GISUTECH
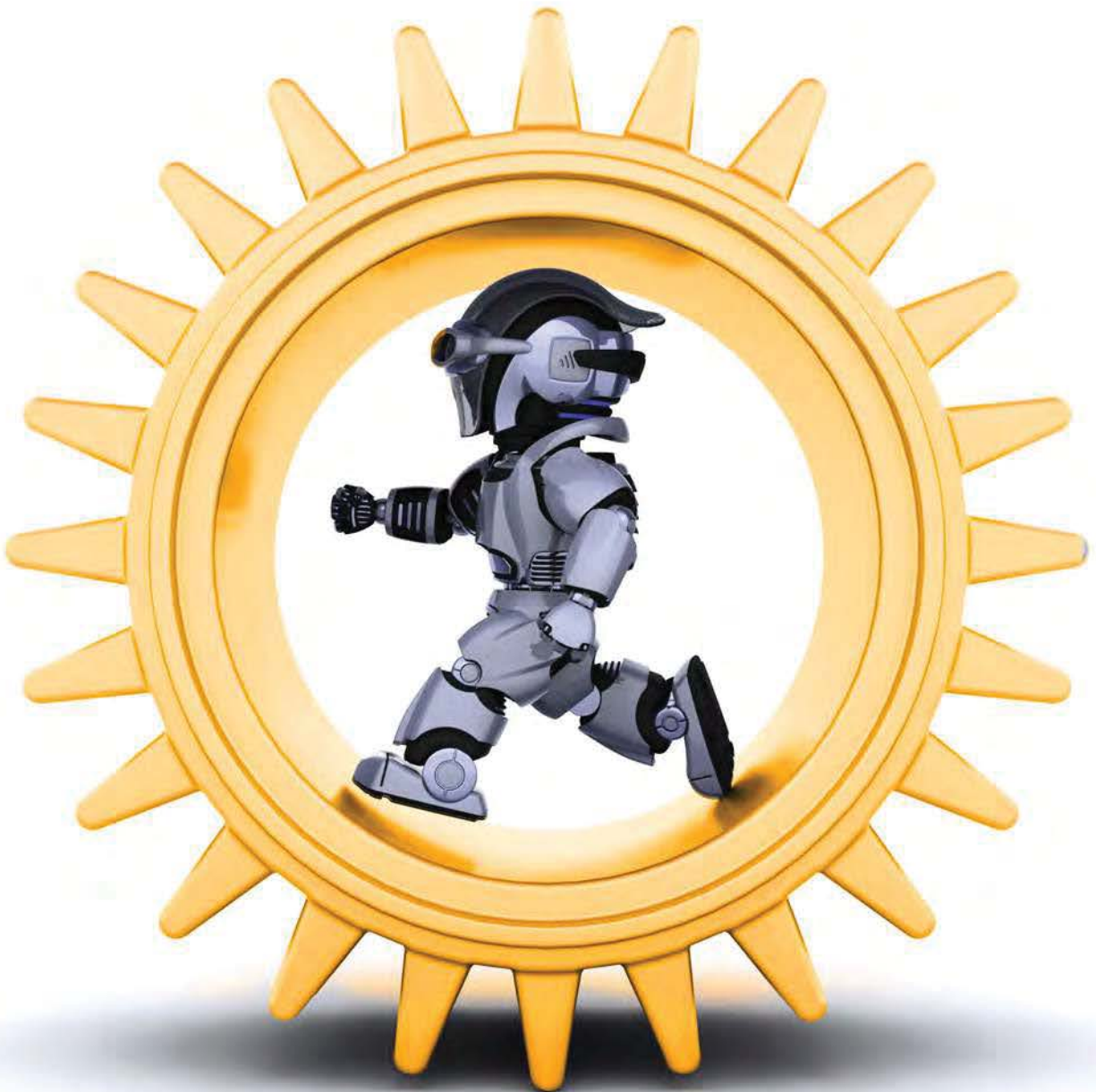
INTERNATIONAL ROBOTICS, SCIENCE AND TECHNOLOGY COMPETITION

April 24-25, 2020

www.gisutech.com

GISUTECH

INTERNATIONAL ROBOTICS, SCIENCE AND TECHNOLOGY COMPETITION

GISUTECH is an International Robotics and Technology Competition organized by Galaxy International School Uganda to encourage young people to apply their imagination, their passion, and their creativity to technology innovations that can make a difference in the world today.

The competition is not just about promoting professional excellence, however; it also serves to promote intercultural dialogue and cooperation, through the involvement of students and teachers from all around the world.

VISION

Our vision is to show students of every age that science, technology, and problem-solving are not only fun and rewarding, but are proven paths to successful careers and a bright future for us all.

MISSION

Our mission is to inspire young people to be computer technology leaders, by engaging them in exciting mentor-based programs that build engineering and technology skills, that inspire innovation, and that foster well-rounded life capabilities including self-confidence, communication, and leadership.

CATEGORIES

Lego Sumo
Lego Line Follower
Line Follower
Mobile Application
Short Movie
Science Environment
Music Video Clip
Photography
Digital Poster Design

LEGO SUMO

Open to both middle and High School. (age 11-19)
Two self controlled robots compete and try to push their competitor off the field. The field is round and the interior surface is painted black and is bordered with a white margin. In each competition two robots compete. One competition consists of three rounds. If there is a lack of time the matches can be shortened to one round instead of three.

Robot Placement:

Upon the judge's instructions, the two teams approach the ring to place their robots on the ring. A cross in the middle divides the sumo ring into 4 quadrants. Robots always have to be placed in 2 opposing quadrants. The robots have to be placed at the border within the assigned quadrant at the same time when the referee gives the signal to do so and after that the robots may not be moved anymore. The robots have to be placed at the border within the assigned quadrant. The robot has to cover the white border at least partially.

The judge will remove the cross after positioning of the robots.

After the two robots have been placed, the referee gives a starting signal. Then the competitors are allowed to push the starting buttons of their robots. This is the last exterior intervention till the end of the game. The robots then have to wait exactly 5 seconds, before they start fighting. An early start counts as a false start and is assessed with a warning or in case of a repetition with a round loss.
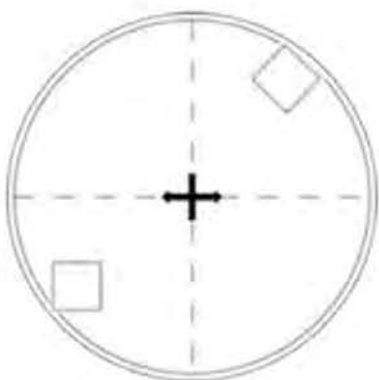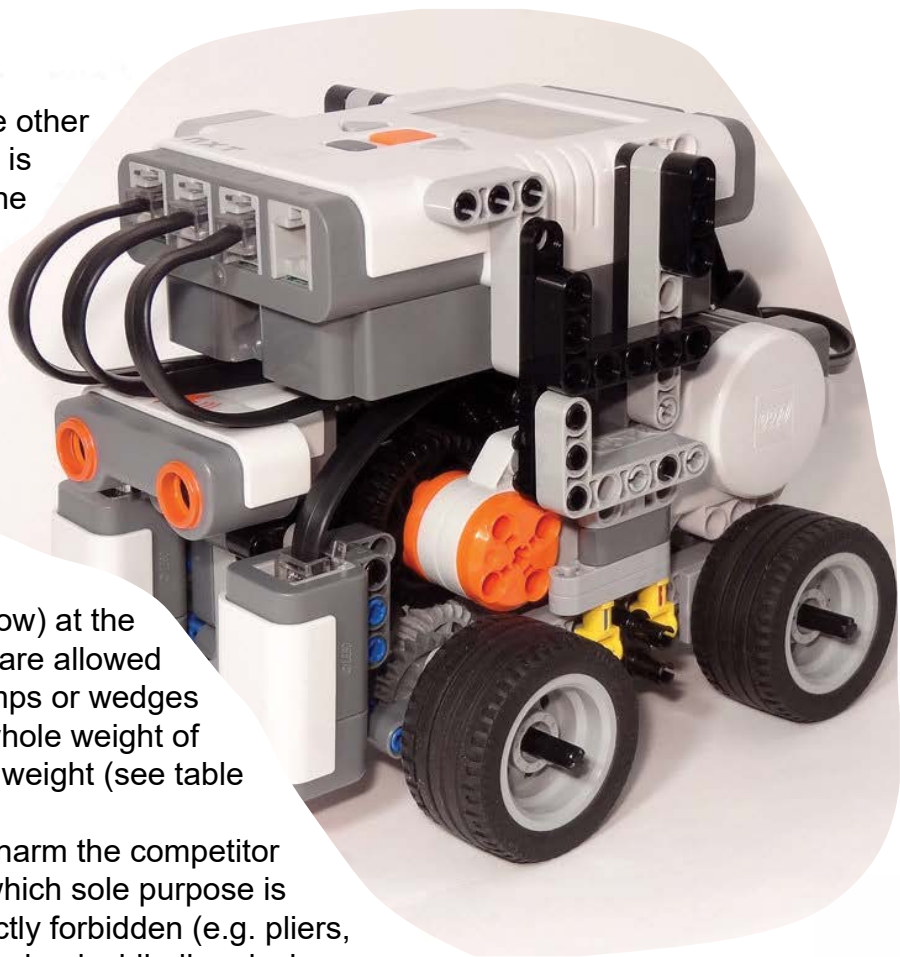
LEGOSUMO

The aim of this competition is to find the other robot and push him off the field. A robot is out of the field as soon as he touches the floor outside of the field (height of fall is only a few centimeters). Hardware and competition tactics may not be geared to damage the competitor ("fair play"). If both robots are still in the field after 3 minutes, the game ends with a draw (Time-out).

The base of the robots may not exceed the specified dimensions (see table below) at the start of the game. After the start robots are allowed to "extend" themselves, e.g. extend ramps or wedges or enlarge their base to stabilize. The whole weight of the robot may not exceed the specified weight (see table below).

Any weapons and actuators that could harm the competitor or the audience as well as equipment which sole purpose is the disturbance of the competitor is strictly forbidden (e.g. pliers, cannons, catapults, chain saws, cut-off wheels, blinding devices, etc.).

Equipment which anchors the robot into the ground is forbidden as well (e.g. glue, vacuum suckers, wheel-away rubber stoppers, suckers etc.). All pieces must be of Lego® brand. Third party pieces may disqualify your robot

Lego Sumo Robot dimensions:

- height: Unlimited
- width: 15 cm.
- length: 15 cm.
- weight: 1000 g.

Ring Dimensions

- Diameter: 77 cm.

LEGOLINEFOLLOWER

Please be advised that there will be one ramp with a maximum 22° steepness in the course. Adjust your designs accordingly.
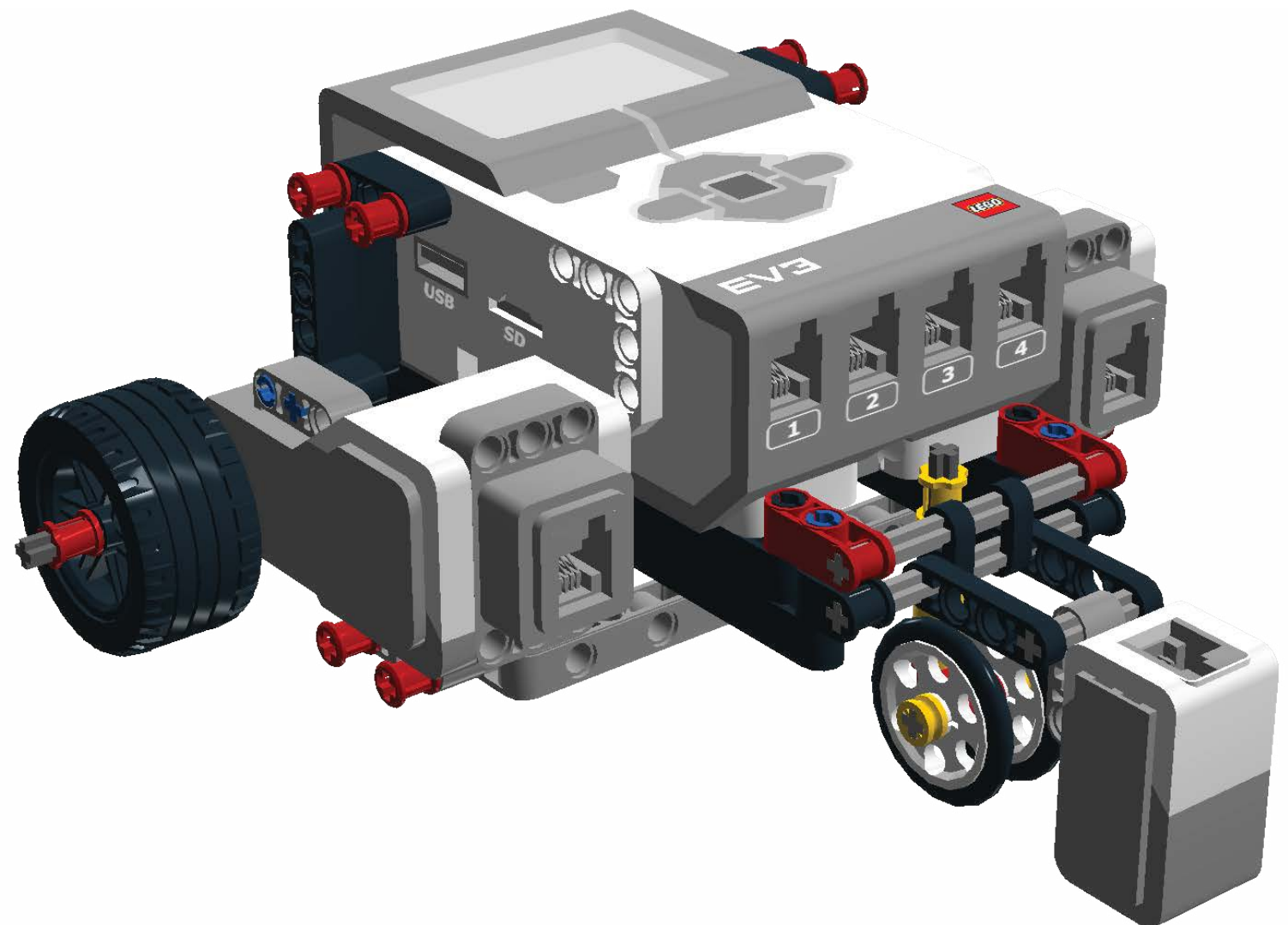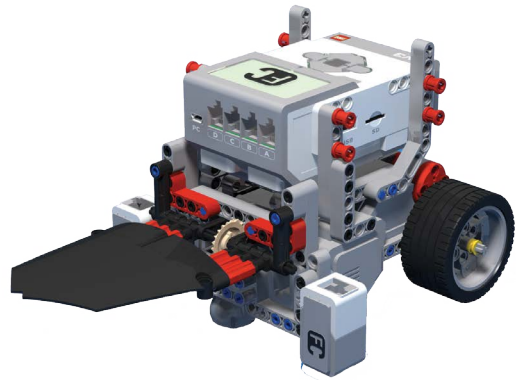
Number of Robots per Event: One or two

Length of Event: 3 minutes maximum

Robot Weight Range: Any

Robot Dimensions: maximum 30 cm wide

Short Description: The objective of this contest is to complete the course in the shortest period of time while accurately tracking the course line from start to finish.

LEGOLINEFOLLOWER

1. General Requirements

1.1. Size and Weight Limits
Dimensional and weight limits for robots shall be strictly enforced. Robots must have passed inspection prior to competing.

1.2. Course Time
Time is measured from the start signal until the time it crosses the finish line. A robot is deemed to have crossed the line when the forward most part of the robot contacts or crosses over the line.

1.3. Time Limit

1.4. Timekeeping
Time shall be measured by an electronic gate system or by a judge with a stopwatch, based on the availability of equipment. In either case the recorded time shall be final.

1.5. Autonomous Control
Once a robot has crossed the starting line it must remain fully autonomous, or it will be disqualified.

1.6. Arena Edges
A robot that wanders off of the arena surface will be disqualified. A robot shall be deemed to have left the arena when any wheel, leg, or track has moved completely off the arena surface.

1.7. Losing the Line
Any robot that loses the line course must reacquire the line at the point where it was lost, or at any earlier (e.g. already traversed) point.

1.8. Course Specifications
The line following course shall traverse a white rectangle. The line shall be black, 15 mm wide. There shall be a starting area at the beginning of the course and an exit area at the end. The line course starts inside the starting area and ends inside the exit area. The start and end points of the line course shall be clearly marked via a transverse line. There shall be a 10 cm gap in the starting and finishing lines where the line course passes through them.

Characteristics of the line course:
A. There shall be no crossovers (e.g. places where the line crosses itself)
B. Switchbacks and hairpins are possible, but the adjacent sections of the line shall be no closer together than 15cm when measured from the center of each line.
C. The closest approach of the line course to the edges of the arena shall be no less than 15cm, measured from the center of the line.
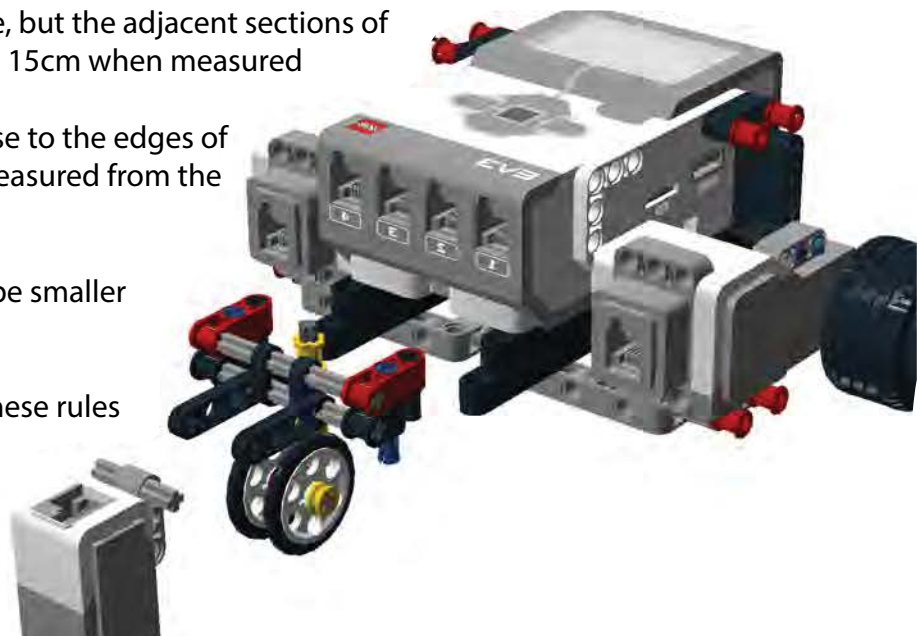D. The minimal curve radius is 15 cm.
E. Sharp angles may occur, but will not be smaller than 90 degrees.

1.9. Power of Officials
The decisions of all officials regarding these rules and the conduct of the event shall be final.

Note: All rules subject to change without notice.

LINEFOLLOWER

Line Follower Details:
Open to both Secondary/High School and University students.
Please be advised that there will be one ramp with a maximum 22° steepness in the course. Adjust your designs accordingly.

Number of Robots per Event: One or two
Length of Event: 3 minutes maximum
Robot Weight Range: Any
Robot Dimensions: maximum 30 cm wide
Short Description: The objective of this contest is to complete the course in the shortest period of time while accurately tracking the course line from start to finish.

1. General Requirements

1.1. Size and Weight Limits
Dimensional and weight limits for robots shall be strictly enforced. Robots must have passed inspection prior to competing.

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Time is measured from the start signal until the time it crosses the finish line. A robot is deemed to have crossed the line when the forward most part of the robot contacts or crosses over the line.

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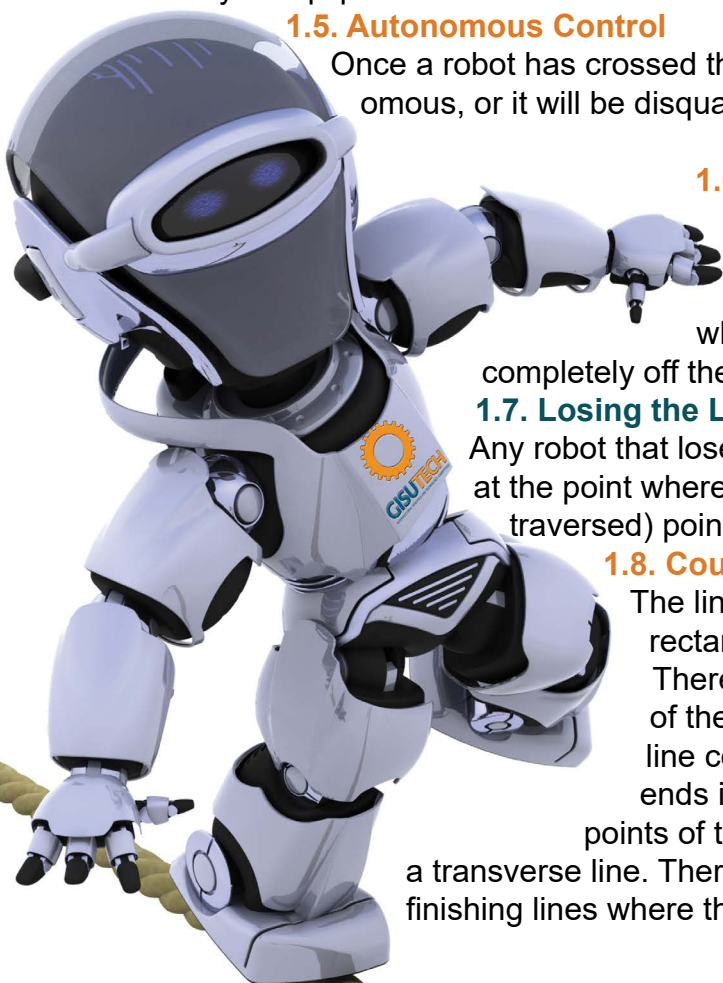
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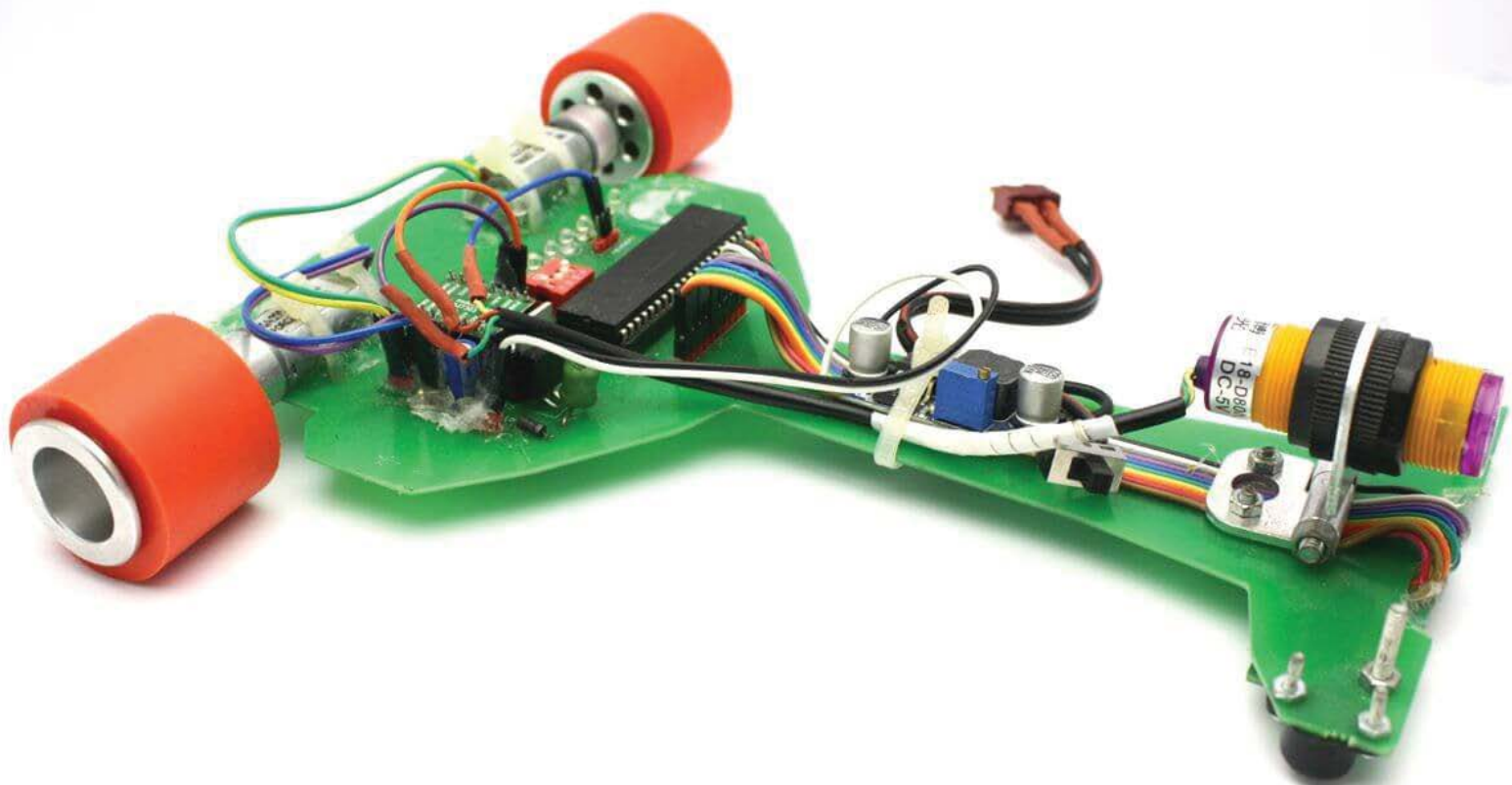
LINEFOLLOWER

Characteristics of the line course:

A. There shall be no crossovers (e.g. places where the line crosses itself)

B. Switchbacks and hairpins are possible, but the adjacent sections of the line shall be no closer together than 15cm when measured from the center of each line.

C. The closest approach of the line course to the edges of the arena shall be no less than 15cm, measured from the center of the line.

D. The minimal curve radius is 15 cm.

E. Sharp angles may occur, but will not be smaller than 90 degrees.

1.9. Power of Officials

The decisions of all officials regarding these rules and the conduct of the event shall be final.

Note: All rules subject to change without notice.

MOBILE APPLICATION

Write some code..

Create an application (i.e. Utility Programs, mobile application for Android or IOS, Edutainment and Entertainment applications, intranet and internet applications), GNU/Linux, FreeBSD or Apple MacOS X etc.

You may use any programming language (or scripting languages) you wish C++, C#, Java, Pascal, ASP, ASP.NET, PHP etc.) It is crucial that an application has usability and a proper easy-to-use interface as well as functionality. But of course, none of these matter if the key element is missing: a good idea

If you think you're up to the challenge and are able to create a working program from top to bottom, you should definetly give it a try!

Criteria for Qualification to Final
- Project documentation
- Originality (not a copy of another project or a program)
- Content, clarity of the documentation
- The aspect of the final product
- Concordance with the category in which the project is registered
- Up-to-date, reflecting present interests

Final phase
- Common Criteria
- Documentation
- Originality / creativity
- Oral presentation
- Stand design
- Technical Skills

Category Specific Criteria
- Usability
- Functionality
- Interface
- Difficulty

SHORT MOVIE

Short movie theme for GISUTECH 2020 is:

"Global Environmental Problems and Solutions."

Create a video(short film) in which you will convey your message in a story enhanced with visual and audial effects by using popular video editing tools like After Effects, Sony Vegas, Movie Maker, Adobe Premiere, Final Cut, iMovie, Pinnacle Studio, Ulead Video Studio etc.

The duration of the film must be between 3 and 5 minutes. English subtitles are required for submissions with language/s other than English. Films should be uploaded to public sites for online viewing (YouTube, Vimeo etc).

A trailer of the movie may suffice for the first stage to get qualification to the GISUTECH final if it shows enough to judge the quality of the full movie.

Criteria for Qualification to Final
- Project documentation
- Originality (not a copy of another project or a program)
- Content, clarity of the documentation
- The aspect of the final product
- Concordance with the category in which the project is registered
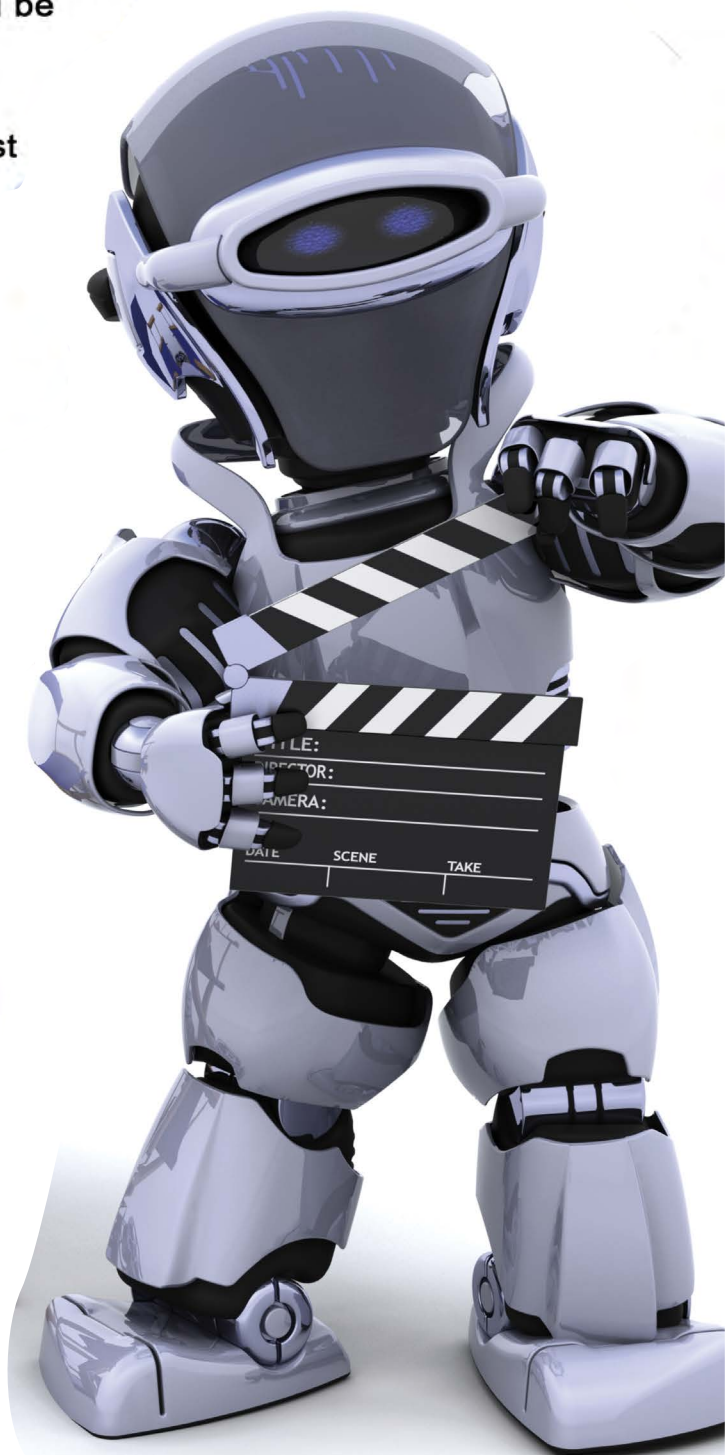- Up-to-date, reflecting present interests

Final Phase
- Common Criteria
- Documentation
- Originality / creativity
- Oral presentation
- Stand design
- Technical Skills

Category Specific Criteria
- Visual impact
- Message & Idea

"WE DO NOT INHERIT THE EARTH FROM OUR ANCESTORS; WE BORROW IT FROM OUR CHILDREN."

HARDWARE CONTROL

Create a software controlling or cooperating with an electronic/mechanic device.

You are free to choose from anything! You should try to piece together your own original device, from whatever spare parts and tools you have at your disposal. However, it needs to have a software component which interacts with the hardware parts.

Creativity is as important as mechanical and programming skills in this section. Your only limit is your own imagination!
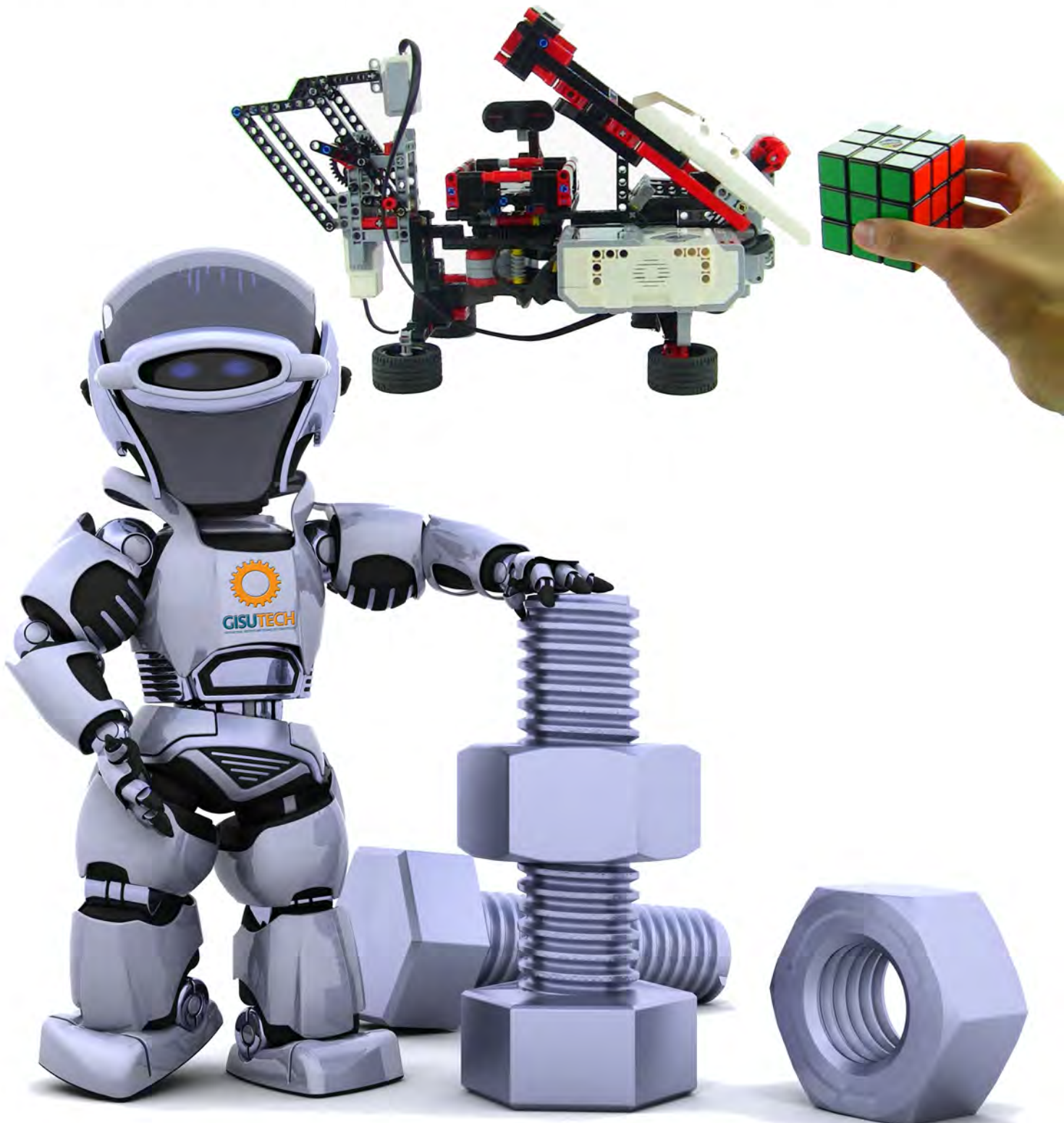
SCIENCE | ENVIRONMENT QUALITY

The category of Environmental science analyzes and provides solutions to the problems of environmental problems—and their potential effects on the health of all organisms, including humans. The world around us changes all the time. How is our quality of life affected by the environment?

GISUTECH Olympiad seeks solutions to problems related to indoor and outdoor air quality; the health effects of air, water, soil, radiation, and noise pollution; pollution management (e.g., systems for early warning or control of polluting incidents); the measurement of pollution; waste water treatment and remediation; solid waste treatment and remediation; the effects of radiation, global warming, climate change and more

GISUTECH SCIENCE | RULES

Application: A science project can be prepared and submitted by up to two students.

Application: The project description paper detailing are required for complete applications. All projects, including affiliated fair winners, must submit a full project description paper (research paper).

Application: The project description paper should include: title, student names, school, city and country, abstract, introduction, goal of the project, methods and experiments, results and discussions, conclusion, and references. The project description paper will be uploaded into an online application. Acceptable file formats for the project paper are doc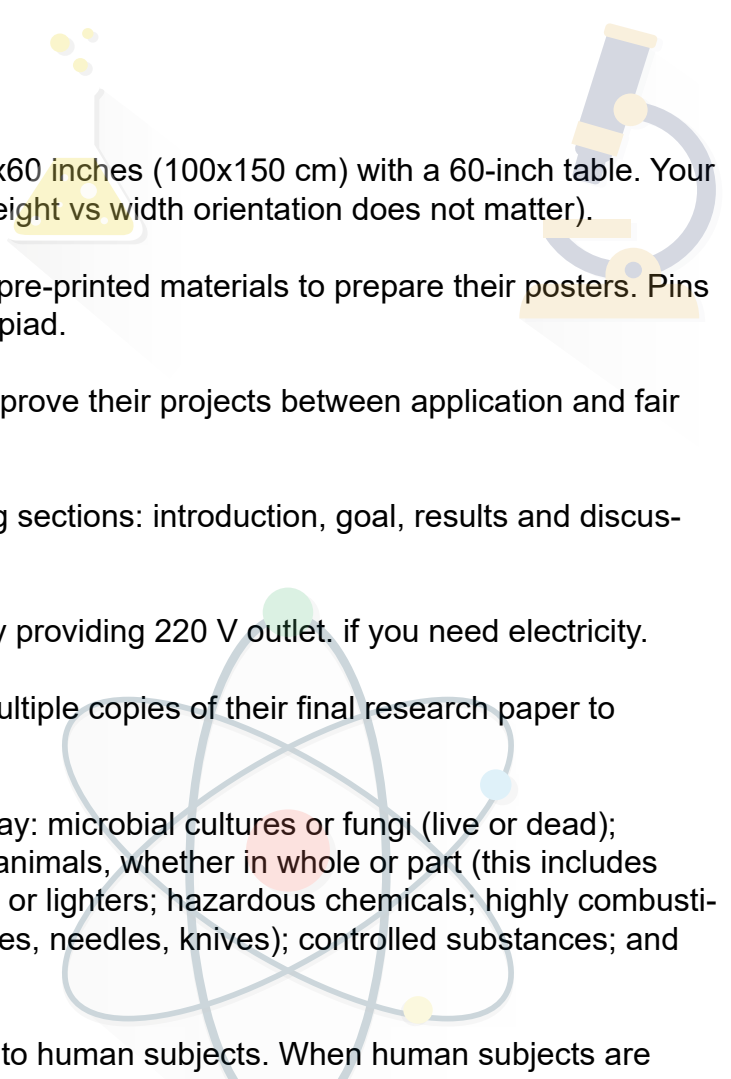 and docx, PDF and RTF, not exceeding 5 MB in file size. Recommended page limit is 15, with acceptable font sizes 11 or 12 for any font type and page margins one inch or more (2.5 cm) from each side.

Application: Your file names must be in English characters.
At the fair: You are allowed to bring your own poster board/presentation, which should be placed on a 40x60-inch table. The height of the poster board is not restricted. Shipping information is available in the Finalist Guide.

At the fair: You are allowed to bring models or prototypes as part of your presentation which is HIGHLY recommended.

GISUTECH will provide foam boards sized 40x60 inches (100x150 cm) with a 60-inch table. Your printed work should fit that size foam board (height vs width orientation does not matter).

Students should come to the competition with pre-printed materials to prepare their posters. Pins and tape will be provided by GISUTECH Olympiad.

Students are allowed to make changes and improve their projects between application and fair presentation.

The poster should include at least the following sections: introduction, goal, results and discussion, conclusion, and references.

Some of the table are equipped with electricity providing 220 V outlet. if you need electricity.

Students are advised (not required) to bring multiple copies of their final research paper to distribute to curious viewers.

The following items will not be allowed to display: microbial cultures or fungi (live or dead); displays of live animals, preserved vertebrate animals, whether in whole or part (this includes humans); open or concealed flames, matches, or lighters; hazardous chemicals; highly combustible solids, fluids, or gases; sharp items (syringes, needles, knives); controlled substances; and radioactive materials.

Proper procedures must be followed in regard to human subjects. When human subjects are used in research (including survey research), they have to be fully informed of any risks and have to give consent to the procedures, in possession of full knowledge of the risks (this is known as informed consent). Informed consent should be obtained for all minors and for adults when more than minimal risk is involved in participating in the project. Minimal risk is defined as the probability of harm or discomfort anticipated in the research.

GISUTECH Science | Judging Criteria
1. Poster Organization and Content
2. Literature Review
3. Skills and Data Management
4. Scientific Method
5. Solution (Innovation)
6. Oral Presentation
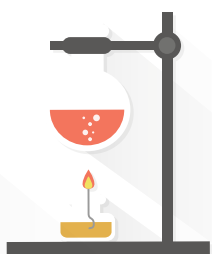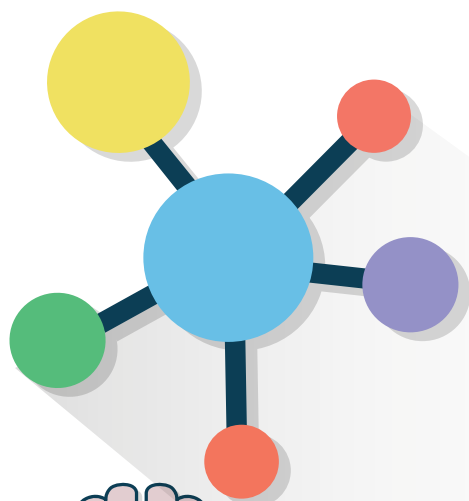
MUSIC VIDEO CLIP

GISUTECH Music Video Clip heightens public concern for environmental problems and offers solutions by pulling at the auditory heartstrings through performance (as a performer). GISU-TECH Music Video Clip allows the student artists to influence public at the level of the heart. From the time of Homer until the present day, Music Clips creators have presented ideas to the public in new ways, reaching them in ways that no others could, and calling people to action.
You can create a music video clip about environmental problems.

GISUTECH MUSIC VIDEO CLIP | RULES

1. All entries must be a digital video.
2. Each entry must focus on ONE of following global challenges as it relates to population growth:
3. Environmental Problems
4. Students may work together in groups or submit entries as individuals.
5. The length of the video should not exceed 3 minutes.
6.   All entries should begin with a 10 second full-screen "title screen" that includes the following information:
 - Lead Producer's name
 - School name
 - School city, state
 - Title of video
 - Total running time (not including the 10 second title screen)
7. All information presented in the video must be cited, giving credit to the original source. Plagiarism of any kind will result in disqualification. IF CHOSEN AS A FINALIST, you must submit a list of your sources, properly cited.

8. There is no entry fee.
9. No copyrighted materials (music, images, etc.) may be used for this contest unless you own the copyright or have a license to use the material for this contest. Written permission must be obtained and provided upon request for all copyrighted materials.
10. No professional assistance is allowed. Adults may assist with production but are limited to verbal guidance only. Adults are allowed to be actors or cameramen but not content contributors.
11. All portions of the online entry form must be completed when you upload your video for it to be eligible.
12. All entries must be submitted in English, if entries are not in English they must include English subtitle

Music Video Clip| Judging Criteria
1. Music Clip Video Organization and Content
2. Quality of Music Clip
3. Editing Skills
4. Message
5. Oral Presentation
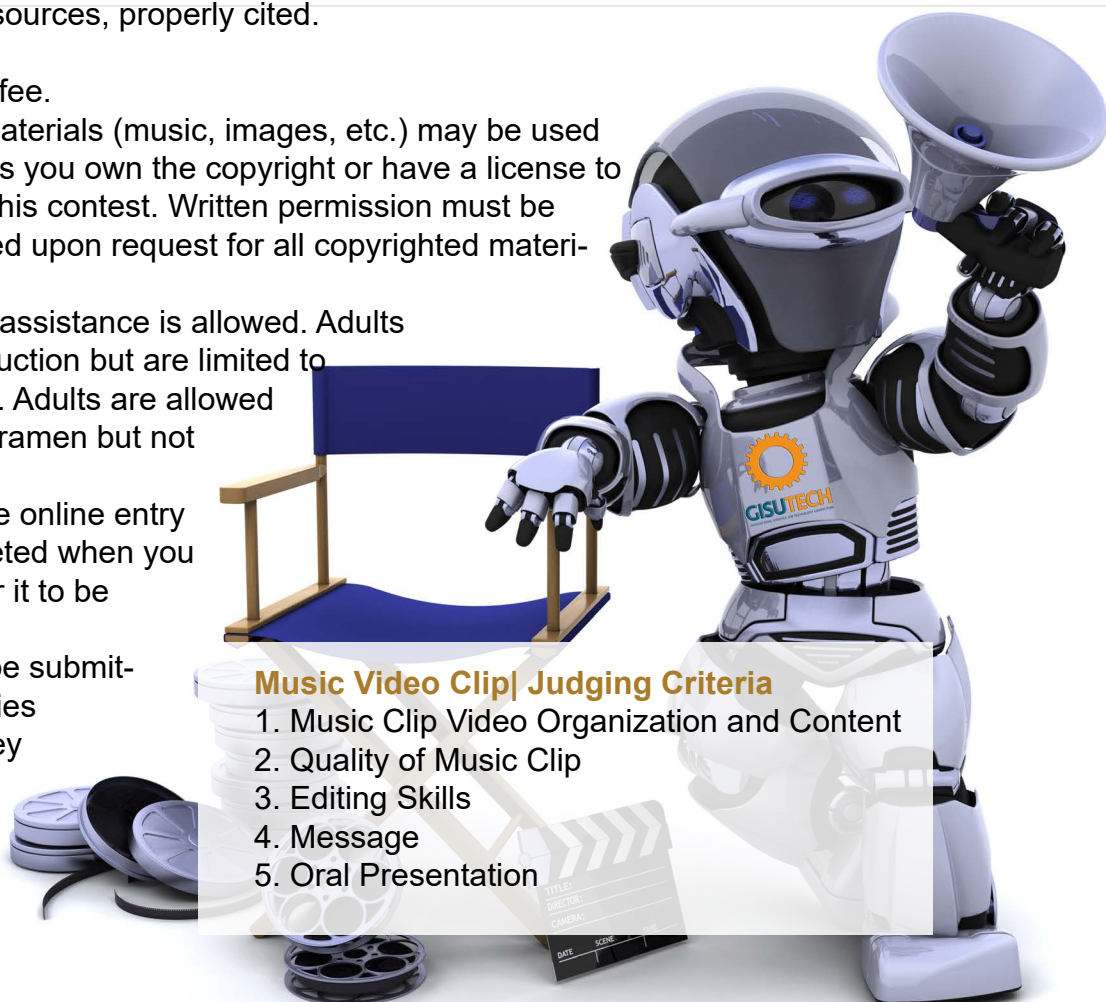
PHOTOGRAPHY

Photograpy theme for GISUTECH 2020 : "**Global Environmental Problems and Solutions.**"
The Competition is open to all primary and secondary students.You can use any mobile phone, table or digital camera.

GISUTECH photography should (but not limited to) express the way natural systems respond and do not respond with the environmental issues, express a sense of frustration about the world we live in, express changes society made through construction, pollution, and land-management policies, and express actions of moments within cities, human environment, and nature to raise awareness.

Photo-journalistic, documentary, experimental, or expressive, photography in all of its machinations can be used to inspire, inform, motivate, and otherwise provide the viewer with a distinct experience related to environmental issues. GISUTECH photography encompasses a wide variety of artwork which uses the environment and all its many aspects, including human impacts on nature, which is a lot more realistic and more in accordance to what we see around us, as their subject.

Turning your lens toward a scene of decay, pollution and photographing it in a way that induces an emotional reaction in the viewer can probably do more to help protect the wilderness than a photograph of a pristine landscape will. By supporting the power of photographic storytelling, we motivate society to make a positive change to raise awareness about endangered cultures, threatened environments and social concerns through photography.

GISUTECH Photography | RULES
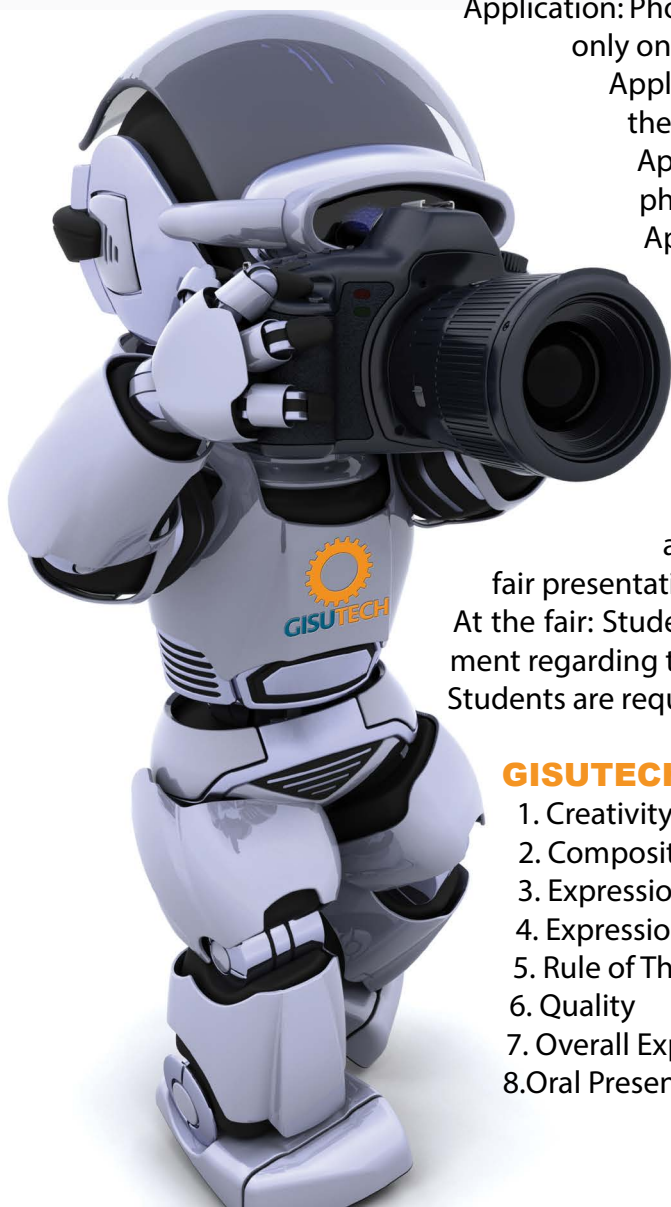
Application: Photography projects can be prepared and submitted by only one student.

Application: You will be required to submit your photo on the system.

Application: Photography projects must submit their photo in JPEG format with a file size under 5 MB.

Application: All photos must be your own work.

Application: File names must be in English characters.

At the Fair: Printed photography project must be 18 x 24 inches to be displayed at the GISUTECH Olympiad. GISUTECH will provide a black foam board of 22x28 inches for all artwork display.

At the fair: Students are allowed to make changes and improve their projects between application and fair presentation.

At the fair: Students are allowed a maximum of 1-2 minutes of statement regarding their photos.

Students are required to submit only one image responding to a brief.

GISUTECH Photography | Judging Criteria

1. Creativity
2. Composition
3. Expression of Meaning
4. Expression of Emotion
5. Rule of Third
6. Quality
7. Overall Expression
8. Oral Presentation (Camera settings and Idea)

DIGITAL POSTER DESIGN

Digital Poster Design theme for GISUTECH 2020 : "Global Environmental Problems and Solutions." Choose one of the topics below:
- Global Warming
- Climate Change
- Waste Disposal
- Water Pollution
- Public Health Issues
- Loss of Biodiversity
- Air Pollution
- Pollution

Create a poster in which you will convey your message in a story enhanced with visual effects by using popular design editing tools like Adobe Illustrator, Adobe Photoshop, Adobe InDesign, Microsoft Publisher, Poster Maker, GIMP, QuarkXPress, and Canva.

Posters have been used for centuries for these purposes, and have been instrumental in transforming and reshaping societies around the world. Whether affirmative or challenging, GISUTECH Olympiad is seeking posters that can inform the public and encourage action or change as well as give new social and political forms visual shape and an imagined personality.

A GISUTECH poster should motivate to think differently about the things that people may be learning or doing about environment, should aim to create a behavioral change regarding environmental problems (local or global) such as global warming, water (pollution or usage), air pollution or quality, waste management (reduce, reuse, and recycle), energy, etc.

GISUTECH Art | Judging Criteria
1. Creativity
2. Composition
3. Expression of Meaning
4. Expression of Emotion
5. Relevance
6. Quality
7. Overall Expression
8. Presentation (software, idea,)n

RULES & REGULATIONS

REGISTRATION
All registration procedure been proceeded through GISUTECH official website (www.gisutech.com)

Each project can be represented by a team of maximum 2 students.

All projects must be registered by a teacher or staff member from their school as supervisor.

Participants are responsible for the accuracy of the information they enter during registration. GISUTECH organizing committee will not accept any responsibility for these mistakes. In case a change is required, please email us before the end of the registration date at info@gisutech.com

There is no fee for registration or participation to GISUTECH.

All middle, high/secondary and university students are allowed to apply for the competition.

(University students are restricted from Lego sumo and Lego line follower)

ACCOMMODATION
International applicants will be accommodated at two different Hotels for $60 and $80 per night and Guest Rooms.Guest rooms are limited. It is first come first serve basis.Hotel fee will be paid on arrival. Those who wish to be accommodated in the hotels before and/or after the specified period will be charged extra. Lunch and dinner will be free to participants.

TRANSPORTATION
Once you have confirmed your participation from GISUTECH, fill-in the Travel Information Form. This is very important as it helps us organize schedules for your pickup from your arrival point. Our pick-up teams will make arrangements and schedule the pick-ups strictly according to the information provided on your travel information form. GISUTECH Organizers will not be liable for inconvenience caused due to misinformation or lack of information in the Travel Information forms

VISA
Every visitor has to pay $50 per person as they enter to Uganda for tourist visa. You need to fill out entry form as entering the country

DOCUMENTS
You need to bring the following documents filled out when you come to competition

Code of Conduct: A general guide on the rules and regulations that MUSt be observed by all participants during the competition.

Parental Consent Letter: A letter to be signed by the parent/guardian of each participant, showing their approval that the participant may take part in the competition
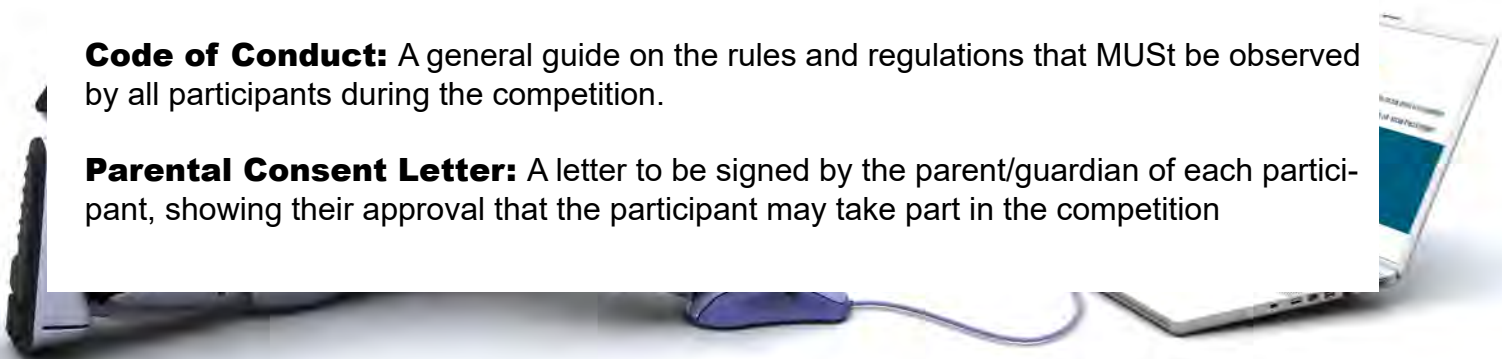
TRIPS

GISUTECH offers two optional trips after The Olympiad.

Kampala Trip
Botanical Garden: Free
Equator Line: Free
Crocodile Farm: Free
Kampala Tour: Free

Jinja Trip
Jinja Tour: Free
Rainforest: Free
Sky Walk*:50$
Source of Nile:Free
ATV Safari* : 50$
Rafting*:150$
Safari*:300$

*Paid Trips

Safari Trip*: You will have the opportunity to see East Africa's wild animals in their habitat through this journey.
Trip packages for International Participants (only those who apply for Trip packages).

AWARDS

Regardless of GISUTECH competition catergory (Lego Sumo, Lego Line Follower, Line Follower, Hardware Control, Mobile Application and Short Movie) prizes are as follows:

1st place - 20% of projects Gold Medal

2nd place - 30% of projects Silver Medal

3rd place - 50% of projects Bronze Medal

GISUTECH

INTERNATIONAL ROBOTICS, SCIENCE AND TECHNOLOGY COMPETITION

GISUTECH 2020 Schedule:

Application starts: January 1, 2020

Application Deadline: March 23, 2020

Announcement of Finalists : March 27, 2020

Arrival of Participants: April 23, 2020

Competition Dates: April 24, 25, 2020

Grand Award Ceremony: April 25, 2020