Sumo Robot Competition 2012
Soirée Pratique

Dominick Vanthienen, Frederik Geth, Jeroen Tant,
Valentijn De Smedt, Klaas De Craemer, Wout Meskens, Jasper Hilven, Tim Leurs
IEEE Student Branch Leuven

November 11, 2012

Contents

1 Organisation

The IEEE Student Branch Leuven is the proud organizer of their first Sumo Robot Competition.

IEEE is the Institute of Electrical and Electronics Engineering organization, a large professional organization of electric and electronic engineers, and engineers in related fields.

The IEEE Student Branch Leuven organizes different sessions in the months preceeding the competition for people that want to acquire the minimal skills needed to compete in the competition.

Instructions on how and where to subscribe will be posted on the IEEE SB Leuven website http //www.ieee-sb-leuven.be/.

2 Goal and definition of the competition

A match is fought between two robots, that are constructed by the team members to the specifications in Section 5.1. A match is won by the contestant that wins most of three rounds. The last robot still in the Doyho (Sumo Ring), within the time limit of 3 minutes, wins the round. See section 7 for a more detailed description. The judge determines the winner of the match.

The robot that wins the dual-stage tournament, wins the competition. The first stage is a qualification round-robin tournament (all-play-all), in which the robots are divided in 4 groups. Each robot plays a match with each other robot in his group. The 2 best of each group go to the playoffs, which consists of quarter-finals, semi-finals and the final.

3 Participants

All interested students (Bachelor-Master-Phd-other) can apply. Other people willing to apply, can ask for an exception with the jury. Taking part in the competition is free. A team should consist of a maximum of 3 people.

4 Important dates

The contest will be held on Monday 26/11/2012 at 19h30 at ESAT 02.58.

5 Requirements and Specifications

All participating robots should comply with the specifications.

5.1 Robot

- The robot should be built by the team that applied for the contest.
- The robot should be autonomous, it should not take any commands from a human or external device of any form.
- The robot should stay in one piece during the full extent of the game, although it may expand in size after the round begins. Small parts, such as bolts and nuts, lost during the round, will not cause a disqualification.
- The robot should be harmless for the other robots and humans. It should leave the Doyho (Sumo Ring) in its original state.
- The robot should fit at the start of the round within a box of following dimensions:
  - width: 20cm
  - length: 20cm
  - height: unlimited
- The robot's mass should be less than 1 kg.
- It should be easy to shut down the robot's operation in any circumstances
- The robot should have the necessary hardware to do the start procedure as described in section 6 (countdown led(s), start countdown button)
- The robot should be distinguishable from its contestants.
- 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 opponents robot or it's operator. Normal pushes and bangs are not considered intent to damage.
- Devices that can store liquid, powder, gas or other substances for throwing at the opponent are not allowed.
- Any flaming devices are not allowed.
- 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 A4 paper (80 g/m2) for more than two seconds.
- All edges, including but not limited to the front scoop, should not be able to scratch or damage the ring, other robots, or players. In general, edges with a radius larger than 0,1 mm, as would be obtained with an unsharpened 0,2 mm thick metal strip, should be ok. Judges or competition officials may require edges that they deem too sharp to be covered with a piece of tape.

5.2 Field of the game

The Doyho is a circular plate of about 150cm diameter. The surface of the Dohyo is dark (black) with a light (white) rim of about 5cm wide. The height between the surroundings and the Dohyo surface is at least 2cm. The Doyho consists mainly of wood.

6 Course of the competition

1. The robots are placed in 2 opposing quadrants of the Doyho. Each robot has to point with its front in the opposite direction as the other (pointing outwards the circle). The robots can be positioned freely in the quadrant, but at least 20cm from the other robot.
2. The robots are powered
3. The 5s countdown procedure is activated on both robots at the same time (releasing a button). The countdown is indicated by the robots by means of leds.
4. Everyone distantiates him/herself from the Doyho
5. The robot can start moving after the 5s countdown
6. The robot has 3min to push the contestant out of the Doyho
7. The round is over when one of the robots gets outside the Doyho as described in section 7 or the 3min are over.

The jury can prematurely terminate a round in case of anomalies (e.g. none of the robots moves). The jury will decide on measures such as rematches and extentions in case of doubtfull situations. The jury will indicate the winner.

7 Quotation

7.1 Match

A match is fought between two robots, that are constructed by the team members to the specifications in Section 5.1. A match is won by the contestant that wins most of

three rounds. The last robot still in the Doyho (Sumo Ring), within the time limit of 3 minutes, wins the round. In case one robot wins two consecutive rounds, the third round is not played.
A robot is outside the Doyho, and therefore loses the round if it touches the space outside the Doyho, including the vertical side of the Doyho. This can occur due to the actions of the opponent or the robot itself.

7.2 Qualification

The winner of a match earns three points, the loser earns no points. Both robots earn one point in case of a draw. A ranking is made based on the sum of these points. The two highest ranked go to the playoffs.

7.3 Playoffs

The playoffs consists three levels: quarter-finals, semi-finals and the final. The winner of a match goes to the next level. The winner of the final is the winner of the whole competition.

8 Jury

The jury consists of the organizers as listed in section 11.2. In case of dispute or doubt, the jury is always right. The organizers reserve the right to exclude a participant or team. Every attempt to cheat or boycot will result in exclusion from the competition.

9 Prizes

The first two teams get a prize. There will also be a prize for the most ingenious robot, chosen by the jury. The winners will be announced on the evening of the competition.

10 Liability

Participating teams are always responsible for the safety of their robots and are liable for any accidents caused by their team members or their robots. The IEEE Student Branch Leuven organization and the organizing members will never be held responsible nor liable for any incidents and / or accidents caused by participating teams or their equipment.

11 Contact and further information

11.1 website

http://www.ieee-sb-leuven.be/

11.2 organizing team

dominick.vanthienen@mech.kuleuven.be, frederik.geth@esat.kuleuven.be,
valentijn.desmedt@esat.kuleuven.be, klaas.decraemer@esat.kuleuven.be,
jeroen.tant@esat.kuleuven.be, woutmeskens005@gmail.com,
tim.leurs@student.kuleuven.be, jasperhilven@hotmail.com

The competition rules are deduced, but altered from robotchallenge.org.