to add LEGO compatible sides to the motors, battery, etc.

As an example of final strength, a Bot dropped from a height of 1.5m on to a hard floor should SMASH.

Any Bot deemed to be too strong or in violation of this rule may, at the judge's discretion, be tested this way.

Each team gets:

- Official 'Brick Bot' LEGO kit, 1274 assorted pieces.
(These can be shared or traded with other teams at the team's discretion)
- Official Battery Pack
(Currently: 11.1v, 450mAh LiPo, weight aprox: 40g)
- Official Electronics Pack
(Pre-programmed with Open Source Code Base) (Weight aprox: 20g)
- Choice of official motor options.
(See below)
- Robot Remote.
(Currently clone PS3 controller.)
- Limited access to laser cutter, chassis plans and one(1) A4 sheet of 3mm Acrylic.
- Access to 3d printers and 200g of filament.
(only 100g allowed in the final build.)

Options:

- Electronics can drive two(2) DC motors and one(1) servo motor.
This allows the choice of two DC motors for steering and servo for weapon,
OR 1 DC motor for drive, 1 servo for steering and 1 DC motor for weapon.

- Two DC motor options. (Slow and fast) are provided. (Wight: 120g/pair)
- Two Servo options (Small(light) and large(heavy))
- ONCE THIS CHOICE HAS BEEN MADE IT CAN'T BE CHANGED.

Teams can provide an official PS3/4, XBox (360?) or USB Wireless Keyboard/Mouse/Joystick if they wish to replace the supplied controller, conditional to compatibility and time. Other options can be discussed.

Software can be inspected freely and while minor tweaks to the software may be allowed at the discretion of the organizers there is no guarantee.

Software may also be modified by the organisers to solve technical problems, any changes will be made clear if and when they happen.

Workshop details

(Basic outline)

Grand prize

Take home your bot and everything you took into the final battle!

Including all LEGO parts, electronics, controller/remote and battery charger.

Everything you need to play at home, school or work!

Second prize

Electronics/Motor/controller package from your battle!

(No batteries or LEGO)

Third prize

Basic electronics and motor kit. Unassembled.

Three workshops, each of 3(4?) hours

One

Introduction, demonstrations, team decisions
(Motors, team names, warcry, etc)

Initial bot design including work on the base plate and playing with LEGO.

Two

Finish design, building your bot, testing ideas.
(Maybe laser cutter time?)

Three

Practice in the Official Arena against the Demo Robots! Tweak your bot!

Participants are also encouraged to use The Edge facilities during Open Lab hours to work on their bots. Hack The Evening and Wednesday walk-in bookings are good times.

Day of Battle!

Part of the The Edge/SLQ's Fun Palace weekend!

2 hours in the morning for elimination rounds.

Public welcome!

(Roughly 10 mins per round including setup/announcements/battle/cleanup).

Mostly this is about having fun, playing with your robots and seeing how others behave as well as working out the final contest.

Four winning contestants go onto the final contest. One or two are chosen by judges based on other merits. Including 'just poor luck' and 'entertainment value'.

1 hour in the afternoon final/grand final!

Public ENCOURAGED!

This will be the 'big' one! It might even be held in the auditorium?

BONUS

After the grand final, if there is time, the arena will be left open and teams can play as they like.

Electronics

Code

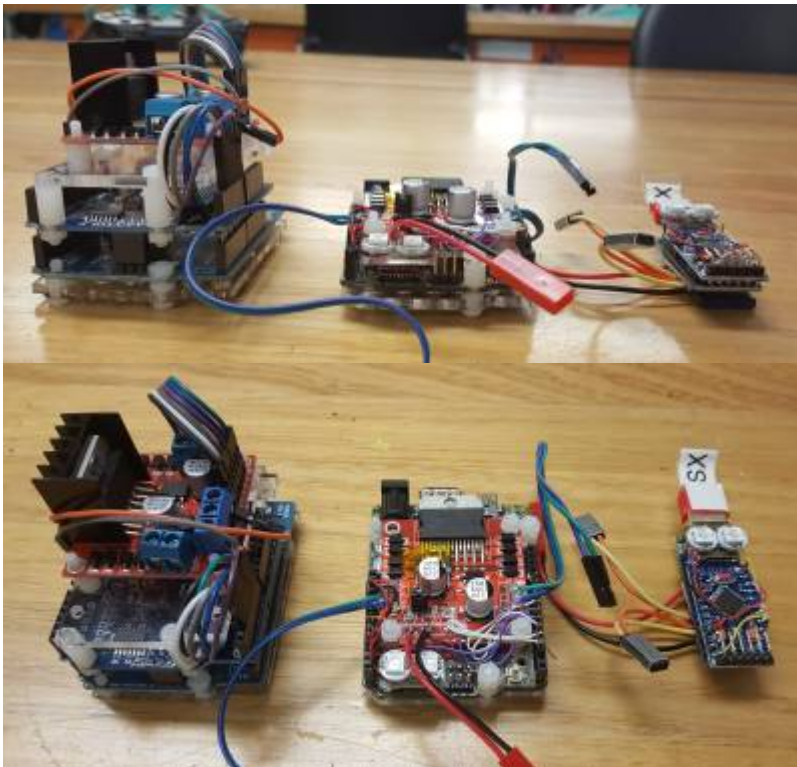
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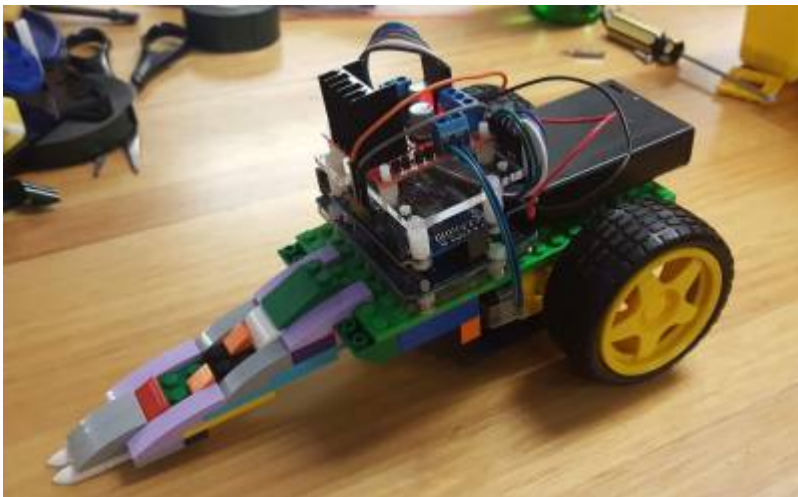
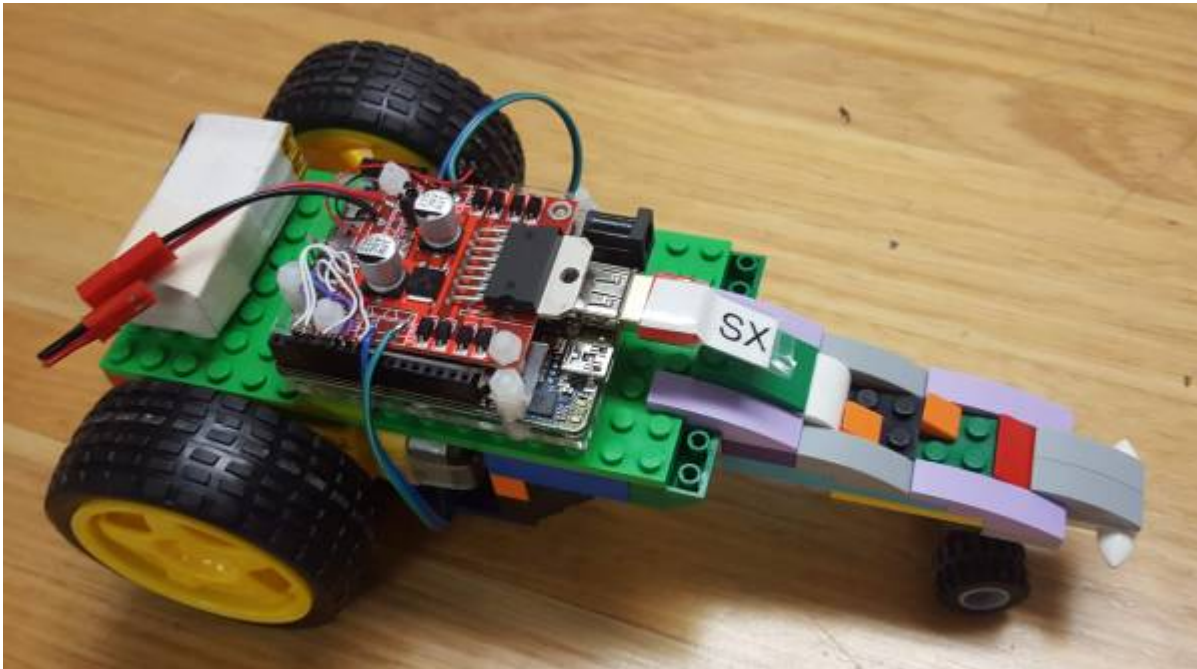
Step Three:

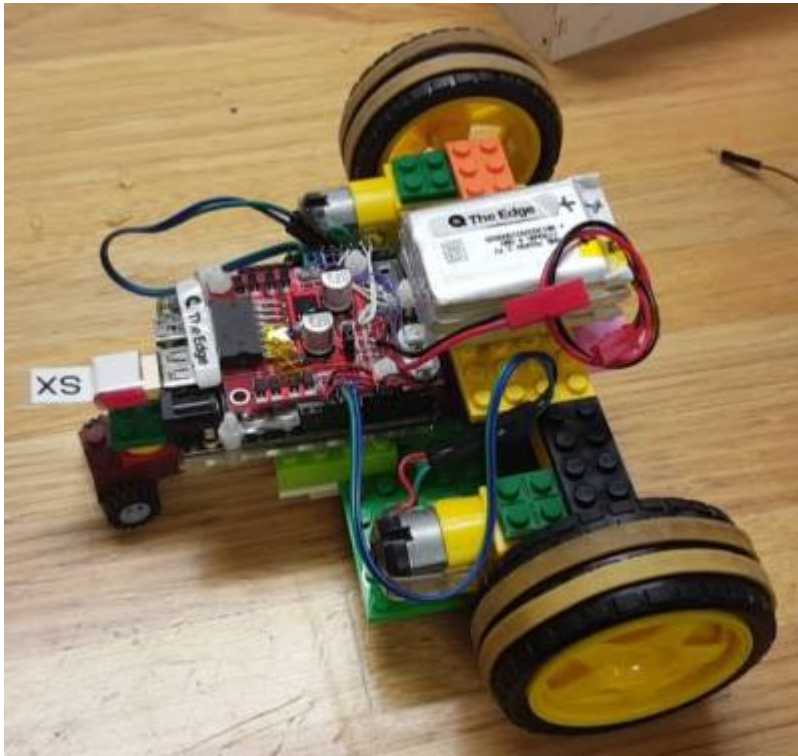
Step Four:

etc ...

Development notes







V3 Electronics

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<https://www.aliexpress.com/item/Free-Shipping-1pcs-pro-mini-atmega328-Pro-Mini-328-Mini-ATMEGA328-3-3V-8MHz-for-Arduino/32342672626.html?>

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<https://www.aliexpress.com/item/Mini-USB-Host-Shield-Support-Google-ADK-For-Arduino-UNO-MEGA-Duemilanove-Expansion-Module-Board-SPI/32835497236.html?>

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<https://www.aliexpress.com/item/5PCS-Free-Shipping-Dual-Motor-Driver-1A-TB6612FNG-for-Arduino-Microcontroller-Better-than-L298N-TB6612/32696432503.html?>

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<https://www.aliexpress.com/item/ORICO-BTA-403-RD-Mini-Bluetooth-4-0-Adapter-Support-Windows8-Windows-7-Vista-XP-Red/32734449020.html?>

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<https://www.aliexpress.com/item/10-Pairs-150mm-JST-Connector-Plug-Cable-Male-Female-for-RC-Battery/32716500577.html?>

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<https://www.aliexpress.com/item/10Pcs-150mm-300mm-500mm-1000mm-100cm-Male-to-Female-Servo-Extension-cable-Lead-Wire-Cable-Connection/32884054260.html?>

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<https://www.aliexpress.com/item/Ultra-Small-Size-DC-DC-Step-Down-Power-Supply-Module-3A-Buck-Converter-Adjustable-1-8V/32880983608.html?s>

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<https://www.aliexpress.com/item/Mini360-DC-DC-Buck-Converter-Step-Down-Module-4-75V-23V-to-1V-17V-17x11x3-8mm/32582982343.html?>

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<https://www.aliexpress.com/item/Mini-DC-DC-12-24V-To-5V-3A-Step-Down-Power-Supply-Module-Voltage-Buck-Converter/32826540392.html?s>

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<https://www.aliexpress.com/item/5PCS-5V-3-3V-DC-DC-Step-Down-Power-Supply-Buck-Module-AMS1117-LDO-800MA/32732025305.html?>

Accessories:

- https://hobbyking.com/en_us/hobbykingr-dc-4s-balance-charger-cell-checker-30w-2s-4s.html?__store=en_us

Controllers:

- <https://www.aliexpress.com/item/2-4Ghz-USB-Wireless-Game-Controller-Joystick-Gamepad-For-Sony-Playstation-PS3-Game-Console-Android-Smart/32895269722.html?>
- <https://www.aliexpress.com/item/Cewaal-Hot-2-4G-Wireless-Gamepad-PC-For-PS3-TV-Box-Joystick-2-4G-Joypad-Game/32834602683.html?>

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<https://www.aliexpress.com/item/Free-Shipping-DS04-NFC-360-degree-continuous-rotation-servos-360-degree-servo-DC-Gear-Motor/32656803984.html?>