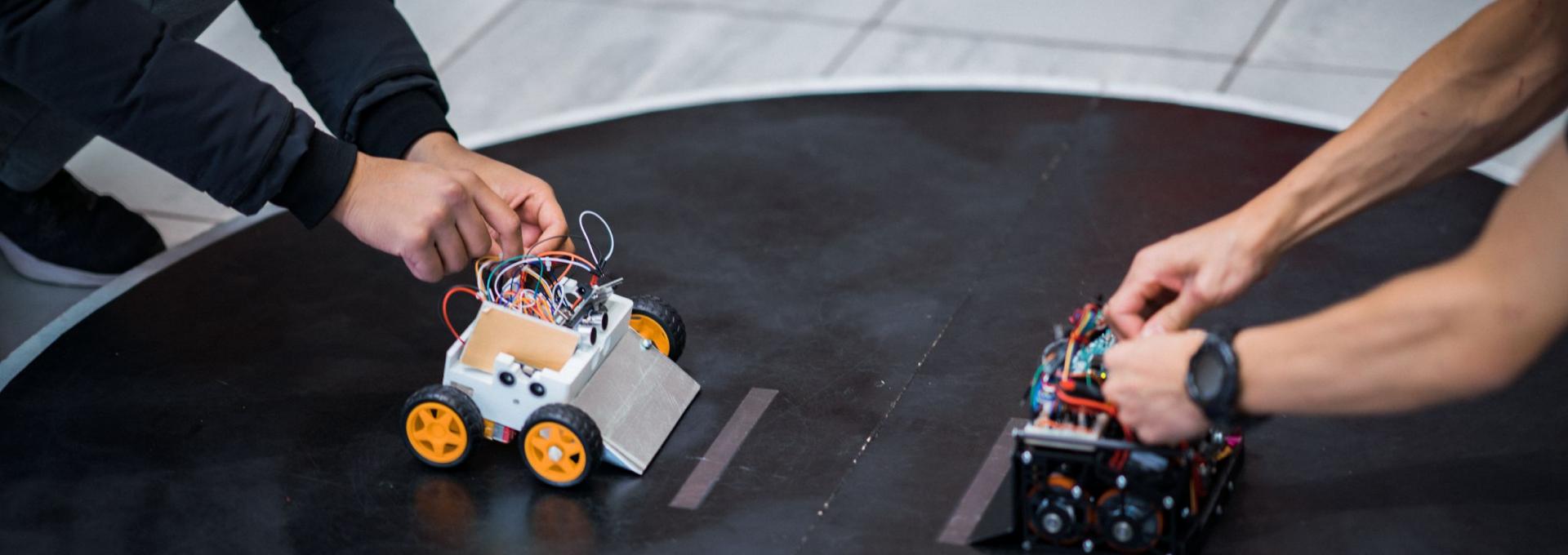


McMaster Sumobot Club





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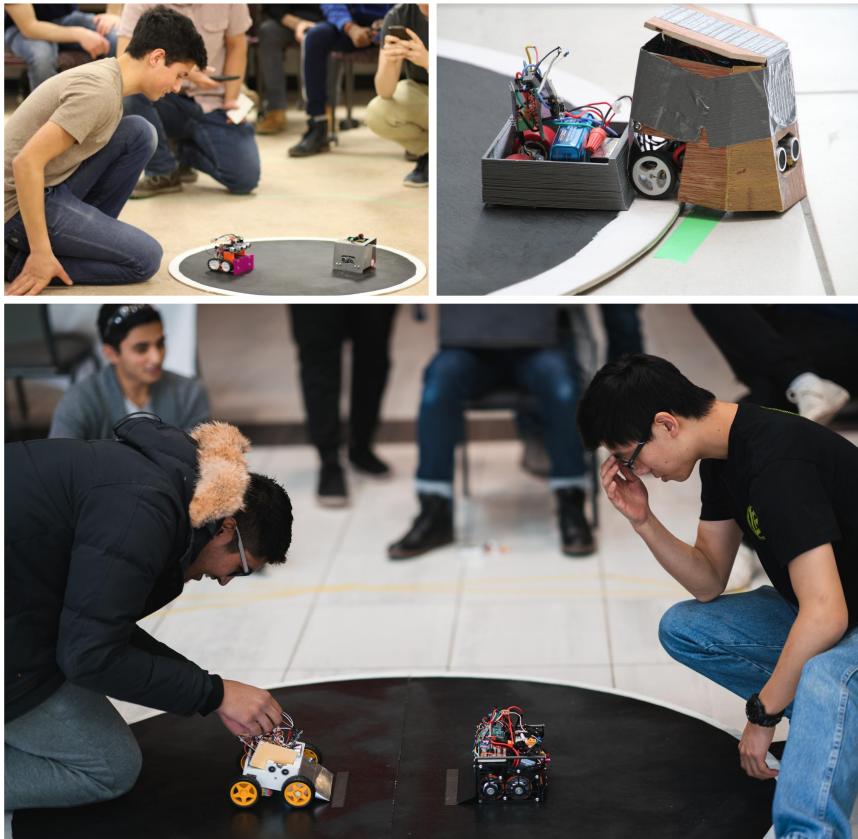




What is Sumobots!

The McMaster Sumobot Club is a robotics organization that challenges students to design their own autonomous fighting robots to compete in tournament-style, one-on-one matches.

This club helps engineering students obtain hands-on experience in several fields such as electrical circuits, CAD designs and coding.

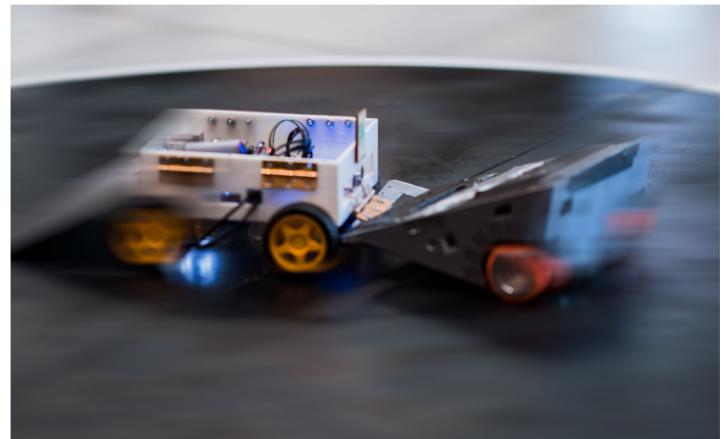
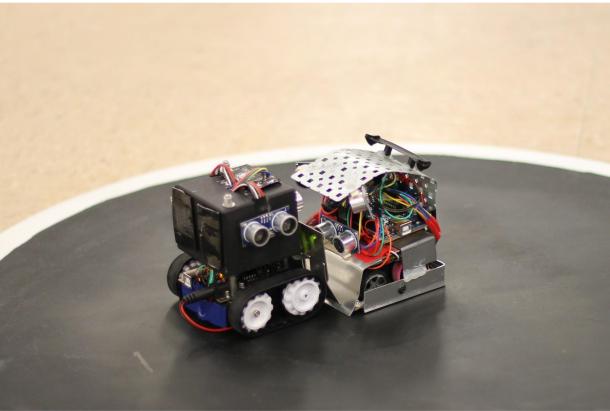




Competition

Details are still being decided

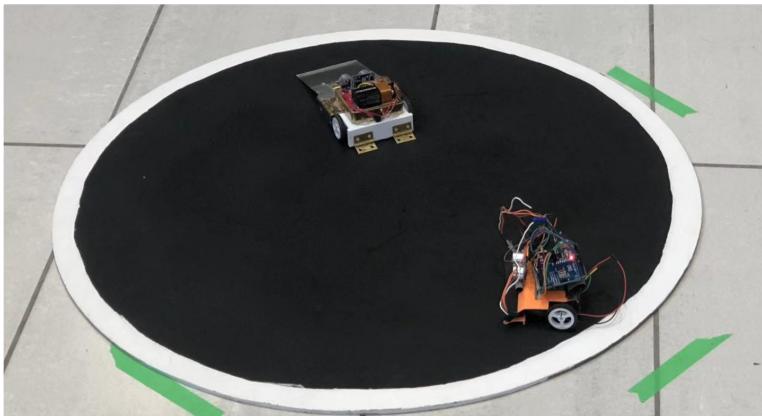
- ❖ Beginners competition
 - Introduction to robotic design
 - Smaller arena, smaller bots
 - Mentor and workshop provided
 - Parts kit available
- ❖ Advanced competition
 - Increase size and weight limit
 - Rules and regulation can be found on our website (<https://sumobot.ca/#/>)



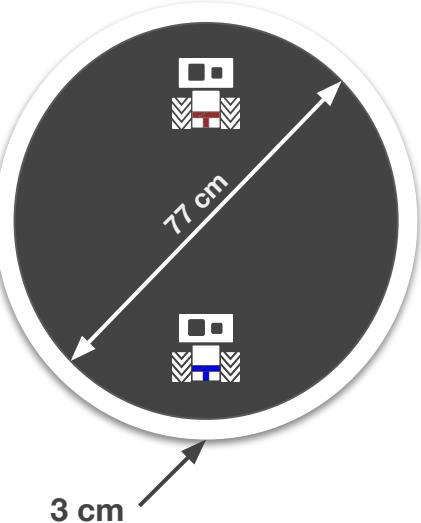


Ring Specification

- ❖ The ring shall be circular in shape, having a total diameter of 77 cm and a border width of 3 cm for the Beginners Competitions

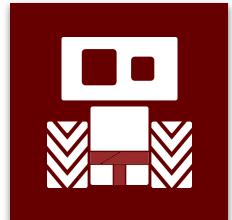


Competitions Arena

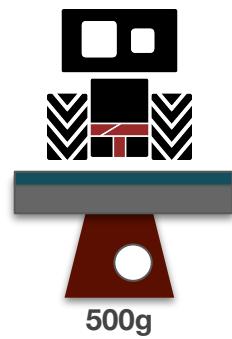


Robot Specification

- ❖ The robot must fit within a square tube of 10x10 cm upon inspection.
- ❖ The robot may expand in size autonomously upon the start of the round, but must remain intact as one piece. Screws, nuts, and other parts that fall off the robot during the round which total to more than 5 grams shall cause the loss of the round.
- ❖ The total mass of the robot at the start of the match must not exceed 500 g.
- ❖ Robot must be fully autonomous. All methods of control must be contained within the robot without external signals or directions from outside sources once the round has started.
- ❖ Robots must be able to be safely turned on and off.



10x10 cm



500g



Restrictions

- ❖ Parts that could break or damage the ring are not allowed. Do not use parts that are intended to damage its operator.
- ❖ Devices that can store liquid, powder, gas or other substances for throwing at the opponent are not allowed. Any pressurized substances are banned.
- ❖ Any flaming devices are not allowed.
- ❖ Sticky substances to improve traction are not allowed.
- ❖ All edges, including but not limited to the front scoop, must not be sharp enough to scratch or damage the ring or players. Judges or competition officials may require edges that they deem too sharp to be covered with a piece of tape.
- ❖ Magnets are banned due to how they affect electrical components.





Match Rules

- ❖ One match will consist of three rounds.
- ❖ If the robot is unable to move after 10 seconds of activation, it forfeits the round.
- ❖ If during the round, a robot stops and stays stopped for more than 5 seconds, it forfeits the round.
- ❖ If two robots are caught in stalemate for over thirty seconds, the round is to end in a draw or be redone according to judge's decision.
- ❖ If two robots are caught in stall for more than 10 seconds, the round is to be redone.
- ❖ The match/round stops and resumes when a judge announces so.
- ❖ The first robot to be out of the ring loses the round.
- ❖ If both robots touch the floor outside the ring at about the same time, and a clear winner cannot be determined, the match can be redone or a draw can be called.

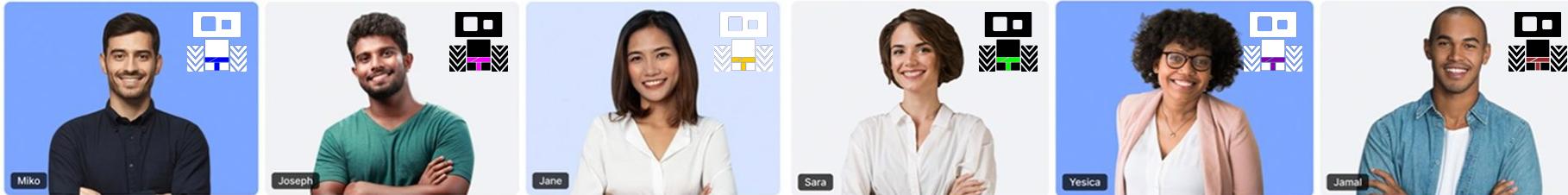
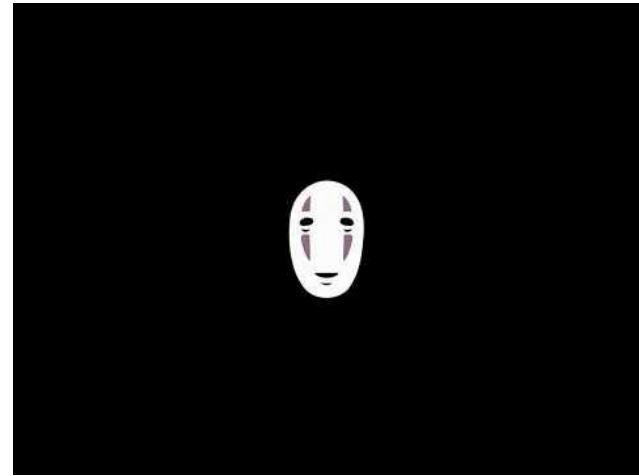


Rules and Restrictions

- ❖ A team whose robot does not meet these requirements will NOT be permitted to compete in the competition.
- ❖ Jamming devices, such as IR LEDs intended to saturate the opponents IR sensors, are not allowed.
- ❖ Parts that could break or damage the ring are not allowed. Do not use parts that are intended to damage the opponent's robot or its operator. Normal pushes and bangs are not considered intent to damage.
- ❖ Devices that throw things at your opponent are not allowed.
- ❖ Sticky substances to improve traction are not allowed. Tires and other components of the robot in contact with the ring must not be able to pick up and hold a standard 8.5" by 11" sheet of paper for more than two seconds.
- ❖ Use of vacuums are allowed as long as they adhere to the guidelines outlined at the end of this document.

The Showcase

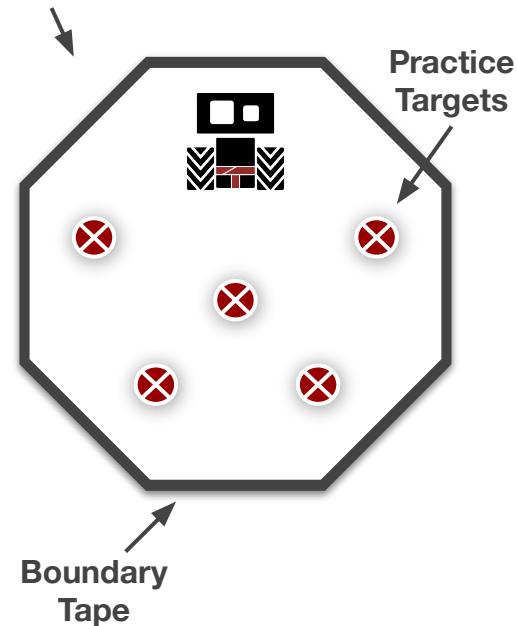
- ❖ The Showcase is separate from the competition and will be held online during reading week of Winter 2021
- ❖ Each team will receive a Hopin booth to showcase their bot and what they have designed through videos, photos, and live demos!
- ❖ The participants will then be judged by a panel of judges
- ❖ The showcase will be open to all McMaster students to view



Showcase Live Demo

- ❖ The match ring and the targets will be prepared by you.
- ❖ The showcase will simulate bot fight where the bot will push all the targets out of the ring (octagon).
- ❖ The octagon ring and targets will be standardized and the build process for both will be released soon.

Showcase
Foam Arena





Showcase Awards

Showcase Award Categories:

- ❖ Speed
- ❖ Strength (Push Weight)
- ❖ Creative/Smart Design
- ❖ Algorithm Design
- ❖ Overall Build

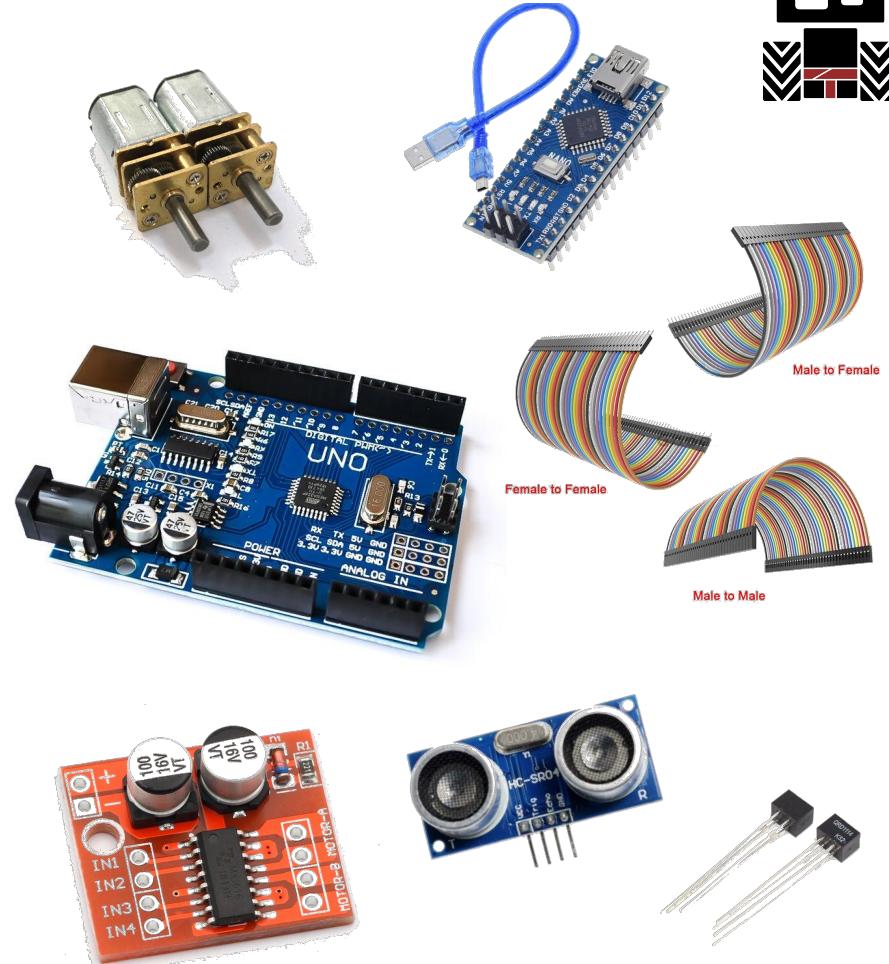


*Official Categories will be posted in January



Parts Kit

- Arduino (Nano or Uno)
- N20 Motors (100 or 200 RPM)
- Ultrasonic Sensor (2 Pcs)
- IR optical Sensor (4 Pcs)
- Dual DC Motor Driver
- Jumper Cables





Parts Kit

- Mounting Bracket
- D-Hole Rubber Wheel (2 Pcs)
- Resistors
- 9V Battery Connector(Open or Closed Barrel)
- AA Battery Pack
- Breadboard
- Open Wire

Ordering the kit through Eventbrite





Technical Resources

Tutorials:

- ❖ [Sumobot Website](#)
(Sumobot.ca)
- ❖ [Instructables](#) (Instructables.com)
- ❖ [Linkedin Learning](#)

Supplies:

- ❖ [Robot shop](#)
- ❖ [Pololu](#)
- ❖ [McMaster-Carr](#) (McMaster.com)
- ❖ [Hamilton library makerspace](#)
- ❖ Facebook marketplace (3D printing)
- ❖ Parts Kit Included



Tutorials & Workshops

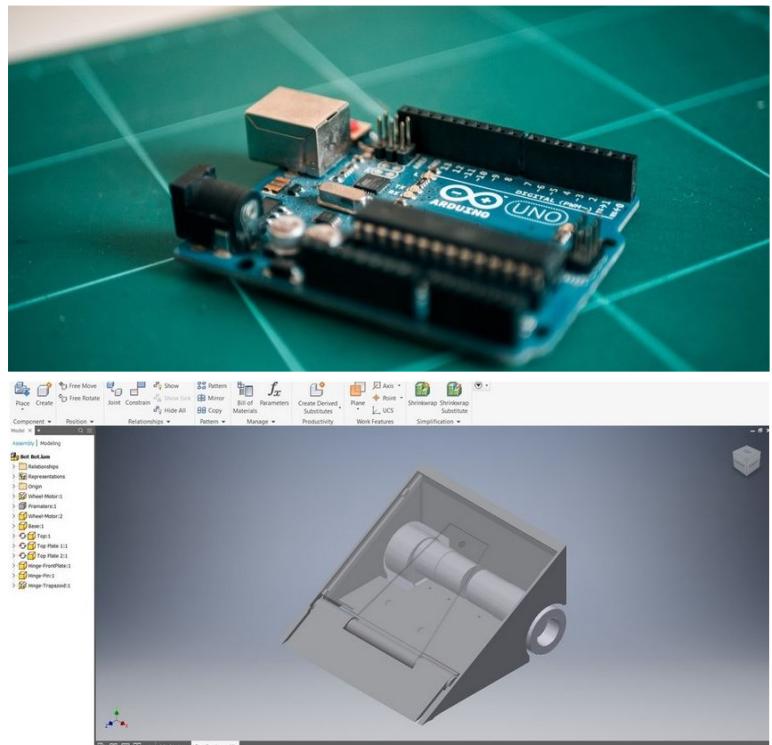
Fall Term Workshops:

- ❖ Workshop 1 - Arduino & Programming
- ❖ Workshop 2 - Motors & Design
- ❖ Workshop 3 - Sensors

Winter Term Workshops:

- ❖ Workshop 4 - CAD & Review
- ❖ Workshop 5 - TBD

Additional drop-in hours will also be available



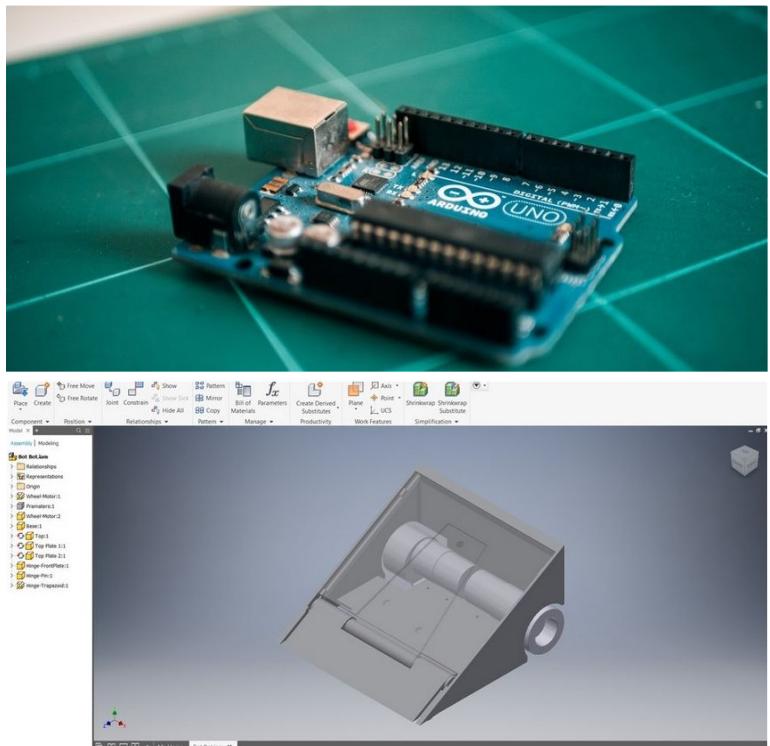


Tutorials & Workshops

Fall Term Workshops Dates:

- ❖ Workshop 1 - Arduino & Programming
 - Monday, Nov. 9th 6:30pm
- ❖ Workshop 2 - Motors & Design
 - Thursday, Nov. 19th 6:30pm
- ❖ Workshop 3 - Sensors
 - Saturday, Nov. 28th 5:30pm

Check Sumobot.ca/#/workshop for updates





Pricing and Fees

Beginners parts kit: Approximately \$30 (excluding shipping)

Showcase registration fee:

Beginners competition - \$10 per bot register (Covered in kit price)

Advanced competition - \$10 per bot register

Competition registration fee:

Beginners competition - \$10 per bot registered

Advanced competition - \$30 per bot registered





Registrations

Workshop Registrations: forms.gle/TvRVM7htAvoFd9Fy9

Newsletter Registrations: forms.gle/wUsstEpfF7DLkeH67

Team Registration Form: forms.gle/q7qsQpGjrq2D2JcYA

Find a Team Form: forms.gle/maMEdPzX7Z8vEJWR6

All links can be found on our website: Sumobot.ca



Contact

To register your teams go to our website at <https://sumobot.ca/#/>

All tutorials and slideshows will also be posted for your reference.



Questions?



<https://forms.gle/wUsstEpfF7DLkeH67>