NATIONAL ENGINEERING ROBOTICS CONTEST 2026

THEME: INDIGENOUS CATEGORY

National Engineering Robotics Contest

A joint venture of NUST and STEM Careers Programme (HEC) Organized

by:

Department of Mechatronics Engineering,

College of Electrical and Mechanical Engineering (CEME),

National University of Sciences and Technology (NUST), Islamabad, Pakistan &

National Centre of Robotics and Automation (NCRA)

CHANGE LOG

The table below will list the pages on which changes have been made to the theme.

Revision Date	
24-01-25	3D map of the arena is added. Website of the NERC is updated in the document. Dimensions of the fruit is added

Contact: nerc@ceme.nust.edu.pk

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NOTE:

1. Any correspondence with the NERC officials via e-mail, telephone, or any other means will not be considered as part of the rules (unless uploaded as an FAQ on official NERC website).
2. In all matters of interpreting the rules before and during the Contest and in any issues not covered by these rules, the decisions of the Contest Judging Committee will be considered final.

CONTENTS

1 INTRODUCTION

The National Engineering Robotics Contest (NERC) is a joint project of the National University of Sciences and Technology (NUST) and Science Technology STEM Careers Program HEC to promote research in the field of robotics and its related fields in Pakistan. We, from the Department of Mechatronics Engineering, welcome you all to participate in 21st National Engineering Robotics Contest (NERC 2026). This competition will provide a common platform for the integration and evaluation of various electromechanical designs, control and path planning algorithms, and agent architectures.

Over the years, NERC has grown increasingly popular among students as well as engineering departments across the country. The Engineering students from all over Pakistan participate in this competition. Many students participate in this contest in their final years of undergraduate degree and take the contest theme as their Final Year Project, thus becoming part of human resources required in field of robotics and automation. This not only adds value to the competition but also resolves our pledge to bring exciting new challenges every year for the advancement of robotics community at an increasingly wider scale. Robotics is a buzz word at today's technology forefronts. Due to exponential advancements in fields like high performance computing, computer vision, computer networks, material sciences and power electronics, the growth experienced by robotics in past few years is unprecedented. Robotics is the only field which can add precision while replacing slow manual labor in the contemporary industrial world. Thus, this field faces enormous pressure from industry to produce all-purpose mobile manipulator robots which can perform complex tasks like grab, navigate and place objects at desired locations autonomously. The future of Pakistan relies heavily on advancement in the fields of engineering and science; events of this nature will encourage and motivate students to improve their technical skills in leaps and bounds. The theme of NERC 2026 is Automatic Storage and Retrieval System. The focus of this year's competition is to develop an autonomous robot capable of automating warehouse package handling and placement operations. In this theme, the robot will start with preloaded packages, and its task is to identify storage locations and accurately place each package in its designated storage zone within the warehouse arena. The team that completes all placements successfully and reaches the parking area first will be declared **"The Winner."**

2 CATEGORIES

There are two categories of the contest:

- Indigenous Robot category
- Modular Robot category

The purpose of this contest is to develop a sense of problem-solving, project- based learning, team-based learning, technical design, and ingenuity among the contestants.

2.1 INDIGENOUS ROBOT CATEGORY

Indigenous category includes robots that are constructed from scratch. Their mechanical structure, controls etc. are designed by the teams themselves.

2.2 MODULAR ROBOT CATEGORY

Modular/Lego category includes robots that are developed using ready-made kits for example Lego, EV3 kits, EDVON kits or NCRA robotic kit etc. The Modular category is further divided into two subcategories:

2.2.1 Modular School

2.2.1.1 *Lego School*

2.2.1.2 *Ready to Race School*

2.2.2 Modular University

2.2.2.1 Lego University

2.2.2.2 Ready to Race University

This document describes the theme only for1 Category – ***Indigenous Robot Category***

3 CONTEST STRUCTURE

The contest will consist of two stages:

1. Heats/Qualifying Rounds
2. Head to head matches

3.1 QUALIFYING ROUNDS

Each robot will participate in the qualifying rounds (heats). There will be no head-to-head matches in heats. For qualifying rounds following rules will be observed:

3.1.1 There will be NO head-to-head matches. Each team will individually run their robots.

3.1.2 Seeding chart will be based on points scored by teams. If the points of both teams are equal, decision will be made based on time taken by both teams. The team with shortest time will be placed on higher seed position. If time of both teams is also same, the decision

of the higher seed will be based on the shortest distance from the next objective from the current position (as per discretion of judges). If all the above criteria are the same, coin toss by judges will decide higher seed position.

3.1.3 Each team will be provided with a maximum of 3 minutes to run their robot. A timer will be displayed for the audience, however, accurate time through the stopwatch will be recorded by jury.

3.1.4 A team can take as many retries as desired within 3 minutes without any penalty but only the total time taken, and final score will be recorded. (Refer to the section 7.9, **Retry** for further details)

3.1.5 When a team takes a retry, the score is reset to zero and the entire arena will be reset.

3.1.6 When the team is ready within the allocated setup time, and the whistle is blown, then the time will start.

3.1.7 If a robot is not able to successfully complete the task in time, then the time when team's flag bearer will call it off (By saying "STOP") will be recorded as the finish time.

3.1.8 Only the **flag bearer** has the right to say **Retry/Stop.** Other members of the group must refrain from saying Retry/Stop other than the flag bearer to avoid confusing the referee. If referee makes a call due to the confusion caused by other team members, the referee's call will be considered final.

3.1.9 Judges reserve the right to give a re-run to any team with zero score with justifiable reason (if required). This clause will only be applicable if the Judges, Jury and Referee agree to the re-run. This clause does not apply to the team's request but to reasons which are justifiable and acceptable to the judging committee.

3.1.10 If the robot completes all tasks successfully and completely crosses the finish line (scoring maximum point), the stop called by the flag bearer will be of no importance/significance.

3.2 Head-to-head Matches

After qualifying rounds, the top 32 teams (with non-zero score) from the qualifying rounds will go for head-to-head matches. The judges reserve the right to change top 32 teams (the number of head-to-head matches). The winners will be decided through a final match and Runner-up will be decided based on the outcomes of the semifinals.

4 CONTEST THEME

NERC 2026 theme focuses on automation in modern warehouse logistics. In this challenge, teams are required to design and develop an autonomous robot capable of transporting and placing pallets within a warehouse environment. The robot must carry a total of 6 preloaded pallets (represented by dominos) and accurately deposit them into 3 defined storage racks located across the arena. The first team to successfully place all six pallets in their designated rack slots and reach the parking area will be declared the winner. The Contest Arena, representing a complete warehouse setup and the pallet placement location, is shown in Figure 1. Details are as follows:

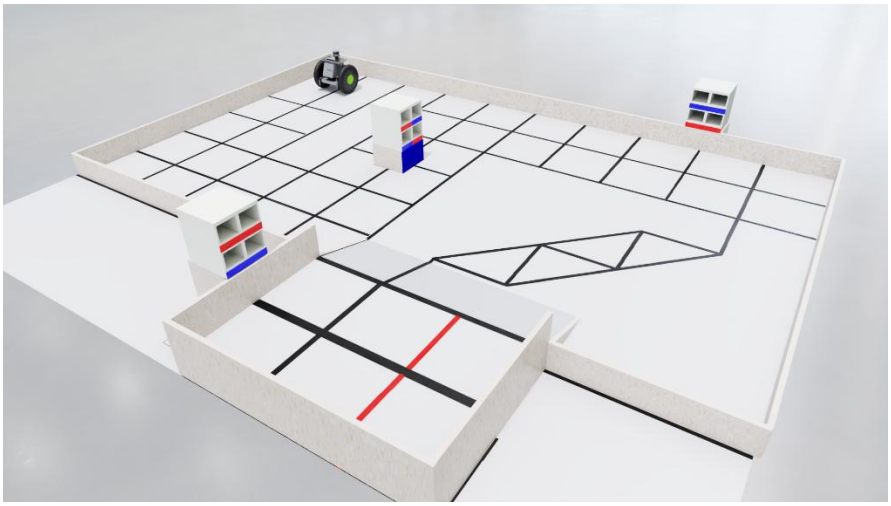
1. Laminated wooden sheets (lasani) are used for the construction of the arena. The floor of arena will be of white color as shown in Fig. 1. All the boundary walls and separation walls have a height of 5 inches, and thickness of 0.6 inches throughout the arena. The solid line made with black tape of 3cm width present on the floor of arena can be used for line tracking.
2. The starting position and orientation of the robots are fixed. The robot must be placed behind the starting line shown in Fig. 1 with red color. The complete robot should be behind the line. The red line is only for reference in Fig. 1; it will be a solid black colored line on actual arena.
3. The robot will begin its run with all six pallets preloaded onboard. The robot will not pick pallets from the arena.
4. There are three designated storage racks within the warehouse, labeled S1, S2 and S3 in Fig. 1. Each storage rack contains four rack slots and is accessible from one side only.
5. Model of pallets and S1, S2 & S3 is attached to Annex A.
6. Storage Rack S1 is mounted on top of a supporting box. One side of this supporting box is marked BLUE, indicating the opening side from which the robot must insert pallets into the rack. The orientation of S1 may be changed before matches at the discretion of the Judges. (the orientation will be at a 90-degree shift in either of the four directions, such that the center of the S1 is aligned with the black line).
7. The supporting box below S1 measures 7 × 7 × 5 inches (where 5 inches is the height), while the S1 rack itself measures 7 × 7 × 8 inches (where 8 inches is the height), and contains four slots of 7 × 3 × 3 inches (where 7 inches is the depth), each. The total height of the complete S1 assembly is 13 inches, whereas the arena wall height remains 5 inches.
8. Storage Racks S2 and S3 are fixed against the arena walls; therefore, their facing direction and access side remain constant. The base of S2 and S3 shall be aligned on top of the arena wall as shown in Fig 1(a). For exact dimensions of S2 and S3, please refer to Annex A.
9. Each rack slot will carry exactly one coloured strip beneath it: BLUE or RED.
    - BLUE indicates that the pallet must be placed in that slot.

- RED indicates that the pallet must not be placed in that slot.

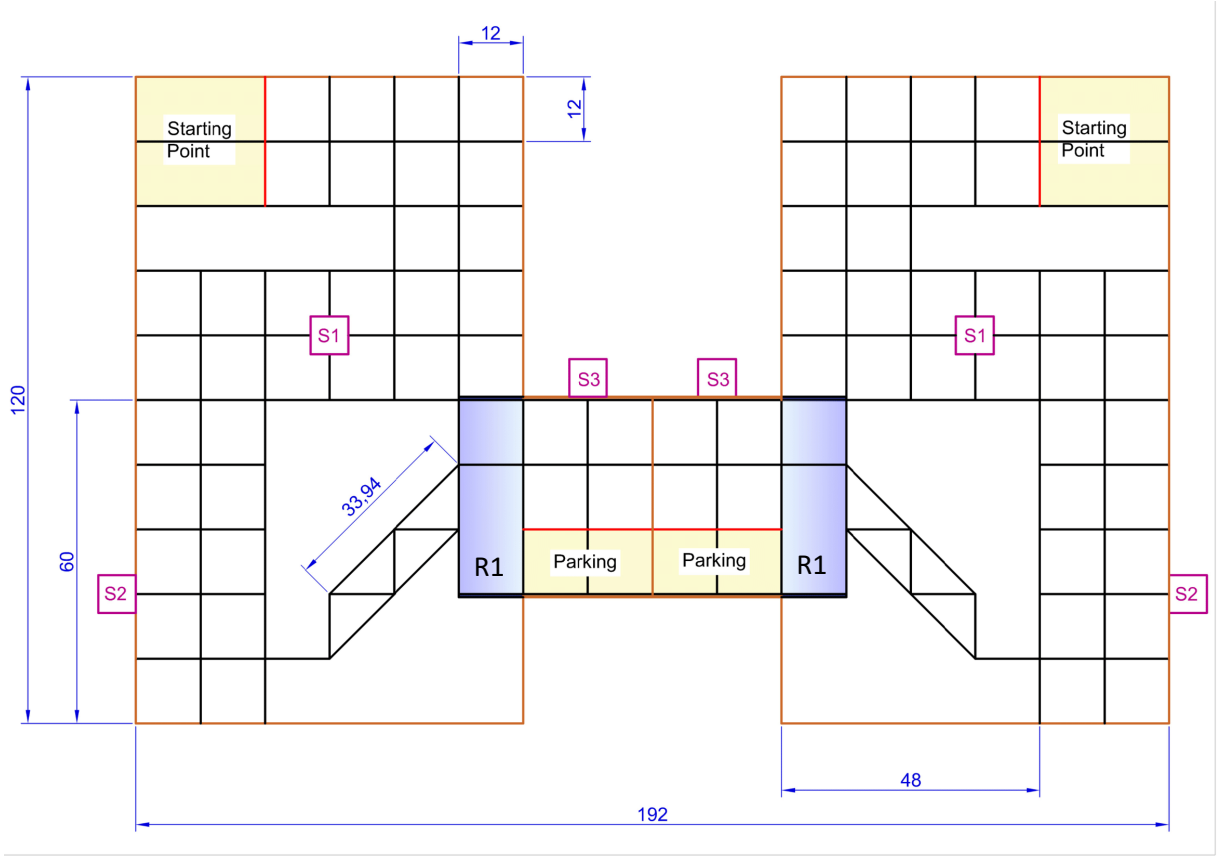
10. The Jury may randomize the BLUE/RED strip patterns before the match or before a retry. They may modify strip patterns on any storage rack. Teams must detect slot colors dynamically using sensors or vision.
11. A total of six pallets is to be placed, two in each of the three storage units.
12. Teams may use non-tactile sensing mechanisms such as sensors, cameras, or vision-based systems for identifying the blue-labeled slots.
13. The ramp region (R1), shown with gradient fill in Fig.1, represents the inclined surface the robot must climb to reach S3. The height of the ramp is 5 inches, and its dimensions are 3×1 grid cells.
14. Before the ramp region (R1) begins, the arena features a staircase-like zigzag pathway designed as a navigation challenge for the robot. This section consists of alternating horizontal and vertical segments, where each individual step occupies one full 12×12-inch grid square.. This zig-zag region spans a total of 4 grid columns in Length and 3 grid rows in width, as shown in Fig. 1. Alongside this zig-zag path, straight bypass lanes are provided to accommodate different navigation strategies. Teams may choose to traverse the zig-zag route or use the bypass lanes before proceeding toward the ramp.
15. The ramp and the ramp-parking area both include extended regions as shown in Fig 1.
    - Ramp: The slope extends 0.6 inches outward on both sides.
    - Ramp Parking: The surrounding wall is of 0.6-inch thickness, with S2 mounted on the outer side of this wall.
    - Parking Area Dimensions: The internal usable area of the ramp-parking zone (within the walls) corresponds to 2 × 3 arena grids, i.e., 24 inches × 36 inches, with each grid measuring 12 inches × 12 inches.
16. The robot is free to choose its own sequence of visiting S1, and S2. There is no fixed order requirement.
17. After completing all placements, the robot must return to its parking area and stop completely inside the designated boundary. A successful “reach” means that no part of the robot remains on or above the parking line.
18. The parking area is located at the top of the ramp and is designated as the Parking. In Fig 1, it is clearly marked by a red boundary line.
19. The robot must autonomously place the pallets; dragging pallets across the field is not allowed.
20. As long as some part of the pallet is within the rack slot, it shall be considered as potted. However, the pallet is to remain within the rack slot till the team either says stop or till the completion of the match. If the pallet drops from the rack slot before the conclusion of the match, the points shall not be awarded. A successful pot shall be considered when no part of the robot is touching the pallet after potting.
21. After the start of the match, the team cannot touch the robot. In case of a retry, the teams

can reset their robots.

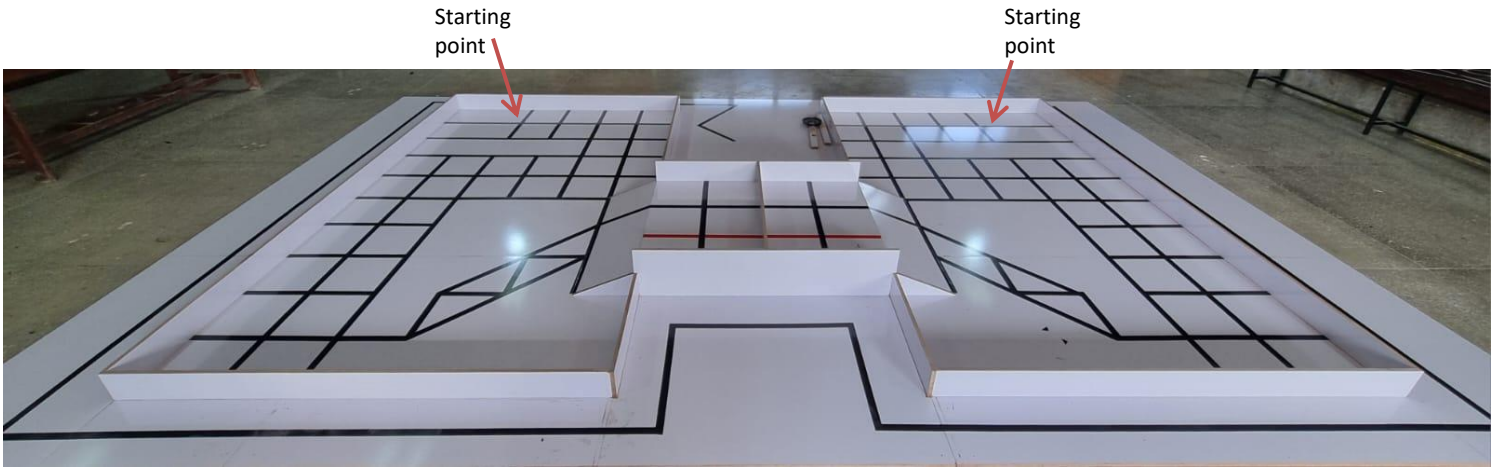
22. Each team must bring their own robot. The maximum dimension of the robot is 12x12 inches (LxW).
23. The robot should be an autonomous and indigenously developed robot.
24. The programming of the robot is allowed only in the setup time of around 1 minute, it is not allowed once a match has started.
25. The left and right-side arenas are mirror images of each other.



(a)


12
12
Starting Point
Starting Point
S1
S1
S3
S3
120
60
33.94
R1
Parking
Parking
R1
S2
S2
48
192

(b)



(c)

Figure 1: Contest Arena (a) 3D view (b) top/2D view all measurements are in inches (c) actual arena

5 ROBOT OPERATION

The qualifying teams (those which qualify for the final rounds) will compete with each other in a knockout format. In each match two teams will be pitted against each other, running their robots side by side in the contest arena. Teams will be declared as Team A or Team B based on the coin toss before every match. The winner of coin toss will decide which arena to choose i.e. Left Arena or Right Arena. The left arena will be given a Blue flag while the right arena will be given a Red flag, hence the arena may be referred to as the Red or Blue arena.

Once turned on, the robot must be self-controlled without any human intervention and contestants are NOT allowed to touch their robots. After the blow of a whistle, the robot will have 3 minutes to complete the task.

During a retry, the layout of the arena shall remain SAME and shall be reset, however the point-scoring will restart from zero. The robot may navigate through the arena using any suitable technique. The robot may not displace any un-authorized item in the arena. Displacing any un-authorized item inside the arena will result in a forced retry or disqualification as per discretion of judges (Judges decision on declaring a displacement will be final). If the participating team sees that their robot has lost track of its location and is facing trouble localizing itself, the team can ask for a retry by raising their flag. During its motion, the robot may touch the walls of the arena without damaging them, but it is not allowed to use any sort of tactile sensor to drag along the walls. This will result in forced retry as per call of referee or disqualification as per discretion of judges.

In case of a tie, the contestant may be required to run a rematch, or the winner may be decided on a coin toss as per the discretion of the judges.

For a particular match, both teams will face the same layout of the arena.

6 POINTS

The point scoring is shown below in Table 1 Point Scoring.

Table 1 Point Scoring

Point Scoring:	**Score**
Placement of 2x pellets in S1	**2x10=20**
Placements of 2x pellets in correct slots in S1*	**2x10=20**
Correct Placement of 2x pellets in S2	**2x10=20**
Correct Placement of 2x pellets in S3	**2x10=20**
Reaching parking area**	**20**
Total	**100**

*Only in case of S1, points are awarded for incorrect potting with bonus points for correct potting.
**All the 4 tires should be within the boundary wall of the parking area. A successful "reach" means that no part of the robot remains on or above the parking line.

6.1 DEDUCTION OF POINTS

The deduction of points is shown below in Table 2. Deduction of Points

Table 2. Deduction of Points

Deduction/Penalty	
The robot fits in an area of 12x 12-inch square	No Penalty
Oversize Robot (14x14 inch square)	10 Points
Oversize Robot (exceeding 14 x 14-inch square)	Disqualification
Robots weigh less than 12 kg*	No Penalty
Overweight Robots (Weight between 12 and 14 kg)	10 Points
Overweight Robots (Weight exceeding 14 kg)	Disqualification
Damaging the arena/wall/sites/Tape/Objects	Disqualification

*This is the individual weight of each robot

The penalty handicap shall be applicable in heats and head-to-head matches.

7 RULES

The following are the rules governing the contest.

7.1 GENERAL

7.1.1 The Contest judges may stop any robot at any time if they feel that it is performing or is about to perform any action that is dangerous or hazardous to people or equipment.

7.1.2 Maximum effort in the design and fabrication of the robot shall be done by the contestant themselves.

7.1.3 Contestants are allowed to use only certain electronic components, list for which is attached at the end of this document.

7.1.4 Additional information regarding the contest rules and regulations may be found in the Tab of FAQs (https://www.dmtsnust.com/nerc/) and will be considered as part of the theme and rules. New FAQs are uploaded frequently so keep watching the FAQ corner for new information.

7.1.5 Any correspondence with the NERC officials via e-mail, telephone or any other means will not be considered as part of the rules (unless uploaded as a FAQ on official NERC (website). It is the responsibility of each contestant to be familiar with all the rules.

7.1.6 If both the teams have scored same points but are not able to complete the task in allocated time slot, decision of the winner will be on judges' discretion who will determine which robot is closer to finish the task first.

7.1.7 If both teams have scored the same points, have the same time and are at the same distance from the finish point, a coin toss will be used to decide the winner.

7.1.8 If any team wants to launch a protest (of any kind), they must do so within 15 minutes after the end of their match. The procedure and payment are outlined in Annex C.

7.1.9 Attempting to damage the game field or performing an act that fails to comply with the spirit of Fair Play will lead to the disqualification of the team.

7.1.10 In all matters of interpreting the rules before and during the Contest and for any issues not covered by these rules, the decisions of the Contest Judging Committee will be final.

7.1.11 Wireless Control of the Robot for operation is not allowed.

7.2 TEAMS

7.2.1 The Robots can be built by teams of currently registered students from Engineering Institutions and Polytechnic Institutions (these students can also be part of a robotic club). Each team can comprise a ***maximum of 6 members***.

7.2.2 If the students from two different Institutes/Universities join hands and form a team in collaboration, then the name of the Institute/University with maximum number of students in such a team would be registered or official consent from both institutions will be required at the time of registration before the contest start date.

7.3 ROBOT SIZE AND WEIGHT

The robot fits within 12x 12-inch square at the time of measurement. If the area of the robot base is more than 12x 12-inch square but less than 14 X 14- Inch square, then points will be deducted. There is no restriction on the maximum permissible height of the robot. Any robot which does not fit in 14 X 14-Inch square will be disqualified. All robots will be carefully measured. All sensors mounted on the robot will be counted as part of the robot's total dimensions. If contestants want to add a flag, hat or other purely decorative, non-functional items to the robot, they may do so. The decorations may be removed for measurement purposes. The weight of each robot excluding decorations must not exceed 12 kg. Penalties are as detailed in 6.1 Deduction of Points will be levied if the robot does not fulfill the size and/or weight criteria.

7.4 ROBOT OPERATION

7.4.1 Any team that damages the arena will be disqualified.

7.4.2 The robot must not use any harmful substances such as oil, petrol etc. in its operation that can damage the arena.

7.4.3 The Robot CANNOT split after the start of the game, only one Robot is allowed to compete at a time.

7.4.4 The robot must not use any destructive or dangerous methods to displace any obstacle or box.

7.5 SENSORS

7.5.1 Robots are not allowed to use tactile sensor of any type for dragging along the walls, however it can use for sensing the walls.

7.5.2 Ultra-Sonic Range detectors (SONARs) or IR based proximity sensors (models specified in the components' list attached) can be used for sensing walls/Line.

7.5.3 The team may use any off-the-shelf encoders if they feel the necessity. Self-made encoders from discrete components are also allowed.

7.6 ELECTRONICS

7.6.1 Motor drive circuits may either be self-manufactured using discrete components or built using the allowed H-bridge ICs/modules listed in the components list. Gate driver ICs such as **IR2101 / IR2110** are permitted.

7.6.2 Microcontrollers specified in the components list must be used for controlling your robots. You can also use Microcontroller development boards specified in the list only. Microprocessors and Single Board Computers are not allowed.

7.6.3 No prefabricated modules are allowed, unless listed in the components list (Annex B) or allowed by the NERC coordinator in FAQs. If a component needs to be added then all of its specifications (datasheet, picture, location to purchase, price) MUST be emailed for formal permission.

7.6.4 In case of any query, questions shall be emailed to NERC Coordinator at nerc@ceme.nust.edu.pk . The FAQs section on the website shall be considered part of the theme.

Note: Only the theme documents and the questions in the FAQ section of the official website (https://www.dmtsnust.com/nerc/) shall be considered as official notifications.

7.7 POWER SUPPLY

7.7.1 The robot must be battery-powered.

7.7.2 The robot must not have any wired connections with its surroundings.

7.7.3 Voltage of the machine's electrical power source must not exceed 48-volt DC. **Power banks may be used.**

7.7.4 Power sources that are considered dangerous or unsuitable by the contest officials shall not be permitted.

7.8 DURATION OF MATCH

7.8.1 Each match will be for a maximum of 3 minutes.

7.8.2 Teams will be given around 1 minute for setting up the Robot at the start.

7.8.3 Robots can start at the instant when the start signal is given, and a whistle is blown. The Robot should be constructed so that it can be started in minimum possible steps.

7.8.4 Once the Robot moves, team members will not be allowed to touch the Robot or enter the Contest Arena. If any team member enters, forced retry shall be imposed. The air space above the arena is also part of the arena, contestants must avoid leaning over the arena as the referee may call a forced retry.

7.8.5 Timing shall start once the start signal is given and the whistle is blown.

7.8.6 Time would stop as soon as Robot reaches completely into the parking spot. If a robot is not able to successfully complete the task, then the time when team will call it off (by the flag bearer saying STOP", will be recorded as the finish time. The team must leave their robots as they are at their current locations when time stop is called by them. They are NOT allowed to pick their robots up till the referee announces the end of the match. The team is not allowed to take a retry after the time has stopped or STOP has been called.

7.8.7 The team which picks all the pallets and places them correctly, then reaches the parking spot first will be declared the winner of the match.

7.8.8 If both teams fail to complete the task, within the time limit, the team scoring more points will be declared the winner of the match.

7.8.9 If both the teams have scored the same points but are not able to complete the task in the allocated time slot, then winner will be decided on time. If both teams call stop at same time, then decision of the winner will be on judges' discretion who will determine which robot is closer to finish the task first. The distance of the robot's current location from the Finish Point (Parking Spot) will be measured, or decision shall be given by judges based on completion of task.

7.8.10 The Complete robot is required to cross the parking line for the run to terminate.

7.9 RETRY

If the robot is strayed due to some reason, retries are allowed.

7.9.1 There is no limitation on the number of retries and a team can take as many retries within the 3 minutes duration of the match. No Points will be deducted for retries but total score will reset to zero.

7.9.2 Each team would be provided with a flag of their respective team. If a team wants to take

a retry, the flag bearer must raise the flag and say clearly "retry". Once the referee announces a retry, the team shall place its robots at their starting location.

7.9.3 If a team wants to stop their robot during the match, the flag bearer must raise the flag and say "stop". The team can then turn off their robot, but they must not move it. The time at which the robot is stopped would be recorded as the final time. The team must not enter the arena until referee has acknowledged the "STOP".

7.9.4 For each retry, robots must be started again from the start point. Points will reset to zero.

7.9.5 Arena Management team is responsible to reset the arena, any team member is not allowed to interfere or do the resetting of arena themselves. If such an act is done, referee may call retry.

7.9.6 Separate time for individual retries will NOT be recorded or maintained. When a team takes a retry, it is only allowed to restart the robot.

7.9.7 Once the start whistle is blown, the team can't reprogram their robot.

7.9.8 If the contestants enter the arena during the match, it will automatically be counted as a retry.

7.9.9 Once the stop has been called by the flag bearer or the task has been completed (obtained full marks), retry will not be allowed.

7.9.10 Only the **flag bearer** has the right to say **Retry/Stop.** Other members of the group must refrain from saying Retry/Stop other than the flag bearer to avoid confusing the referee. If referee makes a call due to the confusion caused by other team members, the referee's call will be considered final.

7.10 DISQUALIFICATION

The following behavior shall be considered for disqualification by the referee and the team could possibly be disqualified:

7.10.1 Attempting to damage the game field.

7.10.2 Performing any act that fails to comply with the spirit of Fair Play.

7.11 PROTEST PROCEDURE

The protest procedure is as follows:

7.11.1 The team must launch a protest (submit a complete protest form to the head jury) within 15 minutes after the end of their match.

7.11.2 The team must collect the protest form from the head jury on request or use a hard copy of the

form in Anx C.

7.11.3 Only one member of the team must submit a non-refundable protest fee of Rs. 5000/- along with the protest form.

7.11.4 A complete protest form includes submission of the protest fee.

7.11.5 The head jury will forward the case to the judges.

7.11.6 The judges will decide on the protest's validity and render their decision.

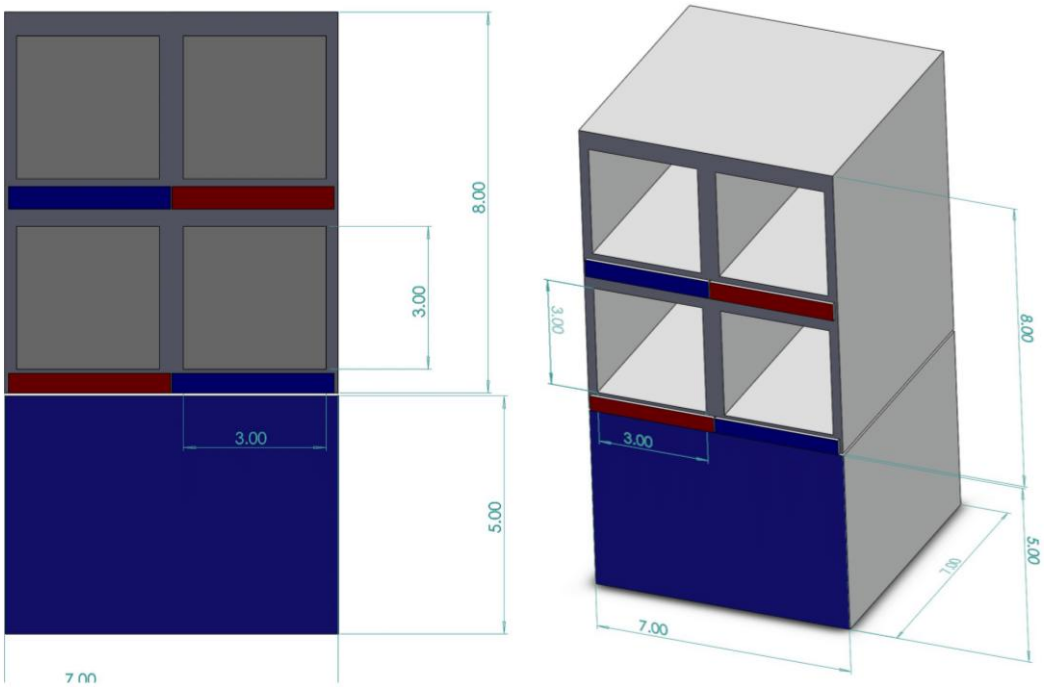
7.11.7 In case of noncompliance of any of points above, the protest will not be considered valid.

7.11.8 The judges' decision will be final.

8 TEST RUN

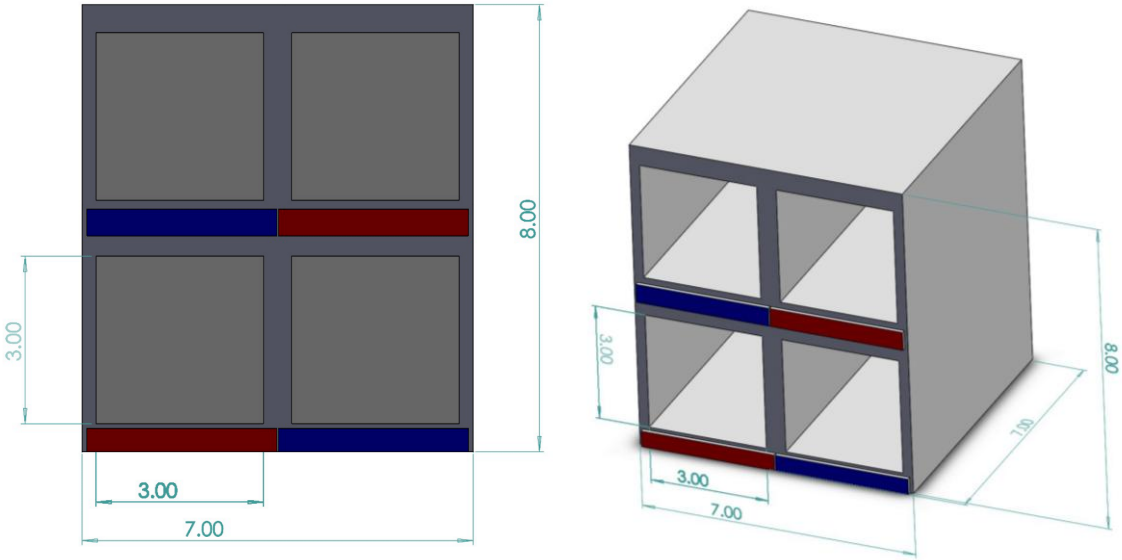
Contestants will be given time for trial run one day before the contest to calibrate their robot/sensors on the actual arena/game field. However, considering the huge numbers of participants, practice time may be limited. Scheduling shall be done by the organizers.

Annex A: STORAGE RACK & PALLETS



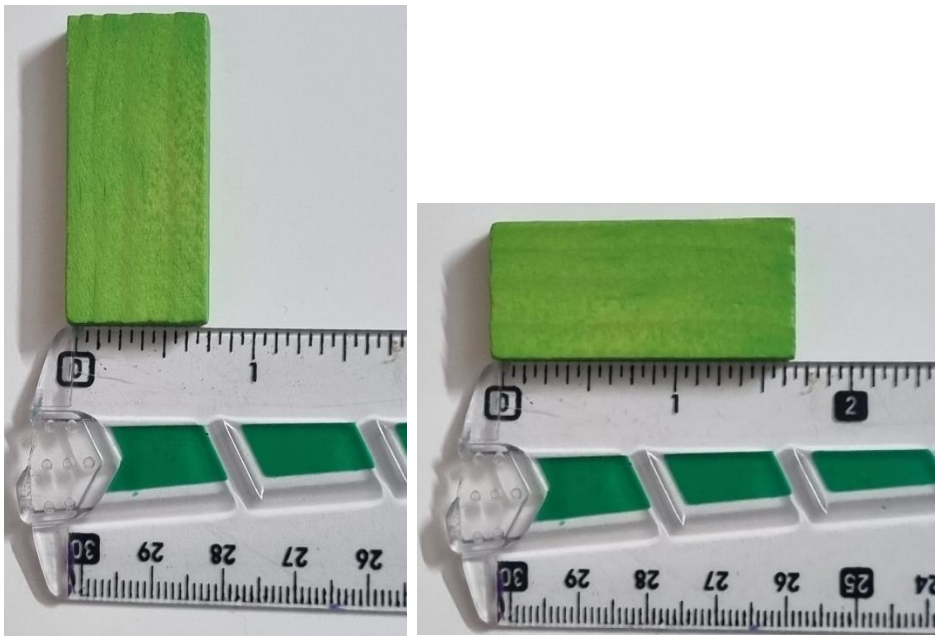
(a) *(b)*

Figure 2: Storage Rack S1 with supporting box(all measurements are in inches)



(a) *(b)*

Figure 4: Storage Rack S2 & S3(all measurements are in inches)



(a) *(b)*

(c)

Figure 3: Pallet Measurements in inches

Figure 4: Ramp Angle (22 degrees)

Annex B: COMPONENTS LIST

Please see the components below. In case of any query, questions shall be emailed to NERC Coordinator at nerc@ceme.nust.edu.pk . The FAQs section on the website shall be considered part of the theme.

Table 3 Components List

Sensors	***Allowed Parts***
Wall Following Sensor (Proximity Sensors)	1. IR Sensors: Sharp GP2Dxx & GP2Y0xx series sensor 2. Sonars: Maxbotix Maxsonar Range Finder series (XL,LV) Parallax PING))) Ultrasonic sensor, HC-SR04 3. Self-made from discrete components
Color Sensor	4. All types of color sensors are allowed 5. Self-made from discrete components
Controller/Development Boards	**Only those Development Boards are allowed which don't have Built in Wi-Fi**. Any external Wi-Fi module is also not allowed
External Shields	*Only SD card shield allowed* *WiFi SD cards are not allowed*
Motor driver	*All Hbridge ICs are allowed.* *L298N IC, TB6612FNG IC, BTS7960 IC modules are allowed.* *A module may include the following active and passive components, all of which are allowed:* *1. Diodes* *2. Capacitors* *3. Inductors* *4. Transistors / MOSFETs* *5. Voltage regulators* *6. Power-indicator LEDs* *7. Resistors* *8. Terminal blocks for motor connections* *9. Pin headers / jumpers* ***Note:*** *Any pre-made module must not contain a microcontroller/ controlling chip*

Motor	*Any type of motors is allowed. Encoders are also allowed*
Battery	*Any type (Power Banks are allowed)* *Buck/Boost converter modules are allowed.*
Wheels	*Meccanum/Omni wheels are allowed*
Sensor array	*QTR-8A Sensor Module*
Free Wheels	*Any type is allowed*

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Protest Form

Team Name:	
Team ID:	
Team University:	
Team Members:	
Match finish time (to be filled by Head Jury)	
Launch time of Protest (to be filled by the head jury)	
Non refundable Protest fee Payment (to be filled by head jury) @ 5000 Rs/- per protest	

Reason of Protest: _____

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***By Signing below, I confirm that the decision made by the judges is final and I will not protest it any further.**

_____ _____

Signature of Team Leader Signature of Head Jury

Decision of Judges: _____

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Signature of Head Judge