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Inter College Championship

Techy Events Rulebook

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Points Distribution

Event	*1st*	*2nd*	*3rd*	*Participation*
Drones	5000	3000	2000	200
Robo Soccer	5000	3000	2000	200
Maze Explorer	5000	3000	2000	200
Sugar Rocketry	4000	2400	1600	200
Jumping Bots	4000	2400	1600	200
Game Jam	3500	2100	1400	150
Fix The Bug	3500	2100	1400	150
Enigma CTF	3500	2100	1400	100
Glider	3500	2100	1400	100
Verilog	3500	2100	1400	100
Code Clash	3500	2100	1400	100
Pulse Quest	3500	2100	1400	100
Cosmos	3500	2100	1400	100
ESports	3000	1800	1200	100
NatureTech	2500	1500	1000	100

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CODE CLASH

A Competitive programming competition where participants solve algorithmic and mathematical problems within a limited time frame. It tests participants' problem-solving skills, algorithmic efficiency, and coding speed.

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General Details:

- Online
- Team Size: 1 member per team
- Date: 17th March, 2024

Rules:

- The contest will be held on codeforces. Only individual participation is allowed.
- The scoring system will be based on the extended ICPC Rules (same as the format of the Educational and Div. 3/4 rounds on Codeforces).
- Other general codeforces rules apply.
- Contestants are not allowed to discuss problems or solutions with anybody else through any medium of communication.

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Scoring criteria:

- There is an extra penalty time of 20 minutes for every wrong submission (including answers on test case 1).
- Contestants will be ranked by the number of problems solved.
- Ties will be resolved based on the total time which is the sum of the total time taken to solve the problem and the extra penalty time due to wrong submissions for each problem.

Organizers:

Dilip Reddy G – 9398113936 (ee23btech11022@iith.ac.in)
Aman Preetham V – 6301428976 (cs23btech11063@iith.ac.in)

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Enigma CTF

Find hidden flags within secure prompts using techniques like reverse engineering, cryptography, and forensics.

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General Details:

- Online
- Team Size: 1-3 members per team
- Date: 15th March, 2024

Event Description

EnigmaCTF24 will be a Jeopardy-style Capture The Flag competition. The participating teams will be given challenges based on reverse engineering, cryptography, and forensics. The objective is to find hidden flags.

Basic Details

- The event duration is 24 hours
- New teams may join while the event is in progress.
- The flags will have the format ‘enigmaCTF24{...}’
- Use of any tools, resources, and the internet is allowed.

- Some questions may form a sequence, i.e., solving one question gives a hint/clue for the following question.
- Brute-forcing, or performing a DOS(Denial-of-Service) or DDOS(Distributed-Denial-of-Service), or any other kind of attack on the server will result in disqualification.
- Sharing of flags and hints between competing teams is strictly prohibited throughout the entire duration of this competition.
- Report any bugs found on the platform immediately.
- Further guidelines regarding contest platform, timing, etc shall be released as the event approaches.
- Organizers reserve the right to use their discretion regardless of any rule.

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Scoring

- Submitting a flag correctly will score points for the team.
- The amount of points for a challenge is based on its difficulty. Points will be displayed along with the challenge on the competition platform.
- The weightage of a question is dynamic and reduces as more teams solve it. The final weightage of the questions is applied to all teams. Points gained are independent of the time of submission.
- There are no penalties for wrong submissions. (Note: brute-forcing is not allowed and is not feasible)
- In case the total scores are tied, the tiebreaker will be based on the time taken to solve the last question; earliest submission wins.

Organizers:

Sattar saif - 9381564607
Ashwath - 7550018262
Dhruv - 8800468029

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FIX THE BUG

Participants must debug and fix software issues within a given time frame. Participants' problem-solving abilities, attention to detail, and proficiency in programming languages will be tested.

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General Details:

- Offline
- Team Size: 1-3 members per team
- Date: 15th March, 2024

About

Welcome to the Elan Fix The Bug Challenge, an exciting opportunity to showcase your problem-solving prowess and debugging skills. Get ready to dive into the world of code and conquer challenges like never before!

Details

- Objective:
  - Teams will be given a set of code snippets or small programs with intentional bugs.

- Teams will be given a set of tasks to complete, each of which consists of a small program or code snippet, along with a bug report describing the problems faced by users.
- The goal is to identify and fix the bugs to make the code work correctly.
- Teams can comprise up to 3 participants
- The event will last for 6 hours.
- The event will be offline and proctored.

Guidelines

- Eligibility:
  - Must have a basic understanding of coding
  - Must have a GitHub account
- Tools:
  - Teams are required to bring their laptops with the necessary development environments pre-installed
- Technologies:
  - The challenges will include various popular programming languages and frameworks, like React.js, Rust, Next.js, FastAPI, Flutter, Golang, etc.

- All debugging tools are allowed
- Teams are expected to exhibit fair play and sportsmanship.
- Any form of cheating, plagiarism, or unethical behavior will result in disqualification.
- The Organizers reserve the right to make final decisions on any matters not explicitly covered in this rule book.

Scoring and Evaluation:

- Each challenge is assigned a score, which will be awarded upon resolving the bugs.
- Points will be awarded based on the correctness of the fixed code.

Organizers

- Samhitha - 9347229254
- Vindhya - 93460 00275
- Nishi - 9869322263

Email: cs23btech11044@iith.ac.in

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Game Jam

Participants must design and create video games from scratch within a given time frame. It showcases participants' creativity, programming skills, and game design abilities.

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General Details:

- Online
- Team Size: 1-5 members per team
- Problem Statement release date: 9th March, 2024
- Submission deadline: 12th March, 2024

Rules

- The game should be made within the stipulated time.
- The game should be relevant to the theme.
- You are free to use any game engine, software, or library to create your game.
- You can also start with any base code that you already have.
- You can use assets that you previously created yourself.
- You can also use third-party assets (including artwork, audio, character models, and sprites) as long as you have the legal right to use them. All assets used and their sources must be mentioned in the report.
- At least one of the members should have an Itch account.

- Do not mention your name anywhere in your game or the Itch submission page. Doing so might result in disqualification. The titles of your games and the reports will be collected towards the end of the Jam.

Prohibitions

- Uploading or linking viruses or malicious code to the Service or any related platform will lead to expulsion from the event.
- Any sign of plagiarism or cheating and violation of the rules of competition will lead to immediate disqualification of teams.
- Participants should not sabotage the work of others which includes spreading misinformation etc.
- Participants should not attempt to communicate with judges or organizers outside of designated channels or periods for fair examination. Any clarification will be handled by assisting staff.
- Participants should not provide false information or manipulate data. All submissions should be truthful and transparent.
- Presenting any offendable information or content in the presentation or the game can lead to elimination.
- There is no room for any sort of bias (gender, race, caste, nationality, age) throughout the competition.

- Unauthorized communication between the teams should be avoided.
- The participants must not include any of their details in the game concept or the final submission.

Procedure

- The game submission must be on itch.io try to fill in all the details on the submission page
- You may be asked to send a gameplay video clearly showing both the screen and the player interacting.

Judging Criteria

- Relevance to the theme
- Does the game connect with the subject?
- Is the Theme information presented clearly and accurately?
- Creativity in the interpretation of the theme
- Concept and complexity of the game
- Is the game new, fresh, and innovative?
- How unique is the design and concept of the game?

- Does it bear little resemblance to other games?
- Completeness & Game aesthetics

Report

Additionally, each team also has to write a report describing their game. It should consist of:

- Title of the game (it should be the same as the title you upload to Itch).
- Name of your team and the names of your team members
- Concept and idea behind the game
- Controls/instructions
- List of themes used and in what ways were they incorporated into your game
- List of software, assets, and resources used along with their sources (for example, links)

Organizers:

- Sathwik: 88854 96881
- Harshini: 93813 45579
- Sai Rishi: cs23btech11024@iith.ac.in

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BGMI Tournament

An Esports gaming tournament in which top-tier teams from around the country showcase intense battle and strategic gameplay to come out on top

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General Details:

- Online
- Team Size: 1-4 members per team
- Date: 12th & 13th of March, 2024

Tournament Format

The Elan BGMI Battle Royale Tournament will consist of two days of competition, with four matches played on each day. 25 Teams will participate in each match.

Teams:

- A total of 25 teams will compete in each match.
- Each team will consist of four players.
- Each team is allowed to have one substitute player.

Participant Information:

All teams are required to provide the following information to the organizers in advance -

- Team Name

- Each team member's name and in-game name
- Character ID
- Roll Number

Scoring System

Points will be awarded based on both team performance and individual kills. The scoring system is as follows:

Team Performance

- 1st Place: 15 points
- 2nd Place: 12 points
- 3rd Place: 10 points
- 4th Place: 8 points
- 5th Place: 6 points
- 6th Place: 4 points
- 7th Place: 2 points
- 8th to 14th Place: 1 point each

Individual Kills

- Each kill: 1 point

Individual Player Ranking

Players will also be ranked based on their individual kills. The player with the highest number of kills in each match will be recognized as the top fragger for that match.

Rules and Regulations

Participants are expected to adhere to the following rules and regulations throughout the tournament:

In-Game Rules

- All matches will be played in "BGMI" (Battlegrounds Mobile India) on the official tournament server.
- Players are not allowed to use any third-party cheats or hacks. Violators will be disqualified.
- Any use of in-game bugs or glitches for an unfair advantage is prohibited.

Match Guidelines

- All teams must be ready and in the lobby 15 minutes before the scheduled match start time.
- The match format will be TPP (Third Person Perspective).

- In case of server crashes or technical issues, the match may be restarted at the discretion of the tournament organizers.
- The tournament organizers' decisions are final and binding.

Scoring and Results

- The tournament organizers will announce the official results and leaderboard after each match.
- Participants must take a screenshot after each match as proof of their performance. Screenshots should clearly show the team's placement and the total number of kills.
- Participants can request a review of their match results within 30 minutes of the result announcement. Afterward, no changes will be made.
- The overall winner will be determined based on the total points accumulated over all eight matches.

Tiebreaker System

In the event of a tie in points for any position in the tournament standings, the tie will be determined in the following order:

- Total times of winning the first placement across all Tournament games.

- Total accumulated placement points across all Tournament Games in the applicable Tournament.
- Total accumulated finishes across all Tournament Games in the applicable Tournament.
- Placement in the most recent match of the Tournament.

Fair Play and Sportsmanship

- All participants are expected to display good sportsmanship and respect for fellow competitors.
- Harassment, abuse, or unsportsmanlike conduct will not be tolerated and may result in disqualification.

Organizers:

- Kowsith 8121181256
- Pranav 96998 61885
- Atharva 94202 97205
- Email kowsithgurubilli@gmail.com

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CODE THE COSMOS

Participants have to analyze datasets, derive insights, and build predictive models to solve real-world problems using machine learning algorithms and statistical techniques.

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General Details:

- Online
- Team Size: 1-3 members per team
- Problem Statement + Data Set release date: 1st March, 2024
- Submission Deadline: 10th March, 2024

Event Description

- The event will be based on Data Science and will involve curve fitting, parameter estimation and/or model comparison based on one or more datasets.
- You will be provided a dataset and multiple models that are assumed true for the dataset.
- You have to find the model that fits the given dataset best and also quantify how accurate one model is over the others.
- The dataset will contain errors and those errors should be taken into account while carrying out the analysis.

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Evaluation:

- Entries will be judged on the basis of the –
  - Accuracy of the method used (Highest Weightage)
  - Implementation
  - Code documentation. (Lowest Weightage)

NOTE: Judges' decisions are final

Rules of Contest:

- Data will be provided as part of the problem statement.
- Participants can use any method to carry out the analysis (Bayesian analysis method would be preferred; one can also use frequentist analysis method).
- Implementation has to be done in Python; participants can use any libraries/modules for their analysis. Participants need to submit a well-documented code.

- Participants can refer to any sources available online but directly using A.I. generated code or copy-pasting from any other competition is strictly prohibited and will result in immediate disqualification.
- Sharing information or collaborating with other teams is restricted and can result in disqualification if caught.

Submission Guidelines

- Submissions must include a file containing the code, documentation, and an explanation of their approach.
- The deadline for submission will be specified with the release of the problem statement. Late submissions will not be accepted.

Dispute Resolution

- Any disputes will be resolved by the organizing committee, and their decision will be final.
- Participants are encouraged to report disputes promptly to the organizing committee

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Updates and Clarifications

- Any updates, clarifications, or changes to the rules will be communicated through the official competition platform and email.

Feedback and Post-Competition Analysis

- Participants will receive feedback on their submissions after the competition.
- The organizers may conduct a post-competition analysis and share insights with the participants.

Organizers:

- Varshith Ganta – 6301286584
- Garvit Maheshwari – 8687436028
- Ethan Bobby Kurien – 7893031454
- Mail – elan.ctc@outlook.com

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Verilog Hackathon

Participants' mettle will be tested when it comes to coding and designing circuits using Verilog

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General Details:

- Offline
- Team Size: 1-2 members per team
- Date: 16th March, 2024

Structure & Rounds

- The hackathon will consist of 2 rounds, none being eliminatory rounds.
- The medium of coding will be an online compiler provided by us (Such as https://hdlbits.01xz.net/wiki/Iverilog)

First Round

- This consists of 3- 4 easy to moderate difficulty questions.
- Start code will be provided which cannot be modified. Our testbench will check the code submitted.
- This round will be 1 hour long and online resources are not allowed—offline resources such as notebooks, printed materials, textbooks, cheat sheets, etc are allowed.

- In case of being caught while using an online resource, the team will be heavily penalized and may even be disqualified.
- Communicating with people outside your team is strictly prohibited and if caught, the team will be disqualified.

Note: Regardless of performance in round 1, all teams will be allowed to take part in round 2. A short break will be provided between the two rounds.

Second Round

- There will be 1 tough question (might contain sub-questions).
- This round will be 1.5 hours long and online resources as well as offline resources are allowed.
- Here too, a start code will be provided which cannot be modified and our testbench will check the submitted code.
- Communicating with people outside your team is strictly prohibited and if caught, the team will be disqualified.

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Judging

- Each passed test case will carry positive marks and each failed test case will carry negative marks. The exact marking scheme will be shared at the time of the competition.
- The final marks allotted per question will not be less than zero.
- In case two teams have a tie, the team that submitted the code first will be declared the winner

Organizers:

- Saipoorna – 6301503053
- Aryan – 9108548555
- Shiv Shreeram – 9757064048

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Pulse Quest

A machine learning competition where participants develop and deploy machine learning models to solve specific tasks or challenges, demonstrating their proficiency in data analysis, model building, and deployment.

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General Details:

- Online
- Team Size: 1-3 members per team
- Problem Statement Release Date: 10th March, 2024
- Submission Date: 15th March, 2024

Submission

- A Kaggle competition page will be shared after the start of the competition, where you can submit the .csv file to know the live leaderboard ranking
- Participants are required to submit a .ipynb notebook that was used to experiment, train, and/or fine-tune the model that was used to produce the leaderboard submission results
- Participants are also required to submit a .csv file containing the predictions which will be tested against a private test dataset.

[The above two files will be collected via a Google form which will be sent to the Team Leader via registered email]

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Evaluation

- The top 3 submissions with the highest score on the private test dataset will be rewarded
- If there is a clash between any two submissions [same scores], the participant who submits first gets preference
- The decisions of the organizers will be final and binding. No claim will be entertained against the announced results

Rules

- Participants can be individual or a team up to 3.
- Codes will be subjected to a plagiarism check. Submissions found to contain plagiarism will be disqualified.
- The number of submissions per day will be mentioned on the Kaggle website.
- Any form of cheating will lead to disqualification.

- Participants who set up a team are the default Team Leader but they can transfer leadership to other participants on the team. The Team Leader can invite other data scientists to their team. Invited participants can accept or reject invitations. Until a second participant accepts an invitation to join a team, the participant who initiated a team remains an individual on the leaderboard. No additional members may be added to teams within the final 5 days of the competition or the last hour of a hackathon.

Organizers:

- Shiva Sai - +91 7989697873
- Panshul - +91 7347446449
- Preetam - +91 9381423794

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DRONE CHALLENGE

Participants have to design and pilot drones to complete specific tasks or challenges, putting to the test their skills in aerodynamics, electronics, and remote piloting.

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General Details:

- Offline (With one online submission to be made by 12th March)
- Team Size: 1-5 members per team
- Date: 17th March, 2024

Introduction

Drones are objects that the world is looking up to, literally! A multi-level competition that involves various challenges and obstacles in increasing order of difficulty would screen out the fastest and the most agile drone. Design a drone and compete to see if it has the moves to dance past all the obstacles.

Problem statement

Drone Specifications:

The participants are free to make any kind of drone (tri, quad, hex, etc.) and of any shape as long as they adhere to the below-mentioned rules

- ***Dimensions*:**
  - Minimum - 15 cm x 15 cm x 5 cm
  - Maximum - 50 cm x 50 cm x 30 cm
  - The drone must not exceed the maximum limitations during any stage of the competition
- The drone needs to be controlled by a ***wireless remote control*** system at all times during the competition. Organizers won't be responsible if the frequencies of two drones match and there is interference. Participants must have a secondary remote or operate the controller at a different frequency in such cases.
- Propellers ***cannot*** be made of ***metal***
- Usage of ***ready-to-fly kits*** is strictly ***prohibited*** but usage of commonly available parts is allowed. In case of queries regarding the usage of parts, kindly contact the organizers at the earliest
- Usage of ***autopilot*** is strictly ***prohibited***
- The ***battery*** must be onboard. The voltage difference between any points on the drone must ***not exceed 25 V***
- For the on-spot level, the drone will need to carry a ***payload*** of ***200- 300g*** which will have a ***hook*** attached to it. Ensure your drone has some attachment that can help it carry the payload

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LEVELS OF THE CONTEST

Level '0': Maximum - 30 points (Deadline: 12th March, 2024)

- Upload a video of your quadcopter with the given instructions on Instagram with two hashtags:
    1. #teamName
    2. #Quadcopter#elan_nVision2023
- Make sure to tag the following accounts
    - elan_nVision.competitions
    - elan_nVision.iith
    - robotix.iith
- Submit the video through the below Google form link with your team details. Only one video per team is accepted.
  Link: https://forms.gle/2nVZiUSFHApffZYb6

- The length of the video should be between 1 and 2 minutes showing the drone taking off, taking a left turn, right turn, and landing. The video must also cover the pilot.

Level 1 (*offline*): ***Maximum*** - *120 points*

The participants are ***not allowed*** to add major changes to the drone (except an attachment to carry payload) shown in Level '0'. In case any ***major*** changes are observed, a penalty shall be awarded. The degree of the penalty will be decided by the organizers

Round 1: *Maximum - 80 points*

- The drone will need to traverse through ***hoops*** (at different angles) and different kinds of ***obstacles*** along the path
- The team will be awarded points for crossing a particular stage/obstacle
- The ***time taken*** to ***traverse*** the specified path will also be taken into consideration for points
- The exact point scheme will be revealed on the spot

Round 2: *Maximum - 40 points*

- This is a test for position and altitude holding accuracy. The quadcopter needs to hover mid-air in between four rods without getting out of the closure.
- The drone will need to hover exactly at a height of 1.5 m for 1 min.

- In case of deviation from the height or the drone moving out of the closure (bordered by the 4 rods), negative points shall be given
- The exact point scheme shall be revealed on the spot

Level 2 (offline): Maximum - 60 points

This is a surprise spot round where in the problem statement will be disclosed at the venue. The top performers from the previous levels will be eligible for this round.

Make sure to add an attachment to ensure the drone can carry a payload of 200-300g. The payload will have a hook attached to it.

BONUS ROUND: (Maximum 25 points)

- This round is not compulsory. Any team may volunteer to enter this round
- In this round, the drone needs to perform any kind of flips or rolls. For reference - Rolls, Flips and Spins with Chad and Tommy - Trick Series

- Bonus points (up to 10 points apart from the 25 mentioned) will be given if the drone is able to surprise the judges with new innovative moves
- The points awarded will be up to the discretion of the judges

Fouls and penalties:

- Destruction of the arena of each round of any type will result in a huge penalty.
- Obstruction of another participant's drone in any manner whatsoever may result in a huge penalty or immediate disqualification.
- The drone should not go beyond 25m of altitude in any scenario. Prior permission from college authorities is required for flying drones at such heights.
- ***Organizers and judges' decisions are final and binding in all matters.***

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Note:

- Make sure you make use of the failsafe option in case it may go out of control
- The Organizers will not be responsible for any damage that occurs to your drone throughout the competition.
- The above-mentioned rules are subject to change. Major changes will be informed to the participants separately but they are requested to constantly check the rulebook for any updates
- In justified cases, the judge has the right to make decisions that may contradict the above-mentioned rules

Organizers:

- Vinay – 9392418084
- Raghav – 9256381350
- Manasvi - 8143955378

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Jumping Bots

Participants have to design bots capable of jumping as high as possible. It is designed to showcase the agility, innovation, and engineering prowess of robotic systems.

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General Details:

- Offline
- Team Size: 1-3 members per team
- Date: 16th March, 2024

Robot Specifications

- The “robot” is hereby defined as the entire contraption utilized for the jump. The teams are not allowed to have any launchers or similar extra pieces of hardware.
- The robot should fit inside a 25cm x 25cm x 25cm cube before jumping.
- The mass contained in the robot should not change during the jump. This includes but is not limited to the use of rockets, counter-weight projectiles, etc.
- The force for the jump must be applied entirely on the ground. This prohibits the usage of propellers, wings, etc.

Safety Regulations

- The user should be able to control the trigger for the jump. Mechanisms with unpredictable time between the placing of the robot and the jump will be disqualified.
- The entire assembly should not contain anything injurious or harmful to other participants or the environment.

Scoring Criteria

- The height of the jump will be calculated by looking at the lowest point of the robot.
- 2 cameras with different angles will record the entirety of the jump against a ruled background to accurately measure the jump height.

Code of Conduct

- Participants must adhere to the highest standards of sportsmanship and ethical behaviour.

- Any form of cheating, sabotage, or unethical conduct will result in immediate disqualification.
- The organizing committee reserves the right to disqualify any robot deemed unsafe.

Amendments

- Organizers hold the right to alter these rules at any time to ensure fair competition.
- Any changes to the rule book will be communicated to all registered teams promptly.

Organizers:

- Gopi – 9701008792
- Anusha – 9108029100
- Pranay – 7702360623
- Aashritha - 9347457764

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Maze Explorer

Build a robot that can solve a three-dimensional Maze in the least time possible.

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General Details:

- Offline
- Team Size: 1-4 members per team
- Date: 16th March, 2024

Objective

Design and implement a maze-solving robot capable of autonomously navigating through a given 3D maze constructed with rigid walls and open pathways. The robot should reach a specified destination while avoiding obstacles in the shortest possible time.

Maze Representation

- The Maze will be represented by a two-dimensional grid with cells labeled (x,y) with the origin at the top left corner
- A cell can either be open or blocked by a wall
- Each cell measures 30cm x 30cm
- The height of the wall is 20cm
- The overall maze will be a 8 x 8 grid i.e, 240cm x 240cm

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Maze Description

- Color of the walls: White (ideal for IR sensors if used)
- Color of the cells
  - Start cell: Red
  - End cell: Green
  - Other cells: White
- Wall material: Thick cardboard (rigid enough to work well with ultrasonic distance sensors if used)
- It is assured that the maze is solvable with one or more paths

Expected Bot Specifications

- The size of the bot should not exceed the cell dimensions excluding height
- Participants should choose an optimum size for unhindered maneuvering given the cell size.
- The choice of components/sensors is qualitative and quantitative and is at the discretion of the participants. However, certain components are not advised; refer to the guidelines below.
- The bot is to be powered by an on-board battery

- The weight of the bot should not exceed 1 kg (inclusive of battery)
- The bot must be completely autonomous. No human involvement is allowed in any of the tasks
- The teams are required to strictly adhere to the above-mentioned specifications. There may/may not be relaxation in any of the above parameters.

Prohibitions

- Any kind of remote link between the bot and the outside world is strictly prohibited
- Components such as WiFi/Bluetooth modules, RF transceivers, and microcontrollers/computers with WiFi or Bluetooth capabilities (e.g., ESP32, Raspberry Pi, etc.), are not advised. If used, strong justification is required, and prior verification of the code is necessary

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Rules

- No plagiarism: Any form of plagiarized content is unacceptable
- No manual control: Manual control through any medium is strictly prohibited
- No software tampering: Software should not be tampered with or changed except for sensor calibration and PID values. Final code submission is required before the actual round, and no changes are permitted thereafter. The uploading process will be fully monitored
- Hardcoding or pre-programming robot movements is heavily penalized
- All rules must be followed sincerely. Violation may result in severe penalties or complete disqualification of the team
- Participants are provided with initial time (minimum 5 minutes) before the actual round to calibrate their PIDs, sensors, and localization according to the arena.

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Judging Criteria

- Number of rounds: 1
- Priority is given to solving the maze, with significantly high points allocated for successful completion
- Secondary priority is the time taken to solve the maze completely
- A respawn option to the previous checkpoint is available in case of failure or collision, with a cumulative penalty for each instance
- In the event of a draw or other situations, aspects such as distance explored from the start point and number of collisions are considered
- Final judgment by the judges is binding. Teams must respect the given judgment. In case of cheating or dishonesty from other teams, participants should inform the judges

Organizers:

- Faheem – 9745349088 (ma23btech11010@iith.ac.in)
- Ankita – 7358110715 (ma23btech11001@iith.ac.in)
- Jaideep – 7022835787 (ep23btech11013@iith.ac.in)

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ROBO SOCCER

Teams must design and program remote-controlled robots to compete in a soccer tournament, showcasing their engineering skills.

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General Details:

- Offline
- Team Size: 1-5 members per team
- Date: 17th March, 2024

Problem Statement

Design a team of robots that play football. The team would compete against the other teams in a knockout tournament.

Robot Specifications

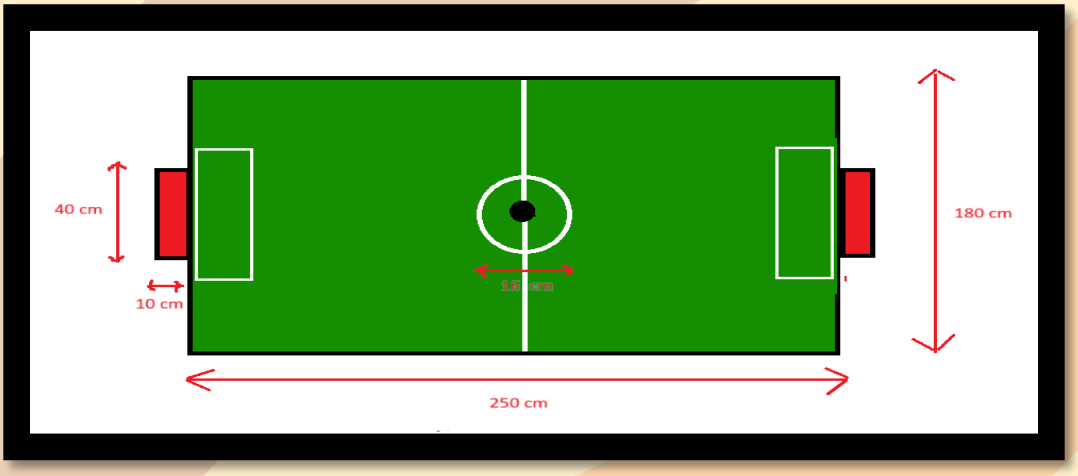
- Each competing team may have at most 2 robots inside the field at any point in time.
- Each robot may not exceed 25 cm in any dimension, and 2kg in weight.
- The robots can be wired, wireless or autonomous. In case of a wired robot, the wire should not hamper the movement of any other robot.

- Only a DC power supply not exceeding 12V should be used in each bot.
- The robots should not employ any methods that withhold, grab, or lift the ball in a way that makes it impossible for the opponent to tackle the ball. They may only push, hit, or drag the ball.

Match Specifications

The rules of the match will be similar to that of a regular football match:

- The field will be of the dimensions 250 cm x 180 cm. At opposite edges, goalposts of length 40 cm, width 10 cm, and height 15 cm will be present such that the front side of the goalpost coincides with the boundary of the field. (Refer to figure)



- The ball for the game shall be a standard tennis ball of diameter of around 6.6 cm.
- Each match shall be 10 minutes in length.

Match Format

- At the start of each match, the ball shall be kept at the center of the field. The team that gets to start the match shall be decided by a toss. The said team may start only after the whistle has been blown by the judge/referee.
- Just before the start of the match, no robot of any team may cross the halfway line and go to the opponent's side.
- Each team aims to score as many goals as possible, i.e., make the ball go into the goalpost of the opponent. If the ball enters the goalpost, i.e., the red region in the figure at any point in the match, it is considered a goal for the opposite team.
- In case of a goal, the team against whom the goal was scored gets to start at the center. The judge keeps the ball at the center and the game is resumed.
- In case the ball goes outside the boundary line of the field, the opponent of the team that last touched the ball starts at the center. The judge keeps the ball at the center and the game is resumed.

- In case of a tie, i.e., an equal number of goals by each team, the match is extended by another 3 minutes. If the number of goals is still equal, the opponent of the team that started the match in the beginning is declared the winner.
- There shall be no direct human interference or physical contact when the match is in action. A team may inspect, repair, or substitute one of the robots with a spare robot (if applicable) only just before the game is about to resume with the ball at the center, i.e., just after a goal or when the ball goes out of the boundary line. In such a situation, the judge must be explicitly informed about this.
- Each team gets 3 chances to appeal for a pause in the match in case of malfunctioning of one of their robots
- In case of any confusion or dispute, the judge's ruling shall be conclusive. Any act of misbehavior or misconduct will lead to immediate disqualification of the team.

Organizers:

- Abhijit Kashyup– 6366022045
- Fawwaz – 8328206136 (me23btech11038@iith.ac.in)
- Abhijith Raj – 8606383504
- Neel – 8247207978

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Sugar Rocketry

Participants are to design and launch rockets based on sugar-based propellants. It tests the participants' understanding of aerodynamics and propulsion principles

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General Details:

- Offline
- Team Size: 1-4 members per team
- Date: 16th March, 2024

Description

- A sugar rocket is a model rocket that is powered by a combustible fuel mixture composed of granulated sugar and potassium nitrate. When the mixture is ignited, potassium nitrate acts as an oxidizer and allows the sugar to burn.
- PVC pipes will be used for making the rocket's body. The fuel will be placed inside a cylindrical PVC pipe casing sealed from both ends using clay (Multani Mitti) and this would constitute the rocket's motor.
- You are only required to make the body of the rocket, Fuel-laden rocket motors will be provided by the organizers

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Rules

- Team Size: 1-4 members
- Participants are required to make and optimize the rocket's body
- The body of the rocket should be ready before the day of the event. Participants won't be allowed to make it during the event.
- The rocket must have a slot for placing the motor. The dimensions of the motor are 19×19×70 mm, so plan your slot accordingly.
- Only 1 motor is allowed per rocket. Using multiple motors to power a single rocket will lead to disqualification from the event.
- A launchpad will be provided by organizers to support the rocket during the launch
- Attempting to use a custom propellant in conjunction with the motor is strictly prohibited

Safety Precautions

- Do not spill any rocket fuel.
- Maintain distance from the Rocket while ignition.

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Judging Criteria

Time of flight, starting from the moment the rocket is launched and ending when it touches the ground next.

Organizers:

- Sarang – 9987888369
- Shozab – 9868379879
- Ritik - 9045652385

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Glider Challenge

Participants have to design and construct gliders capable of achieving maximum distance. It tests the participants' understanding of aerodynamics, material science and flight dynamics

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General Details:

- Offline
- Team Size: 1-3 members per team
- Date: 17th March, 2024

Description

A rubber-band-powered glider is a propeller-powered glider with a rubber band linked to the propeller. When the propeller is rotated, the rubber band twists and stores elastic potential energy. When the rubber band is allowed to untwist, the propeller rotates again in the opposite direction and the stored potential energy gets converted to rotational kinetic energy.

Rules

- Team Size: 1-4 members
- Teams have to make their glider models.
- The glider must have a propeller in front. Participants are free to choose the size and shape of the glider.

- The glider will be hand-launched.
- The glider should be sturdy and is supposed to fly straight without changing direction.
- The number of twists allowed for the rubber band is dependent on the total wing area of the plane.
- Maximum length of rubber band that can be used is 5-inch
- Teams will be judged based on the horizontal range of their gliders.

Organizers:

- Aryan – 9723980026
- Pratyus - 9348297935
- M S Soummya – 8778502292
- Mail – ch23btech11028@iith.ac.in

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NatureTech Ideation

An Ideathon Contest where participants need to give ideas to solve issues related to nature using technology.

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General Details:

- Online
- Team Size: 1-3 members per team
- Contest release date: 8th March, 2024
- Contest end date: 13th March, 2024

Rules

- Each team can submit only one entry for the event. Participation in the event is subject to a “per-team” basis, i.e., one person is not allowed to be part of more than one team.
- Presentation containing a detailed overview of the idea and must be related to real-time environmental issues.
- Teams are required to give an interactive demonstration of the idea in front of a panel of judges, who may ask questions specific to either the implementation or usability of your idea.
- Teams can have a maximum of 3 members, and each team should have a team lead for further communication with the event organizers.

- Points given will be greater for teams with more unique ideas.
- Any submissions made after the deadline will be ignored

Judging Criteria

- Contestants will be scored based on how unique and feasible their ideas are.
- All decisions taken by the organizers and judges will be final and binding.
- The presentation date will be announced during the problem statement release.

Organizers:

- Dheeraj – 6281874741