

## Robotics Contest

### **“Rescue Bangladesh”**

#### ➤ Registration Details:

- ✓ Only Team Registration is allowed.
- ✓ Team Members should be undergraduate, College or school students.
- ✓ Team must be formed with **three** members.
- ✓ Members must be from same university or college.
- ✓ Registration Process is available for **50 teams**. [When the slot limits filled up, the registration process will be closed]
- ✓ Each member has to submit his/her Student ID card scan copy and picture during the registration at website.
- ✓ Registration Fee: **1530 Taka**.
- ✓ Only payment method is **bkash**.
- ✓ Bkash number: **01639500023**. [[Payment Demo](#)]
- ✓ Contact Numbers: 01639500022 and 01639500024.

[**Note:** First you have to pay the registration fees using given bkash number from the list and after that go to our official website: [www.techhuntbd.org](http://www.techhuntbd.org) and complete your registration using the bkash Transaction ID and your bkash number. Please make sure that slots are not filled up and then go for the registration. **For checking the availability of slots visits our official page at [www.techhuntbd.org/team.php](http://www.techhuntbd.org/team.php)**. For any query, contact with the given contact numbers. Any wrong information in the registration form is not allowed. It may cause the disqualification.]

**Registration Deadline:** 10<sup>th</sup> December 2017.

#### ➤ Robot Specification:

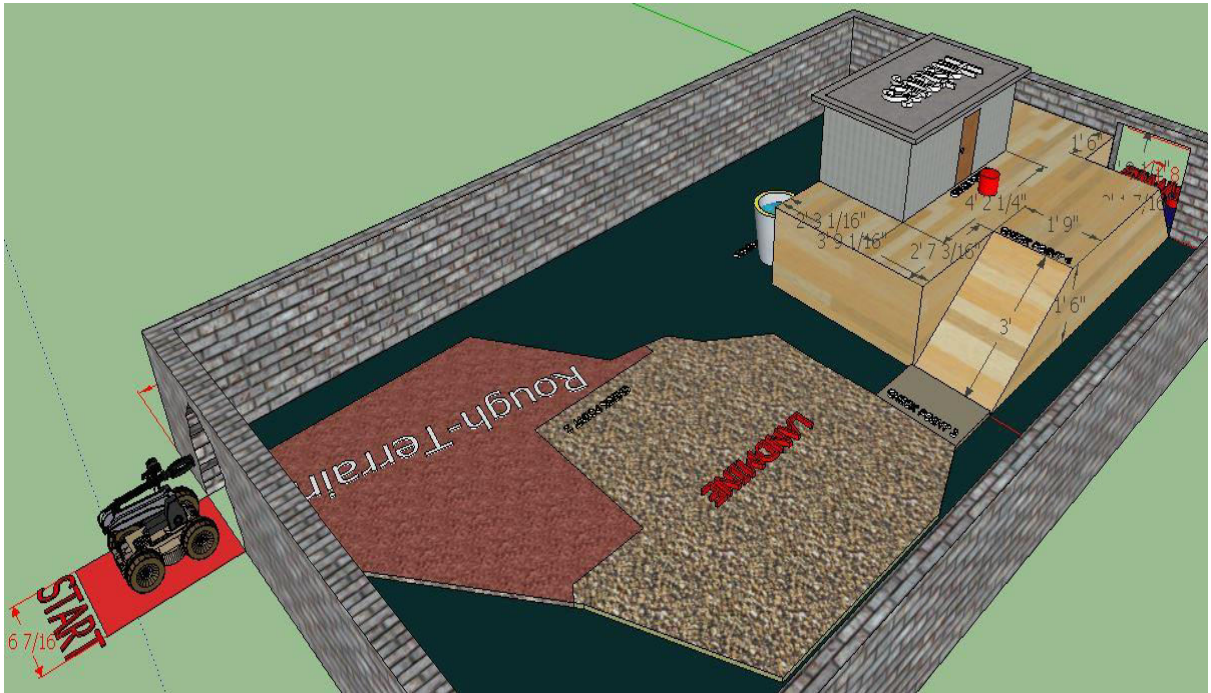
- ✓ The dimensions of the robot are such that it completely fits in a box of dimensions 300mm X 300mm X 300mm (l x b x h). The size of the gripper is not included in this constraint.
- ✓ Must have a stand to tie a camera.
- ✓ Must have gripper.
- ✓ Remote controller must be wireless. Wired controller is not allowed.
- ✓ The robot should have an on-board power supply.
- ✓ Ready-made robot not allowed. Must be homemade.
- ✓ Only one member from the team is allowed to control the bot.
- ✓ All kinds of illegal attempts are strictly prohibited.
- ✓ Robot maximum weight limit is: **4KG**.

## ➤ Problem Statement:

ন্যাশনাল বোমারু ফ্রন্ট নামে জঙ্গি সদস্যরা একটি বাড়িতে দেশের গুরুত্বপূর্ণ কয়েকজন ব্যক্তিকে আটকে রেখেছে। বাড়ির সীমানায় চারপাশে ল্যান্ডমাইন সেট করে রেখেছে যেন কেউ ঢুকতে না পারে। পুলিশ, র‍্যাব, সেনাবাহিনীর সদস্যরা বাইরে থেকে পরিস্থিতি পর্যবেক্ষণ করছে কিন্তু অপারেশনে যেতে পারছেন না কারন গুলাগুলিতে সাধারণ মানুষ হতাহত হতে পারে। জঙ্গিরা একটি রুমের ভিতরে ভিকটিমদের আটকে রেখে দরজার সামনে একটি বোমা ফেলে রেখেছে। দেশের একজন দক্ষ রোবটশিয়ান হিসেবে নিজেদের দেশের সমস্যা সমাধান করার জন্য তোমাকে আহ্বান করা যাচ্ছে, একটি রিমোট কন্ট্রোল রোবট নিয়ে আসার জন্য। রোবটটি কতগুলো বাধা পেরিয়ে দরজার সামনে যাবে এবং সেখান থেকে বোমাটা সরিয়ে দিবে যেন আটকে থাকা মানুষগুলো নিরাপদে বেরিয়ে আসতে পারে।

এটা একটা গল্পঃ রোবটিক্স কম্পিটিশনে এরকম একটি চ্যালেঞ্জ রোবট দিয়ে সল্ভ করতে হবে। রিমোট কন্ট্রোল রোবট টি তোমাকে কন্ট্রোল করতে হবে দূর থেকে, রোবটের সাথে থাকে ক্যামেরার লাইভ ভিডিও দেখে। ক্যামেরা আমরা দিব, তোমাকে শুধু রোবট এ একটা স্ট্যান্ড রাখতে হবে ক্যামেরা টা বসানোর জন্য। ক্যামেরার ওজন সর্বচ্ছ ১৫০ গ্রাম। ক্যামেরার হাইট, রোটেশন প্রয়োজনমত চেঞ্জ করা যাবে।

**Disclaimer:** এখানে কোন সত্যিকারের বোমাজাতীয় ডিভাইস বা টেকনোলজি ব্যবহার করা হবে না এবং এটা পুরোপুরি সেফ।





Game Arena Demo Video: [Click Here](#)

Task Demo Video: [Click Here](#)

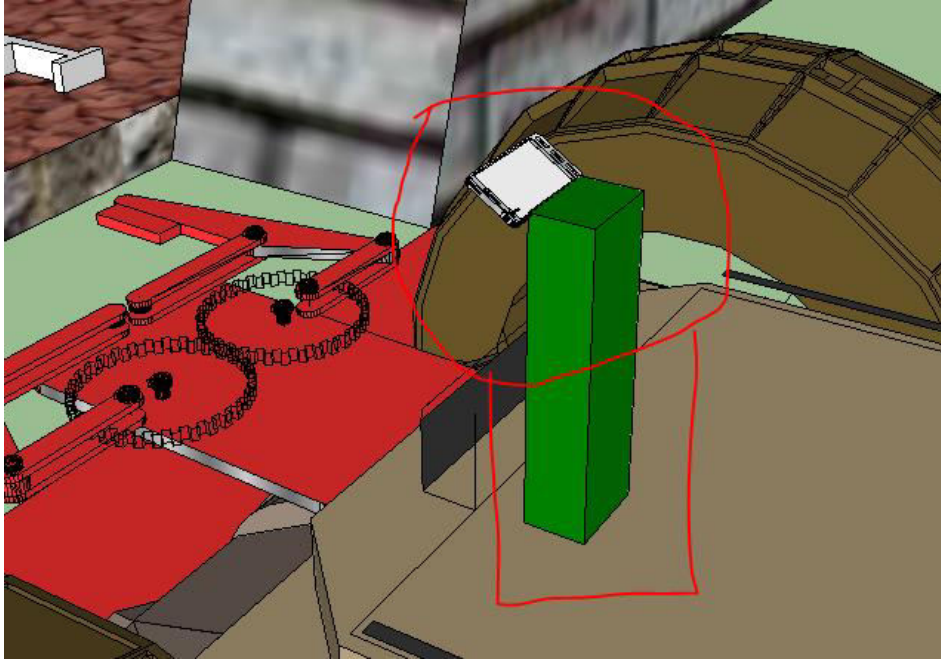
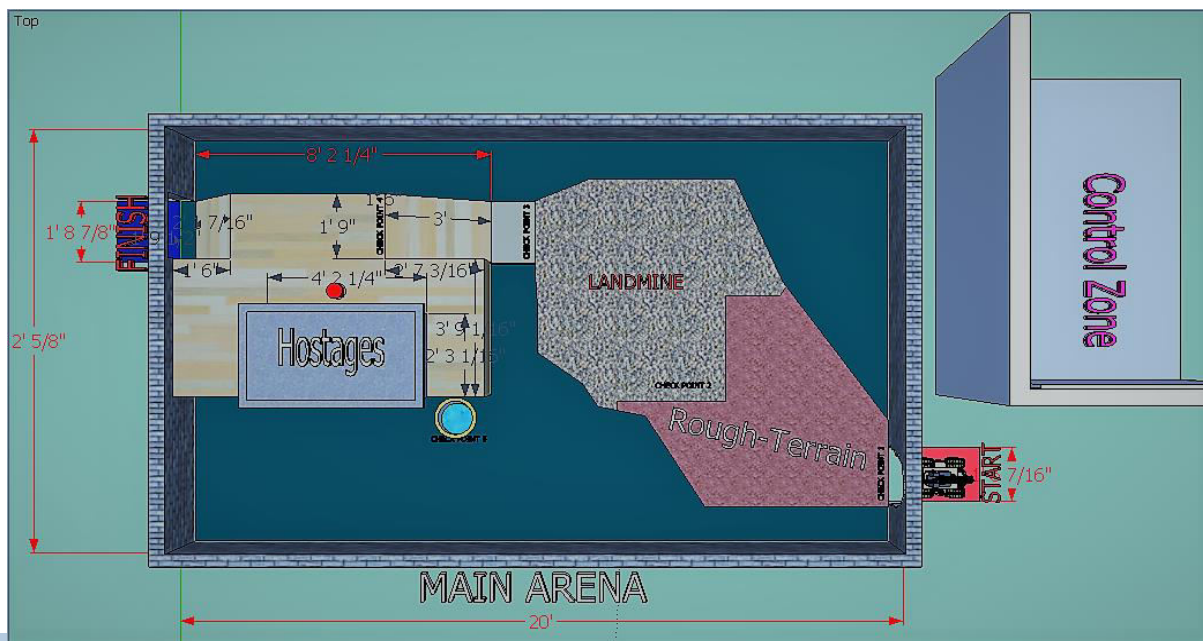


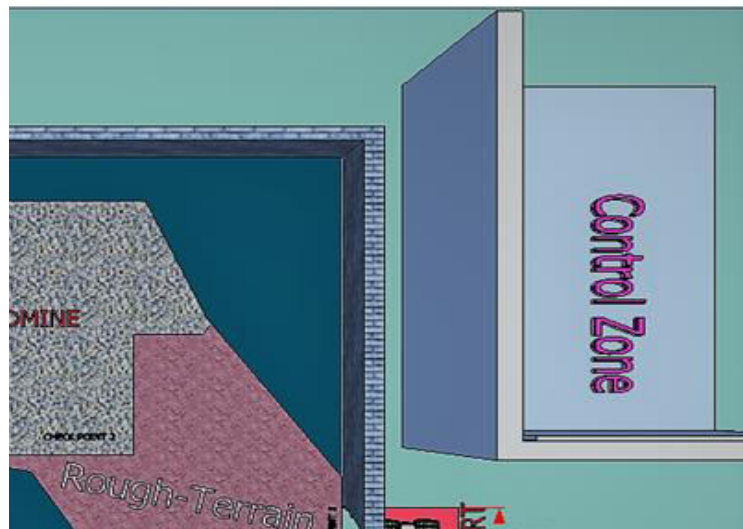
Fig: Robot must have such a stand to tie a camera. Stand and camera are marked in the pic above. We might use android phone as wireless camera.

## ➤ Game Field:

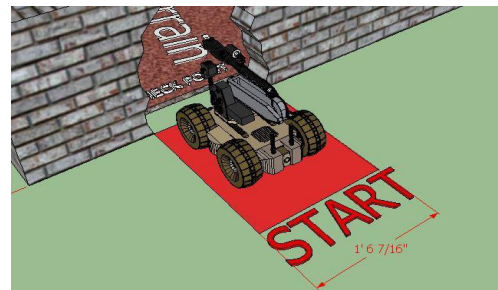
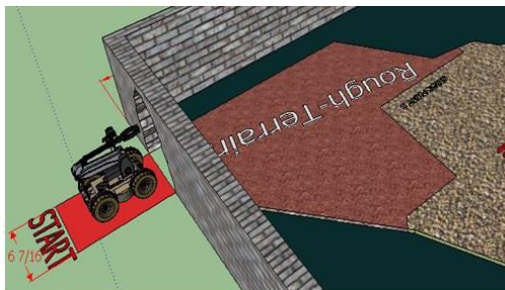
✓ The game field consists of an arena of size 20' x 12' (l X b).



- ✓ **Control Zone:** Where player will seat to operate his robot by seeing live video from the robot camera. We will provide camera and mount where u have to just keep a stand for this purpose.



- ✓ **Start Zone:** Robot has to start from this zone.



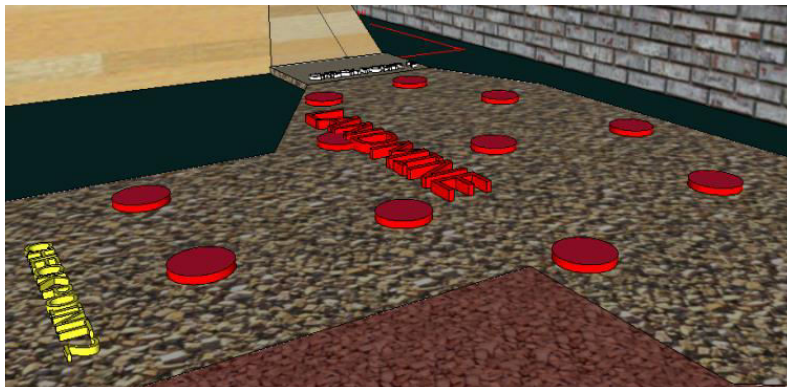


- ✓ **Rough-Terrain:** Robot has to cross this zone. This zone is covered with sand, crack, and piece of bricks.



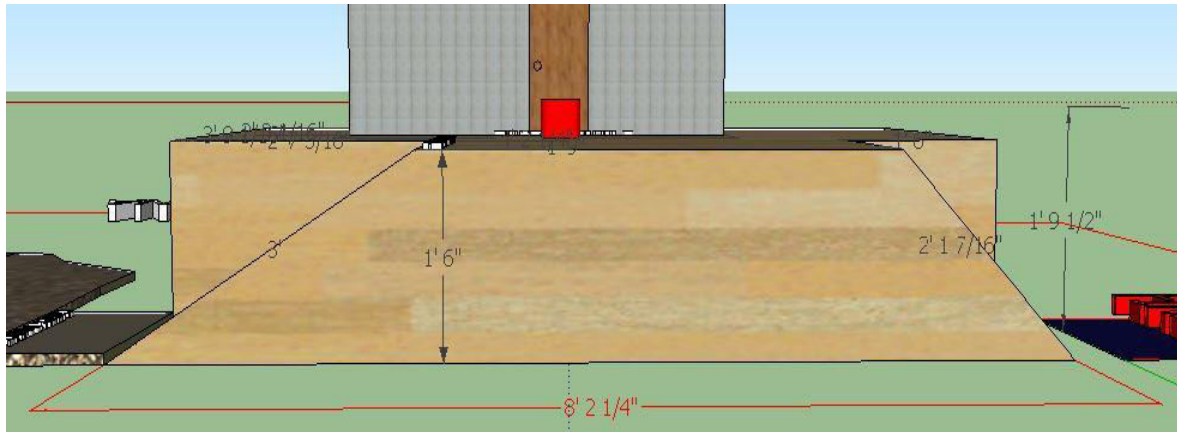
Fig: This zone might contain these.

- ✓ **Landmine:** There will be landmines in random position in this zone. Robot has to carefully maneuver and cross this zone. Mines are 2 inches radius round shape and gaps between two landmines is minimum 1.5 feet.

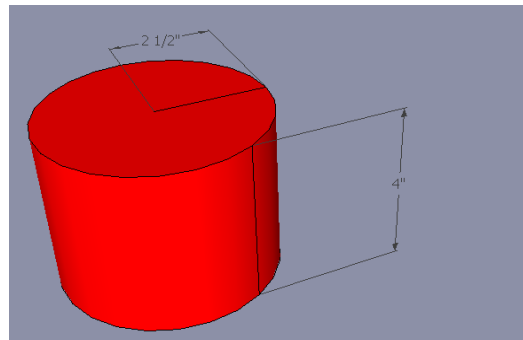


- ✓ **Ramp:** A 30-degree inclined ramp (left side in picture) draw path to the house. Robot need to climb this ramp.

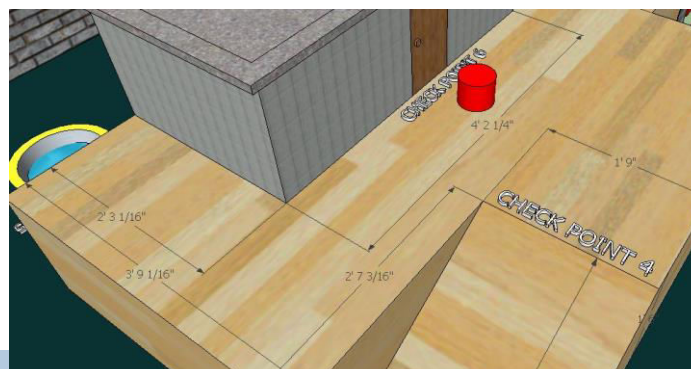
**Length:** 3 feet. **Width:** 19 inches. **Ramp Left:** 30 degree. **Ramp Right:** 60 degree.



- ✓ **Bomb-Pick-And-Place:** A red colored bomb has to be picked placed before the door and need to drop in the deposit zone. Cylinder Type. **Radius:** 2 inches, **Height:** 4 inches, **Weight:** 150gm (max). Bomb will be considered as **blast** only if robot drops it other than the deposit zone.

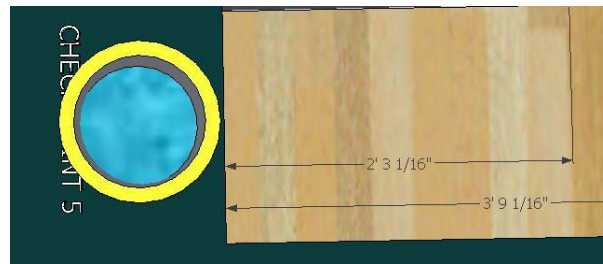


- ✓ **Hostage:** There is a hostage house. After depositing the bomb in deposit zone, the robot has to open the door.

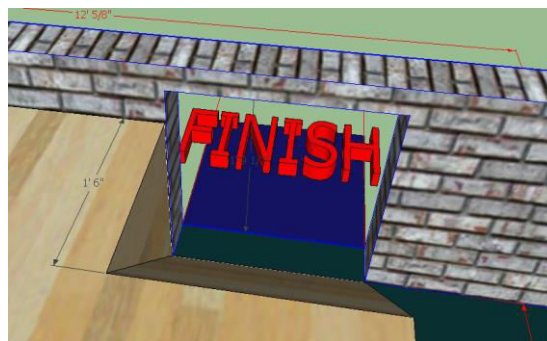




- ✓ **Deposit Zone:** A round bowl of 6 inches radius is the deposit zone. Robot has to drop the bomb inside this bowl carefully.



- ✓ **Finish Zone:** Robot must be reached successfully into this zone to complete the task.



## ➤ Game Play:

- ✓ Robot starts from the start zone.
- ✓ Robot operator sits in front of projector. Will see live feed from robot.
- ✓ First enter into Rough-Terrain zone. Considered as **checkpoint (1)** pass.
- ✓ Cross this zone to enter Landmine zone. Considered as **checkpoint (2)** pass.
- ✓ Pass this mine zone and enter before the ramp. Considered as **checkpoint (3)** pass.
- ✓ Climb the ramp. Considered as **checkpoint (4)** pass.
- ✓ Pick the bomb and drop to the deposit box. Considered as **checkpoint (5)** pass.
- ✓ Push the door to open. Considered as **checkpoint (6)** pass.
- ✓ Reach the Finish zone. Game finished.
- ✓ **Robot has to complete this entire task within 10 minutes.**
- ✓ The problem is **real**, solution must be so. So, robot can be controlled by **seeing camera feedback only**.

## ➤ Scoring:

- ✓ Checkpoint (1)=**20 points**
- ✓ Checkpoint (2) = **50 points**
- ✓ Checkpoint (3) = **50 points**
- ✓ Checkpoint (4) = **30 points**
- ✓ Checkpoint (5) = **100 points**
- ✓ Checkpoint (6) = **20 points**
- ✓ Penalty **50 points** will incur for each restart. Maximum **2 restarts** allowed.
- ✓ Penalty **100 points** for each **landmine blast**.
- ✓ Penalty **200 points** for **bomb blast**. Be careful while pick the bomb, it is **sensitive to vibration**. **Don't drop other than the deposit zone**.
- ✓ Finish = **50 points**
- ✓ **Total Point =**  
$$((\text{Total Time(s)} - \text{Elapsed Time(s)}) + \text{Total Checkpoint}) - \text{Total Penalty}$$

## ➤ Round Details:

- ✓ **Top 8 teams** from elementary round will select for Final round and then **Top 3 winners** will be selected.

## ➤ Kits & Prize:

- ✓ Each member of every team will get a **T-shirt, Pad, Pen, TechHunt Souvenir and a Participation Certificate**.
- ✓ Each member will get **Breakfast and Lunch**.
- ✓ Top **Three** teams will be rewarded.
- ✓ Champion team will get (**40,000 Taka**) Prize money with Trophy and Certificates.
- ✓ 1<sup>st</sup> Runner Up team will get (**30,000 Taka**) Prize money with Crest and Certificates.
- ✓ 2<sup>nd</sup> Runner Up team will get (**20,000 Taka**) Prize money with Crest and Certificates.