



# IEEE Ottawa Robotics Competition Compétition de robotique d'Ottawa d'IEEE

## da Vinci Challenge Rules

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### Disclaimer

It is your responsibility to read and understand this document on a regular basis because we may update it from time to time.

### da Vinci Challenge

The da Vinci Challenge represents a meeting of art and engineering. Instead of competing head-to-head against another robot, the robot you build will be able to draw a design or artwork of your choice. Your canvas will be a large piece of paper on the floor. Your final result will be marked on your creativity and technique.

This year, the theme of the artwork is **Famous Buildings**. We welcome all kinds of creative ideas for the design of your choice!

## Challenge Rules

1. All robots must be built and programmed to the specifications outlined in our [Lego Competition Rules](#). Unless exceptions are listed in the rules below, any robots not adhering to these specifications will be disqualified for the match and can rejoin once the robot meets the specified requirements.
2. Your competition day rank will be worth 70% of your final score. Judges will also evaluate the [Technical Component](#) (30% of the final score).
3. The canvas will be on a flat surface on the floor. The canvas cannot be larger than 3 feet × 2 feet (about 1 piece of flipchart paper).<sup>1</sup> A team may only have one active canvas at a time.
4. The robot must be autonomous. Any remote-control usage (electronic, Bluetooth, etc.) will result in disqualification.
5. At the start of the drawing, the team must indicate which edge of the canvas they wish to start on. This edge will become the only edge the robot is allowed to start on during the remainder of the drawing. **Note:** the robot can return to any edge on the canvas to change utensils but must restart on the designated edge.
6. Teams may choose to place and rearrange obstacles or guides as reference points around the edge of the canvas. However, the robot must **always** return to the edge of the canvas before any team member is allowed to touch it. While it is in the middle of the canvas drawing, team members must not touch the robot, except if the program fails or the robots dies.
7. Teams are responsible for providing their own drawing utensils. Allowed drawing utensils are pencils, pencil crayons, water soluble markers, and crayons. Since the drawings will be done in your personal locations, **permanent markers, such as 'Sharpies', will be allowed at your own risk.**
8. Multiple drawing utensils are allowed throughout the drawing process. Please note that robots must always return to the edge of the canvas first.

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<sup>1</sup> Unit Conversion Note: 1 inch = 2.54 cm and 1 foot = 30.48 cm.

9. Your drawing must be completed within 20 minutes of starting, including the time it takes to switch programs and/or writing utensils.
10. The final video recording of your robot must be continuous, with no cuts. The drawing should be visible during recording. The drawing produced in the video must be the same as the drawing that is submitted to the judges.
11. Please take a picture or scan the final drawing for submission.

Export and submit the EV3 code as an .EV3 file. The code must be the same one used in the video recording. All submissions should be made on the website at <http://www.orc.ieeeottawa.ca/submission/>

### **Judging & Scoring**

Due to the subjective nature of this challenge, multiple judges will judge, and the final score will be taken as the average of the overall marks. Here are elements to consider when producing your artwork:

- **Composition, Layout, and Techniques**
  - Good use of the canvas space and materials to express the team's idea. Is the robot using more than just a corner of the canvas?
  - Do components of the art seem carefully positioned and organized on the canvas, or randomly positioned?
  - How well are strokes planned?
  - Does the robot use a variety of different techniques and elements (for example: lines, shapes, colours, space, textures), or is it just a basic technique throughout?
- **Creativity and Originality**
  - Are imagination and innovation well expressed in the artwork?
  - Does the drawing reflect something more complex than a few simple geometric shapes?
  - To what degree is the work fresh and different from other pieces?
- **Visual Impact and Relevance to the Year's Theme**
  - Is the artwork visually effective in expressing this year's theme?
  - Are viewers able to tell what the artwork is, or do teams have to verbally explain it? Would it grab and hold a viewer's attention? What can a viewer get out of the artwork?

- **Quality and Presentation**

- What is the overall appearance of the artwork?
- Does it seem like the robot is doing what it is supposed to be doing?
- Are patterns or shapes relatively consistent, or irregular?
- Does it 'look good', or does it look like random or uncoordinated motions?

- **Degree of Difficulty**

- Are the robot, program, and artwork appropriate for team's maturity and ability?
- Are the program and final artwork sufficiently complex?
- Is there good use of time? Does the robot spend the majority of its time making the artwork or is substantial human intervention and debugging required?
- Does it seem like the team put substantial thought and effort into designing the robot and code?

## **Canvas Material**

Teams will use this paper as their canvas. You can also buy the newsprint version of this paper.

