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Drone Maze	<u>Division</u>	<u>Team</u>	<u>Building</u>
	Junior/Senior	1~2 Member 1 Drone	Pre-Made

1. Description

Drone maze is a game moving at the starting point and flying to the destination avoiding the obstacles placed randomly. Exquisite programming and flying technique is needed in order not to hit the obstacles using the sensor on the drone.

2. Robot

2-1. Types of robot Drone allowing coding.

2-2. Building robot (Pre-made)

2-2-1. Size of the robot

2-2-1-1. Size of the robot Drone must be within 20cm X 20cm including propeller protection guard.

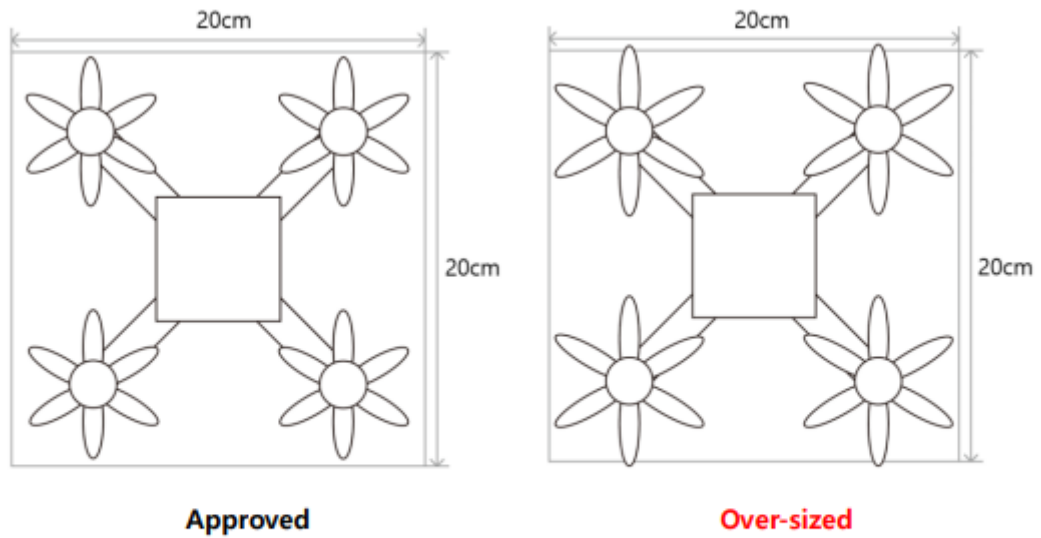
2-2-1-2. Measuring size

- 1) Self-measurement: Participant can measure the size during building and practicing time given.
- 2) Official measurement: Referee measures before competition starts.
- 3) Way of measurement: Measured with the robot turned on with the measurement tool. The participant is not allowed to object to referee's judgement.
- 4) Modification: If the size goes over the limit, the participant gets a chance to modify for a minute at the recording seat. Software modification is not allowed. If failed to modify, the trial will fail and be considered 'over size limit'.



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***Propeller must be within size when spinning**

***Propeller protection guard must be within size limit.**

2-2-2. Sensor of the robot No restriction.

2-2-3. Power of the robot

2-2-3-1. Composition of the power Independent movable power must be used. Combustion engine are not allowed to use.

2-2-3-2. Size of the power No restriction on current and voltage.

2-3. Programming and control Robot must be autonomously moved via program, and not be controlled by person except when starting.

2-4. Propeller Protection Guard Drone must have a propeller protection guard on. If not, the drone is not allowed to fly.

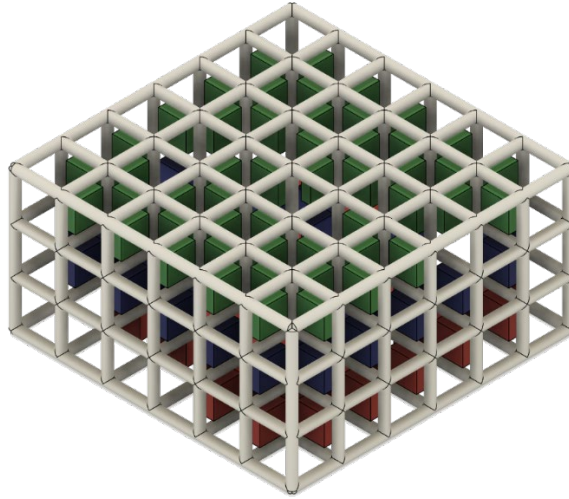
3. Stadium

3-1. Official stadium Official stadium regulated by International Robot Olympiad Committee must be used.

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Example of Drone Maze



3-2. Size and Structure of the Official Field Field is constructed of PVC pipes with total size of 50cm X 50cm X 50cm ~ 80cm X 80cm X 80cm (error±10%).

3-2-1. Outer Wall of the Official Field Field is constructed of fomex or net due to safety problem.

3-2-2. Size of the official field Field is constructed of 500cm X 500cm X 150cm (error±10%) in its total size.

3-3. Field

3-3-1. Floor Nothing is installed on the floor.

3-3-2. Installation of Timer Starting point and destination is installed to measure the time record, and placement and direction may change based on the mission.

3-4. Obstacle Obstacles made of net may be installed on pipe to clear the mission.

4. Competition progress

4-1. Way of competition progress Two trials of record games will be given. Time to modify the robot will be given between the trials.

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4-2. Time given to build and practice Two hours in minimum will be given to build the robot and practice, and will be noticed on the day of match.

4-3. Field assignment Field is assigned based on number of participants and difficulty of the mission.

4-4. Robot building and practicing Participant can practice at the designated field before building and practicing time finishes, and cannot practice before field designation.

4-5. End of robot building and practicing time The participant must stop the robot and go back to their seat following staffs' instruction after the time for building robot and practicing.

4-6. 1st trial 1st trial start either directly after the building and practicing time or after lunch.

4-6-1. Before game All participants must bring their robot and follow referee and staffs' direction.

4-6-2. After game All participants should go to the end of the line, not back to the seat, until all participants finish the game.

4-7. Modification All participants get time to modify their robot or practice after their 1st trial. The details are notified on the day.

4-8. 2nd trial 2nd trial of the game starts directly after the modification.

4-8-1. Game preparation All participants must bring their robot and wait following referee and staffs' direction.

4-8-2. Stand-by All participants must go back to their seat after the game till all participants finish the game.

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5. Game

5-1. Completing the mission Sequence in collecting the target or the way moving is not given. The participant must their own direction and sequence in collecting the target.

5-2. Acquiring Points Points for distance is given based on the location where the robot has stopped. If the robot completes the full route, time record is given.

5-2-1. If the robot touches the obstacle, 1 point gets deducted.

5-3. Start Start by referee's start sign and considered starting when the timer recognizes as starting.

5-3-1. Miss start Considered a 'miss start' when the robot doesn't move in 5 seconds. Two extra trials are given for miss start.

5-3-2. False start Considered a 'false start' when the robot moves before the starting sign given from the referee. One extra trial is given for false start.

5-3-3. Restart Restart is given twice for miss start and once for false start. Maximum trial given as a restart is twice. (One extra trial is given for miss start after a false start.)

5-4. Arrival Considered as an arrival when the robot reaches the line or crossway with the timer on the destination. (Robot must stop at the position with the timer.)

5-4-1. Arrival mission Considered success when staying on the destination for more than 3 seconds of referee's count.

5-5. Time limit Total time for the competition is maximum of 2 minutes.

5-6. Mission opening to the public Driving course the robot has to go through is open to public on the day as a form of mission paper.

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Example of the Mission

5-7. End of the game

5-7-1. Robot arrival If the timer stops by robot arriving before the time limit, the game stops and the mission point at the moment of arrival and the time record is approved.

5-7-2. Time limit If the robot fails to go through the arrive within limited time, points at the moment of time limit is approved.

5-7-3. Robot stop If the robot stops during the game, referee can give 10 seconds waiting for the robot to move again. If the robot doesn't move again, robot stop is declared, and points at the moment of robot stop is approved.

5-7-4. TKO(Technical Knock Out) If the robot seems impossible to move, referee can declare TKO in accordance with robot stop. (e.g. moving back and forth repeatedly, stopping at a point caught by an obstacle, robot falling, etc.)

5-8. Game stop upon disqualification If the participant doesn't follow the game rules or disturbs game, the game stops according to disqualification, and the record for the trial does not get approved.

5-8-1. Line out If the robot goes out the line, the participant may be disqualified for the trial.

5-8-2. Robot modification during game Participant is not allowed to add, remove, change or exchange any part of the robot during game. If the participant possesses extra component for the robot, tool, or battery to modify the robot, the participant may be disqualified for the trial.

5-8-3. Touch If the participant touches or controls the robot without permission from the referee, robot touch is declared and the participant may be disqualified for the trial.

5-8-4. Control If the robot moves by manual controlling, not by programming, the participant may be disqualified for the trial.

5-8-5. Breach in field arrangement If the participant practices or plays not in the assigned field, the participant may be disqualified for the trial.

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5-8-6. False start If the participant starts a false start twice in a trial, the participant may be disqualified for the trial.

5-8-7. Miss start If the participant starts a miss start three times in a trial, the participant may be disqualified for the trial.

5-9. Rematch Rematch can be held in accordance with referee's decision if unexpected accident such as black out or error in timer happens.

5-10. Referee's decision Referee has authority to supervise and generalize all situation during the game. Game result is referee's inherent authority and referee's declaration is the final declaration.

6. Record

6-1. Recording subjects Driving points, time record, and the destination mission.

6-2. Points per location in the course Considered by using the location where the robot stopped at the moment of the declaration of game finish.

6-3. Time record Time recorded on the timer at the starting point and destination is acknowledged as time record. Time record for the robots declared robot stop, robot falling from the field, TKO, and line out is not approved.

6-4. Final record Better record from first and second trial gets approved as final record.

6-5. Priority in record Groups are divided course record in each group, and driving record in each group is considered to choose the ranking. If arrived at the destination, the robot succeeded destination mission has superiority.

Course record > Number of deduction > Availability in time record > Destination mission availability > Comparison in time record

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6-5-1. Priority in trial If the score in each trial is same, record in the other trial is compared to choose the ranking.

6-5-2. Priority when tied Better record upon first or second trial is approved. However, when tied, participant with better record on the first trial is gets priority.