

February 25th - 28th

CLASH OF PIRATES

EVENT DESCRIPTION :

A loot chest has been discovered, let's see who gets there first, "Jack Sparrow" or "Davy Jones"?

Unleash the PIRATE in you!!!

This event requires the participant to build a ship (bot) which can navigate the sea through obstacles and collect the treasure from the chests. The live feed from the satellite (camera) above the sea will be given to the ship (bot) for navigation.

EVENT FORMAT :

This event consists of two phases.

Phase 1 (Online):

- Abstract submission (Eliminative)
- Abstract submission deadline extended to 30th January 2016
- Abstracts should be sent to clashofpirates@pragyan.org
- The format of abstract can be downloaded from the website.
- Each team is allowed to make only one submission. In case of multiple submissions, only first submission will be evaluated.
- Shortlisted abstracts will receive components from Texas Instruments. The components sent must be used for the bot.

Phase 2 (Onsite):

- Main event: Held during Pragyan 2016.

JUDGING CRITERIA :

↯ Separate timers will be running and will be stopped when target value or higher value is reached or when the bot doesn't respond for 10 seconds.

↯ Points will be deducted in case of collision with obstacles.

February 25th - 28th

↯ The total score at the end of the round will decide the winner of that round.

↯ Must use their own code - Participants will be asked to explain how their code works.

RULES :

Robot Specifications:

- Bot should be within specified size limits: 30 X 30 X 30 cm.
- Once the timer starts, the participants are not allowed to touch the bot, or the laptop. If event managers feel that the bot is being manipulated in any way, the team will be disqualified.
- The bot is allowed to have a wired connection with a laptop. Please ensure that wires of sufficient length are used to allow free movement of the bot within the arena. A table will be provided, just next to the arena, to keep the laptop. Power supply will also be provided.
- The power source for the bot must be on board.
- Voltage between any two points must not exceed 12V.
- Any bots damaging the arena will be disqualified immediately.

General Rules:

- A team can have a maximum of four members.
- The arena dimensions are subject to a tolerance of 5%.
- The machines would be checked for their safety before the run and would be discarded if found unsafe for other participants and spectators.
- Do not dismantle your bot until the results are declared.
- Organisers' decision shall be treated as final and binding on all.
- The organisers reserve the right to change any or all of the above rules as they deem fit. Change in rules, if any, will be highlighted on the website and notified to the registered participants through email.

RESOURCES :

Get started with OpenCV:

[http://docs.opencv.org/3.0-](http://docs.opencv.org/3.0-beta/doc/py_tutorials/py_tutorials.html)

[beta/doc/py_tutorials/py_tutorials.html](http://docs.opencv.org/3.0-beta/doc/py_tutorials/py_tutorials.html)

<http://docs.opencv.org/2.4/doc/tutorials/tutorials.html>

CONTACTS :

For Event queries:

- Prakash B +91 89391 03574
- Sabhari Natarajan +91 99622 02047
- Janardhan +919495957295
- Email us at clashofpirates@pragyan.org

For other queries:

- Susanti +918966272765

FAQ :

1. How will I get the camera feed?

The camera will be suspended over the arena and it will have a standard USB cable that plugs into a laptop.

2. Will there be time for calibration?

Yes. A separate day is allocated for calibrating the robots with the camera.

3. Can I bring my own camera?

No. To ensure that the conditions of the contest are the same for all the participants you will have to use the camera that is provided.

4. Will the camera have pan & tilt?

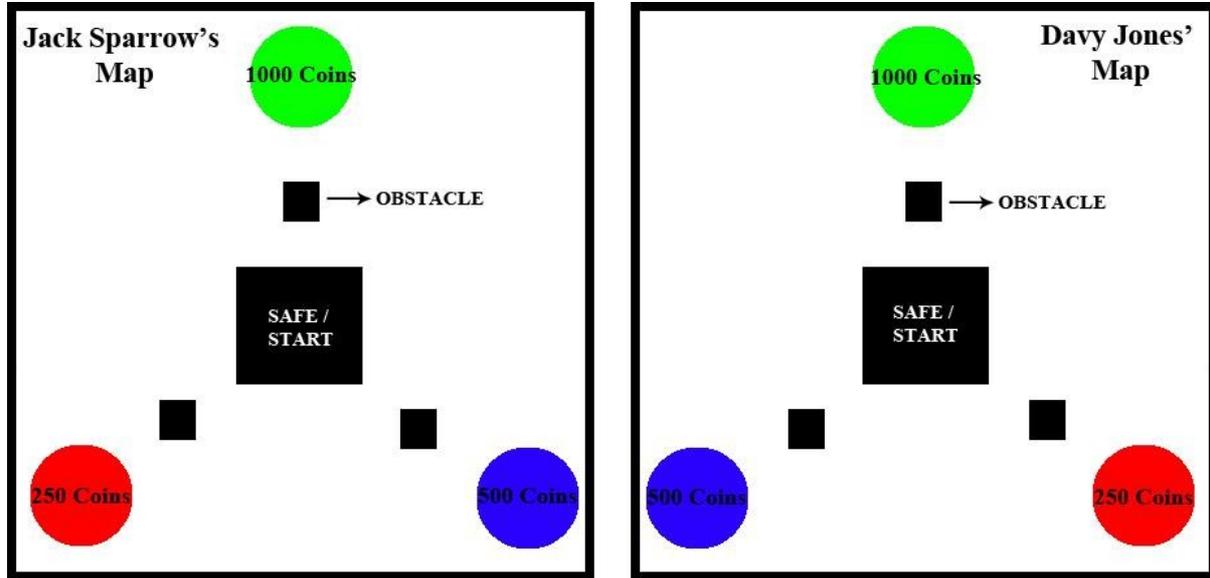
No. The camera will be positioned so that it can see the entire arena. Pan & tilt won't be necessary.

5. Is using OpenCV necessary?

No. You can use any library for image processing. Also you can use any language.

February 25th - 28th

PROBLEM STATEMENT :



(The words “Safe/Start”, “Obstacle”, “Jack Sparrow’s Map”, “Davy Jones’ Map”, “1000 Coins”, “500 Coins”, and “250 Coins” are kept only for understanding purposes and will not be present in the actual arena) 1. Two teams will be randomly chosen and will compete against each other.

2. Each team will be provided with a video feed of separate but identical arena i.e. one team will have access to the “Jack Sparrow’s Map” and other to the “Davy Jones’ Map” as shown in the above image.

3. The aim of the robot is to collect the loot amount that would be specified by the event managers. This will be provided to you before the start of your round.

4. Each coloured circle represents one loot chest. Red - 250 coins, Blue - 500 coins, Green -1000 coins (each is a circle of 35 cm diameter).

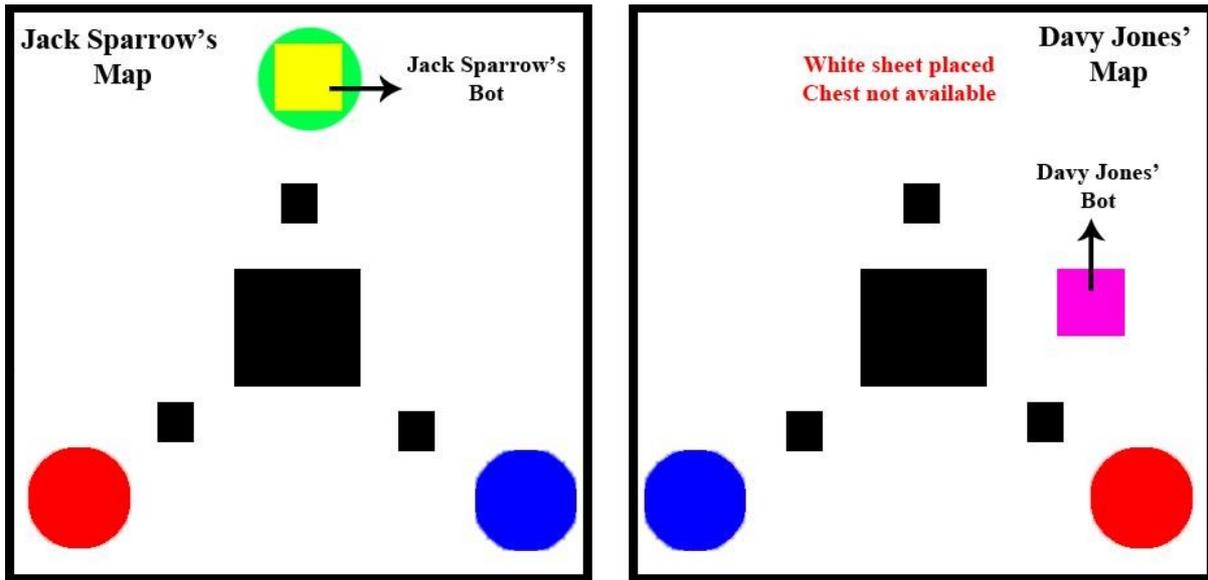
5. Arena: The centre of the three circles will be equidistant from the centre of the Deposition Centre. Each arena will be of the size 2m x 2m. The obstacle will be printed on the track and will be of the size 15 cm x 15 cm.

6. The 30cm X 30cm black box you see at the centre is your Safe/Deposition Centre. The bot starts its run from here. We will start the timer for both the teams when either of the bot starts moving from rest.

7. Looting a Chest: The bot has to park on a coloured circle for a minimum of 3 seconds to loot the chest. The bot should not move during the three seconds. Violation of this rule is considered as a penalty (see Point 2 under Scoring).

February 25th - 28th

8. Beware of your opponent: The chest that has been looted by your opponent will not be available to you until he deposits that loot in his safe. This is done by covering that loot in your map with a white sheet (this will completely cover the loot circle). If in case both of your bots reach the same chest within a time lapse of 3 sec, the chest will be available to both of you for looting. (Refer the image below for better understanding).



Here the Jack Sparrow's bot has looted the Green coloured chest. Hence it will not be available for Davy Jones. This will be made available again only when Jack Sparrow deposits his loot in the safe.

Depositing the loot: The 30cmX30cm black box at the centre of the arena is the Deposition Centre. Deposit your loot by moving your bot into the deposition centre. It is not necessary to stop/park the bot inside the black box. When all your bot's wheels are inside the black box, the loot gets deposited. . **Don't drown:** Your bot can carry only two loot chests at a time. Before you collect your third chest, you should deposit your first two chests at the Deposition Centre.

Picking two chests of the same value: Once you have looted a chest, you need to deposit it in the safe before looting a chest of the same value. Again violation of this rule will be considered as a penalty (see Point 2 under Scoring).

Evaluation:

Timekeeping:

February 25th - 28th

1. The timer is started for both the teams when either of the bot starts moving from rest.

2. The timer will be stopped when-

1. The Deposition Centre/Safe has loot value equal to or more than the target amount.

2. The bot refuses to move for more than 10 seconds.

Note: Separate timers will be maintained for both the teams, but the starting of timer will be done simultaneously.

Scoring:

Points = 10,000 - 5*Deficit - 2*Excess - 5*Time Spent - 100*Number of Penalties

Where the terms DEFICIT , EXCESS , PENALTIES are explained below-

1. What is a deficit?

Let us say that the bot has stopped working midway during a run. If the bot does not move for 10 seconds, the timer will be stopped, and the “deficit” is calculated as Deficit = Target amount - Amount in the deposition centre when timer is stopped For example, if the bot had already deposited 2250 coins, and the target was 3000 coins, the deficit is 750 coins.

2. How can there be an excess?

For example, let us assume that the target is 3000 coins. During the run, the bot has successfully deposited 3250 coins (2750 + 500) at the deposition centre. So, now the excess is 250 coins.

3. What are the violations that come under penalties?

The following two violations will be considered as “penalties”-

a. Running over a circle without stopping in it for 3 seconds.

b. Collecting more than two loot chests without depositing them. Every loot collected when your cargo is full is counted as one penalty each.

c. Collecting a same loot without depositing it.

d. Passing over an obstacle.

4. What if the scores of two teams are tied?

Time is then used as a tie breaker.