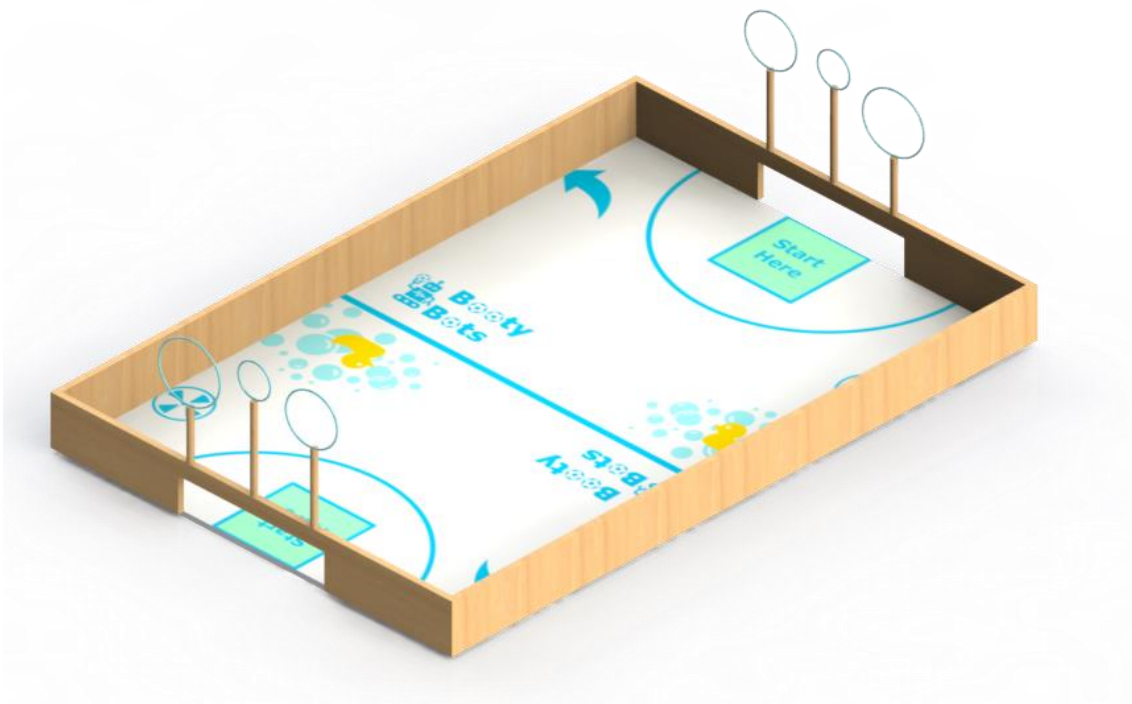# Outline

Booty Bots is a competition where two teams of one robot or more compete on a board to knock a small ball into their opponent's goals.

On each side there is a large rectangular goal on the floor, and 3 circular goals of various sizes raised up behind it. The different goals give different numbers of points depending on difficulty.

As a team, your aim is to get the ball off your opponents and knock it into their goal, while blocking their shots at your own goals. There are also interactive elements on the board like fans to make the game more interesting. We may make these available to be turned on and off by either team (details will be provided in a forthcoming specification update)

As well as points for scoring, you can get points for creativity, flair, and funny robots. The winner of the competition is decided based on total points across all the

2019 Booty Bots Competition Specification V1.0

matches. The competition format will be in the style of league championship, with the winner having scored the most points over multiple matches.

Rules

Gameplay

- Each team puts forth one robot to compete per match.
- To start the game, the ball will be placed in the middle of the arena with the two robots each located in the starting areas.
- Balls are to be dribbled by the robots, while the opponent tried to either block your robot or tackle you to steal the ball.
- Balls must be kicked into the opponent's goal from a distance of at least 20cm from the goal.
- Alternatively, the ball can be picked up and thrown/launched into the three high-scoring hoops. They are quite small targets but give you much more points for scoring in them.
- Matches last up to 2/3/4/5 minutes (TBD) with the highest scoring team winning.
- The games will be run in a tournament fashion, with three points awarded to a winning team, one for a draw, nothing for a loss.

General Rules

- Robots must make every effort not to touch the boundary.
- If the ball goes out of bounds, it is put back into the centre of the arena.
- The ball may only be picked up in order to be thrown, and it must be thrown or launched as fast as possible (i.e no waiting between a pickup and a launch).
- The ball cannot be held or picked up by a robot while it is moving. However, it can we knocked, whacked or kicked to "dribble" it to the opposing side.
- No intentionally damaging the other robots (although collisions are allowed!).
- Your robot can't move within 20cm of the opponent's goal.

Violations of these rules will result in a free kick to the opposing team. The offender must wait in their starting box while the opponent may choose anywhere in their half to restart the game from

Finally, and most importantly…
- Teams must be able to prove that they can satisfy health and safety guide.

Failure to do so will result in expulsion from the tournament. We may be able to help some teams who fail to pass the safety check, but this is a last resort.

Controls

Robots can be controlled autonomously or remotely by a member of your team. Initially, we hope to have remote controlled robots against other remote-controlled robots, and autonomous robots matched against other autonomous ones. If we can't make the numbers,

they will go against each other with a bonus point in the tournament rankings given to the autonomous robot for each remote-controlled robot they compete with.
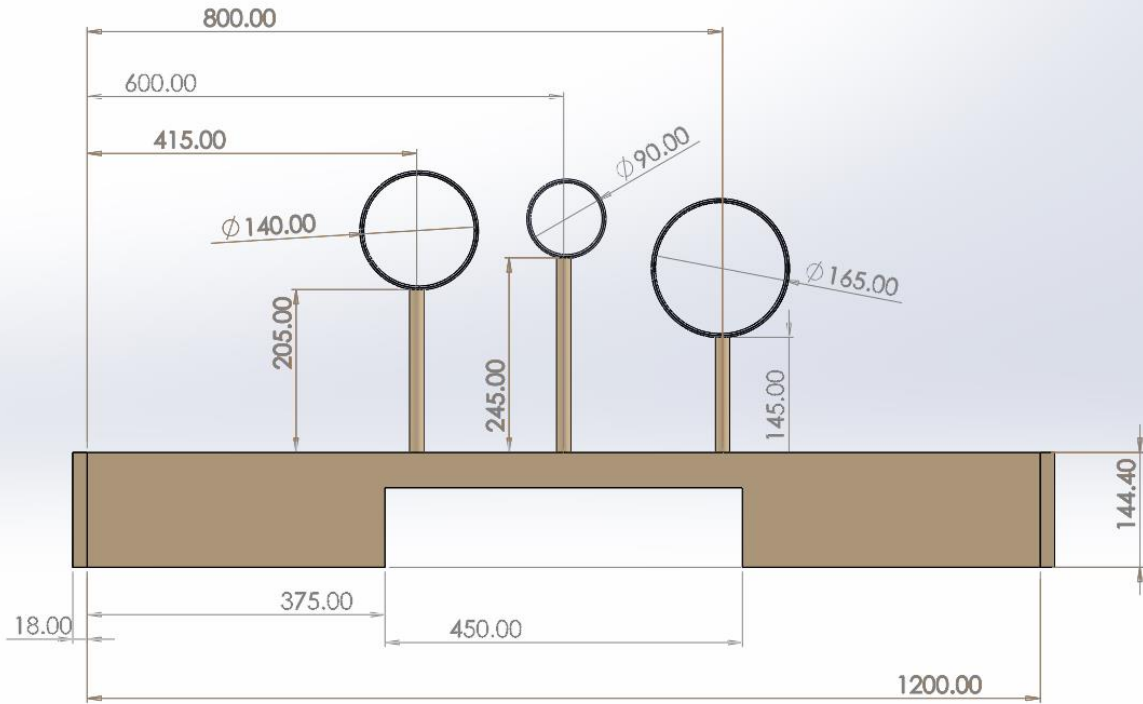
Arena

Games will be played in a pre-prepared arena, with a traditional goal at ground level as well as 3 raised hoops for teams to try and chip the ball into. The arena is made up of a wooden boundary, with a couple of fans in the boundary to push the ball around randomly to make games more exciting.

Arena Size	180x150cm (marked by 18mm thick wooden boundary)
Goal Size	45x10cm (centrally located)
Max weight	2kg
Left hoop internal diameter	14cm (located 18.5cm from centre)
Centre hoop internal diameter	9cm (centrally located)
Right hoop internal diameter	16.5cm (located 20cm from centre)
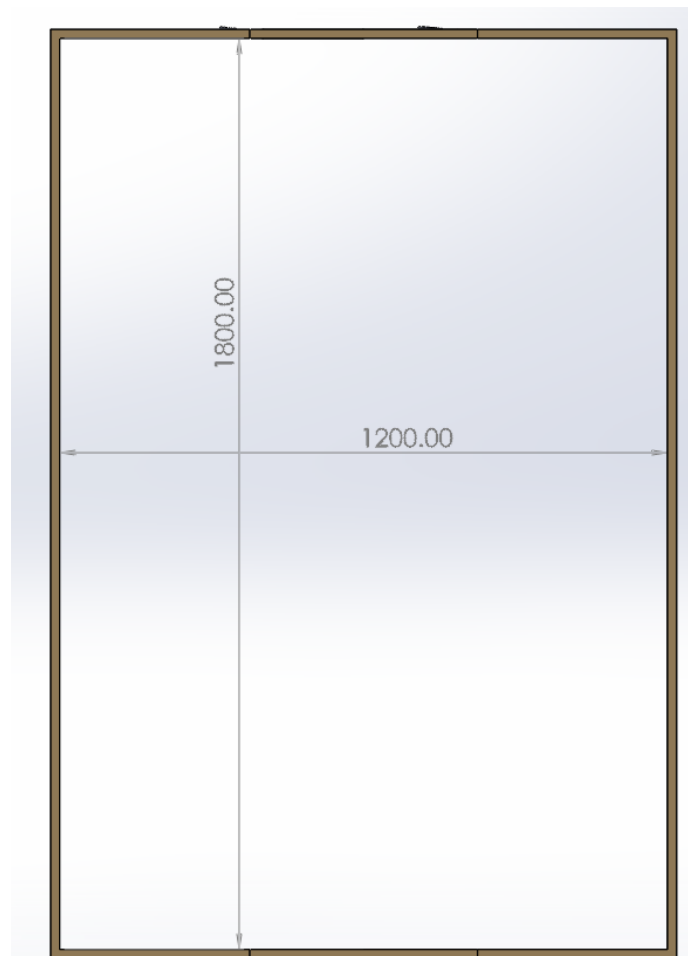
Top Down view of the arena (measurements in mm, markings TBD, but will include a starting box for each robot, a 20cm perimeter around each goal, a halfway line and other random decorative markings)

2019 Booty Bots Competition Specification V1.0

View of the arena facing the target goals (measurements in mm – goal height is 100mm with the height of the boundary being 144.4mm)

The arena will have a base with markings to show where robots need to start and indicate where the 20cm no-go area in front of the goal is located (details in game rules)

Scoring system

Goal	5 points
Left Hoop	60 points
Centre Hoop	75 points
Right Hoop	50 points

Bonus points will be awarded for robot creativity. Whether this is a humorous look, a quirky design element (like a mascot or a music system for example) or a robot that has a fun goal-scoring/victory celebration (especially if it can dance well!), we will reward all fun additions to robots.

Robot specifications

Undeployed size	20x20cmx20cm (length, width, height)
Deployed size	25x25cmx20cm (length, width, height)
Max weight	2kg

The ball

Each game has 1 foam ball, with a diameter of 44mm. We will be sourcing them from Decathalon. https://www.decathlon.co.uk/fb-700-i-table-tennis-ball-6-pack-id_6046538.html

Health and safety

- Power supplied to the drive motors of the robot must not exceed a total of 60W. All robots must employ some form of power control (e.g. active current limiters) to prevent motors from exceeding this limit or show the stall current for the voltage being used to prove that the total drive power will not exceed 60W. Teams will be asked to show their power limiting circuit/datasheets before the competition as part of the safety check.
- Upon losing signal from the control source, a robot must stop moving within 2 seconds. This must be demonstrated during the safety check (e.g. by turning off the remote controller).
- Robots must have an emergency stop button easily accessible and securely attached to the robot.
- LIPO-safe bag for LIPO batteries must be used.
- Batteries must also be safely inside the robot so if there are any bumps/crashes batteries won't be damaged.
- No sharp edges, that could pierce skin or other robots.
- No fire.
- No gunpowder.
- Nerf guns are allowed (bonus points will be given if they can be mounted on the robot and fired)

Event Details

Location	Bouldrewood Innovation Campus Southampton SO16 7QF
Date/time	February 2020 (TBC)
Team size	2-5

This document is to help teams prepare for the competition and see who's interested. Minor changes may be needed to the specification, depending on the feedback. Given that this is the first year that we have run this, there may be quite a few changes we need to make as we begin building our own prototypes and hold the first competition.

Any university is welcome to enter, and each university can enter multiple teams (the exact number of which will be determined once we have an idea of who is interested). RoboSoc have tried to design this competition to be both accessible to beginners, as well as adding additional challenged to those who are more experienced. We hope to get as many entries as possible to make this competition a fun, light-hearted event. We hope to see you there.
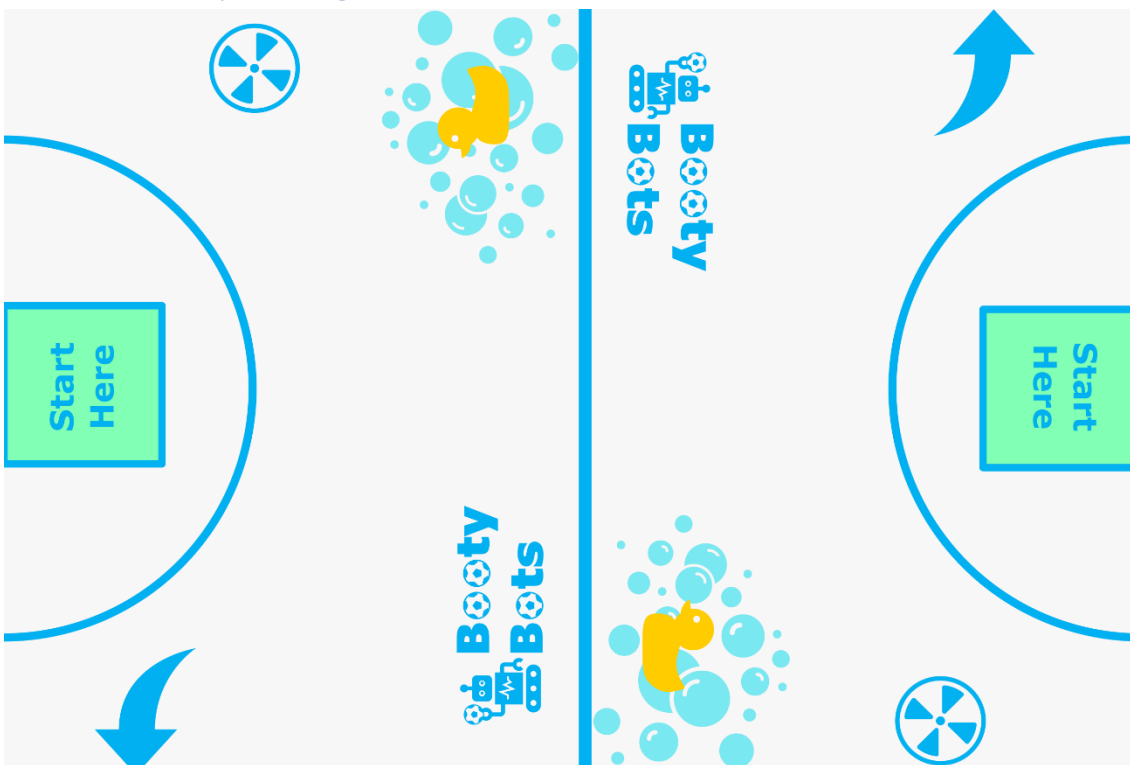
Contact us

If you would like to enter the competition, please get in touch with us as soon as possible! Alternatively, if you have any questions or requests, contact us...

- On our Facebook (https://www.facebook.com/UoSRoboSoc/) **@UoSRoboSoc**
- Email us at robosoc@soton.ac.uk.

Also, the specification will be available at robosoc.com/booty-bots

Board concept design

This may be changed slightly as we get more artsy (keep tuned as there might be bonus points added around the board 😉)

Version History

Version No.	Description
1.0	Initial Release