



DEPHYKLIS

5.0

DOCUMENTATION

Zephyrus Tech Fest December-2023

Day 1

Inauguration

The illustrious four-day tech fest, Zephyrus, unfolded its grandeur within the halls of Christ College Irinjalakuda. The inaugural rites, redolent with significance and anticipation, were set into motion with a prayer in front of our esteemed dignitaries at the hour of 9:30 AM, culminating with due solemnity at 10 AM. The inaugural prologue was embellished by a heartfelt invocation, reverently rendered by the erudite students of our esteemed institution. The dais was adorned with the presence of a multitude of esteemed dignitaries, whose illustrious stature lent an aura of eminence to the occasion. Among those who graced us with their esteemed presence were Jeena George, the esteemed Head of the BVoc Department; Dr. Shinto KJ, the IQAC Self Financing Coordinator; Dr. Vivekanandan, the Self Financing Director; Fr. Joy Peenikkaparambil CMI, the revered former vice principal of Christ College; Xavier Joseph, the venerable Dean of Science; Bharat Jogi, the recently elected chairperson of the new Student Union; and the esteemed HOD of the Department of Computer Science, Sini George. Their presence added grandeur and significance to the event, elevating it to a truly momentous and memorable instance. The Inauguration was conducted by the lighting of the lamp signifying the initiation of the 4 day tech fest.

Exhibition Stalls

On this eventful day, the expansive auditorium was transformed into a bustling hub of innovation and creativity, adorned with a myriad of exhibition stalls that captivated the attention of all in attendance. These diverse stalls, a testament to the collaborative spirit of the occasion, were skillfully curated and operated by a multifarious ensemble of participants. Notably, a significant number of these stalls were orchestrated by the erudite students of the host college, while others were orchestrated by their counterparts from various esteemed institutions, as well as by both private and public entities. The allure of these captivating stalls, replete with ingenuity and enterprise, drew a steady stream of visitors, comprising not only the discerning students of the host institution but also their counterparts from other venerable establishments. It is worth noting that the preponderance of visitors hailed from the host institution, a heartening testament to the enthusiastic participation and support from within. The periphery of the auditorium, save for the entrance area, was enveloped by these engrossing stalls, forming a vibrant tapestry of innovation and knowledge exchange. Within

the hallowed confines of the auditorium, the spatial arrangement was thoughtfully delineated, with the anterior section artfully configured to accommodate the seating of students and esteemed faculty members. Meanwhile, the posterior domain was artfully partitioned into two distinct subsections, each dedicated to the immersive exhibition of cutting-edge Virtual Reality (VR) and Augmented Reality (AR) technologies, thereby offering a truly immersive and enlightening experience for all in attendance.

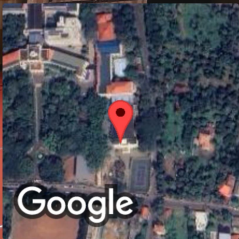
Laser Tag

Laser tag is an exhilarating and interactive game that involves players using laser guns to tag their opponents with beams of light. The game is typically played in a darkened arena, with players wearing special vests that are equipped with sensors that detect when they have been hit by an opponent's laser beam. The game is a popular pastime for people of all ages, and it is often played in groups or as part of organized events. On this occasion, the entrance of the auditorium facing the stage was transformed into a thrilling Laser Tag room, replete with all the trappings of a futuristic battleground. The room was adorned with a mesmerizing array of UV-sensitive light paint motifs, which lent an ethereal and otherworldly ambiance to the proceedings. The room was designed to transport players into a realm of adventure and excitement, where they could engage in thrilling battles of wits and skill. The Laser Tag room was a sight to behold, with its intricate and detailed decor, which was designed to create an immersive and engaging experience for all who entered. The room was equipped with state-of-the-art laser guns, which were specially designed to provide players with a realistic and thrilling experience. The guns were ergonomically designed to fit comfortably in the hands of players, and they were equipped with a range of features that allowed players to customize their gameplay experience. The Laser Tag room was a popular attraction, drawing a steady stream of visitors who were eager to test their mettle against their opponents. The room was abuzz with the sounds of laser beams and the excited chatter of players, as they engaged in thrilling battles of skill and strategy. The room was a testament to the ingenuity and creativity of the organizers, who had spared no effort in creating a truly unforgettable experience for all in attendance.

Images



 **GPS Map Camera**

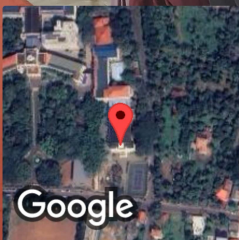


Google

Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354722°
Long 76.214353°
13/12/23 09:48 AM GMT +05:30

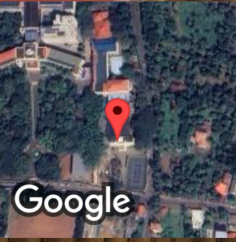


 **GPS Map Camera**

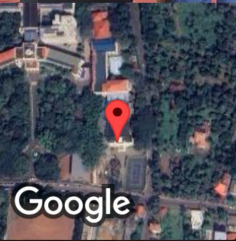


Google

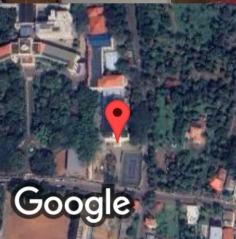
Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354736°
Long 76.214383°
13/12/23 09:47 AM GMT +05:30



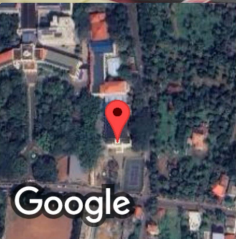
GPS Map Camera
Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354725°
Long 76.214364°
13/12/23 09:53 AM GMT +05:30



GPS Map Camera
Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354714°
Long 76.214367°
13/12/23 10:14 AM GMT +05:30



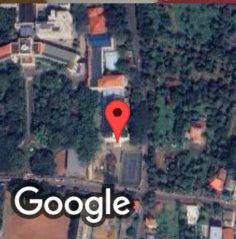
GPS Map Camera
Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354661°
Long 76.21441°
13/12/23 11:04 AM GMT +05:30



GPS Map Camera
Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354723°
Long 76.214393°
13/12/23 11:03 AM GMT +05:30



 **GPS Map Camera**

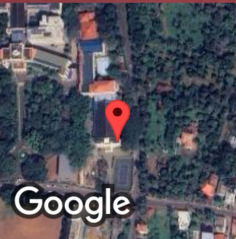


Google

Irinjalakuda, Kerala, India
 9637+VPM, Irinjalakuda, Kerala 680125, India
 Lat 10.354661°
 Long 76.21441°
 13/12/23 11:04 AM GMT +05:30

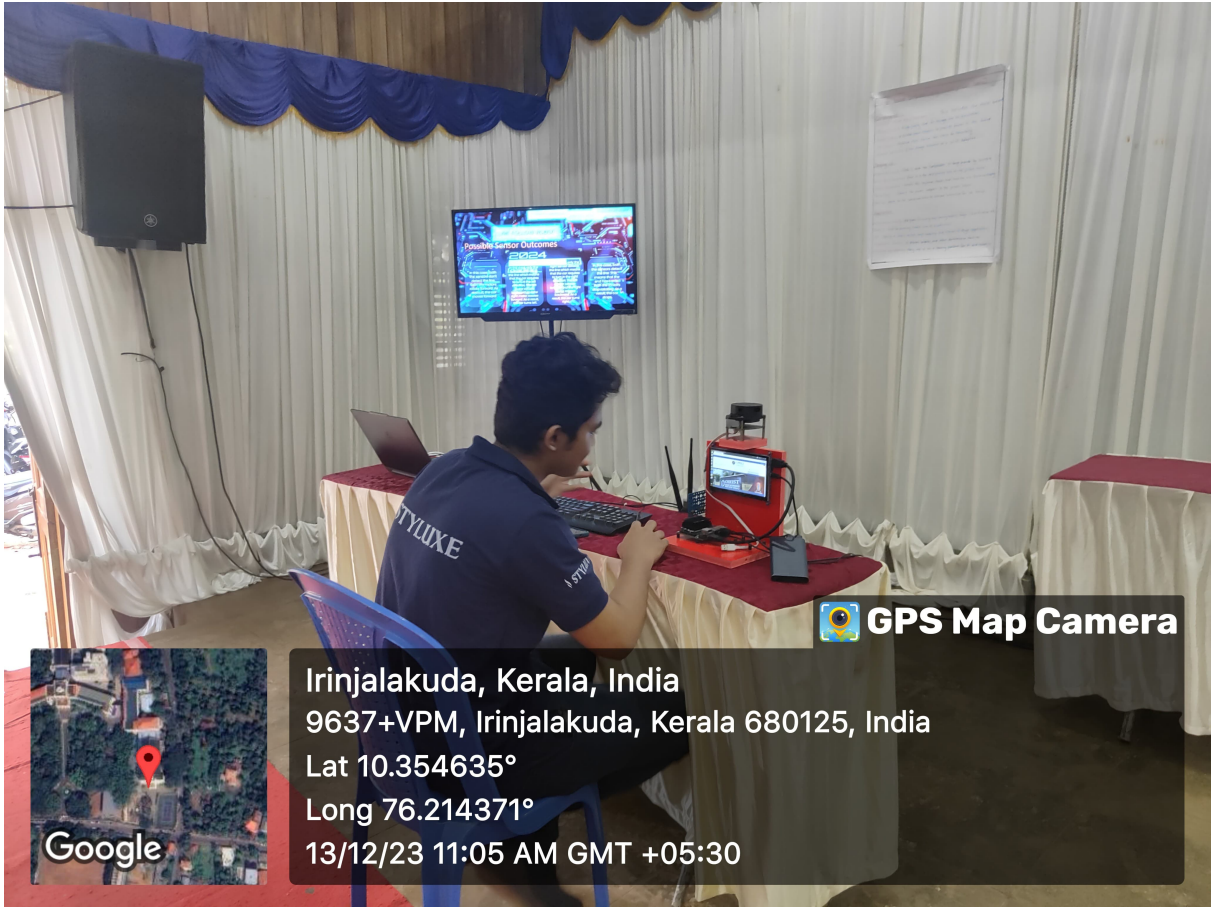



 **GPS Map Camera**

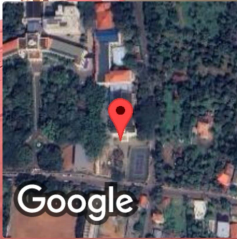


Google

Irinjalakuda, Kerala, India
 9637+VPM, Irinjalakuda, Kerala 680125, India
 Lat 10.354719°
 Long 76.214496°
 13/12/23 11:03 AM GMT +05:30



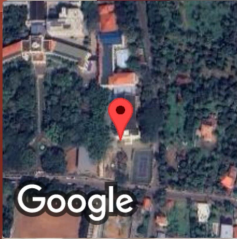
 **GPS Map Camera**



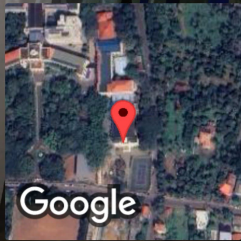
Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354635°
Long 76.214371°
13/12/23 11:05 AM GMT +05:30



 **GPS Map Camera**



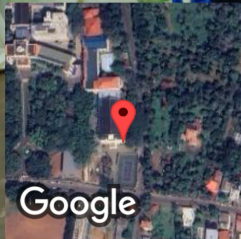
Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354662°
Long 76.214332°
13/12/23 11:08 AM GMT +05:30



Google

Irinjalakuda, Kerala, India
 9637+VPM, Irinjalakuda, Kerala 680125, India
 Lat 10.354714°
 Long 76.214375°
 13/12/23 01:56 PM GMT +05:30

GPS Map Camera




Google

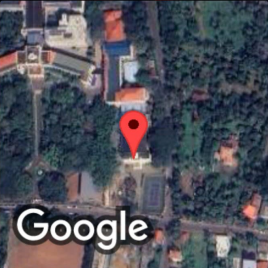
Irinjalakuda, Kerala, India
 9637+VPM, Irinjalakuda, Kerala 680125, India
 Lat 10.354684°
 Long 76.214512°
 13/12/23 03:50 PM GMT +05:30

GPS Map Camera



LASER TAG

 GPS Map Camera



Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.35471°
Long 76.214372°
13/12/23 01:57 PM GMT +05:30



Day 2

IT Exhibita

The second day of the tech fest, Zephyrus, witnessed the continuation of the exhibition, which had been a resounding success on the first day. The exhibition was held once again, attracting a diverse array of visitors, including students from various institutions and other interested parties. On this day, the students of Christ Vidhyanikethan, a renowned institution known for its innovative approach to education, visited the stalls. These students, renowned for their intellectual curiosity and keen interest in cutting-edge technologies, were eager to explore the various exhibits and learn from the insights provided by the stall holders. The exhibition was a veritable treasure trove of knowledge and inspiration, offering students a unique opportunity to witness first-hand the practical applications of technology in various fields. The stall holders were delighted to engage with the students, sharing their expertise and experiences, thereby fostering a spirit of innovation and learning. The second day of the exhibition was a testament to the enduring appeal of such events, providing students with a platform to explore, learn, and grow. The success of the exhibition on this day was a clear indication that the tech fest organizers had successfully created a memorable and enriching experience for all in attendance.

Stalls

The stalls that were set up on the periphery of the auditorium were as follows

Virtual Mouse

A virtual mouse is a device that allows users to control a cursor on a screen using the movement of their index finger and middle finger, rather than a traditional mouse that relies on a physical ball or sensor to track movement. This technology has been implemented in various applications, including video games, operating systems, and remote controls for televisions and set-top boxes. In the context of the tech fest, the virtual mouse was demonstrated by the operators of a stall, who showcased the device's capabilities by playing a game of chess using only their index and middle fingers. The operators skillfully maneuvered their fingers around the display, demonstrating the precision and control that the virtual mouse allows for. The virtual mouse offers several advantages over traditional mice, including increased comfort, reduced risk of repetitive strain injury, and the ability to operate in environments with limited physical space. Additionally, the virtual mouse can be easily integrated into various applications, making it a versatile solution for a wide range of users and use cases. The demonstration of the virtual mouse at the tech fest was a testament to the ingenuity and creativity of the stall operators, who had successfully showcased the device's potential to revolutionize the way we interact with technology. The success of this demonstration was a clear indication that the tech fest had succeeded in its mission to foster a spirit of innovation and learning, inspiring the next generation of leaders and thinkers.

Rock Paper Scissors

The concept of playing rock, paper, scissors with a computer via interfacing through the camera's visual information involves using computer vision technology to allow the user to make hand gestures representing rock, paper, or scissors, which are then interpreted by the computer to determine the outcome of the game. This interactive and innovative application of computer vision technology enables a fun and engaging user experience, where the computer's response is based on the hand gesture recognized through the camera's visual input. In this setup, the user's hand gestures are captured by the camera, and the computer's algorithm processes the visual information to identify the specific gesture being made. Once the user's gesture is recognized, the computer then generates its own corresponding gesture, simulating the traditional game of rock, paper, scissors. The outcome of the game is determined based on the rules of the game, where rock beats scissors, scissors beats paper, and paper beats rock. This interactive demonstration not only showcases the capabilities of computer vision technology in interpreting and responding to visual input, but also provides an entertaining and immersive experience for the user. It exemplifies the potential applications of computer vision in creating interactive and engaging user interfaces, and highlights the fusion of technology and traditional games to deliver a unique and enjoyable user experience.

Audio to Sign Language

The concept of audio to sign language involves using computer technology to convert audio input into sign language, which is then displayed on the screen through an animated character. This innovative application of technology enables individuals who are deaf or hard of hearing to communicate more effectively with those who do not know sign language. In this setup, the computer accepts input in the form of text, which is then processed by an algorithm that converts the text into sign language. The sign language is then displayed on the screen through an animated character, which simulates the movements and gestures of a sign language interpreter. The character's movements are synchronized with the audio input, creating a seamless and natural user experience. This application of technology has the potential to revolutionize the way in which individuals who are deaf or hard of hearing communicate with others. It provides a more accessible and inclusive means of communication, enabling individuals to participate more fully in social and professional settings. Additionally, it highlights the potential of technology to bridge communication barriers and promote greater understanding and empathy between individuals from different backgrounds. The audio to sign language demonstration at the tech fest was a testament to the power of technology to create innovative and impactful solutions to real-world problems. It exemplified the fusion of technology and social responsibility, and highlighted the potential of technology to create a more inclusive and equitable society.

Changing Volume Using Hand Gesture

Changing the volume using hand gestures is a concept that leverages computer vision technology to control the volume of audio playback based on the position of the thumb and index finger, as detected by the camera. This innovative approach allows users to adjust the volume intuitively and seamlessly, without the need for physical volume controls. In this setup, the camera captures the user's hand gestures, specifically the position of the thumb and index finger. The computer's algorithm processes the visual information to determine when the thumb and index finger are close to each other, indicating a decrease in volume, and when they are far apart, indicating an increase in volume. Based on this information, the computer adjusts the audio playback volume accordingly. This concept offers several advantages, including:

1. Intuitive control: Hand gestures are a natural and intuitive way for users to interact with technology, making it easier for users to control the volume.
2. Seamless integration: The use of computer vision technology allows for a smooth and responsive adjustment of the volume based on the user's hand gestures.
3. Customizable sensitivity: Users can adjust the sensitivity of the system to better suit their preferences, allowing for more precise control of the volume.

The demonstration of changing the volume using hand gestures at the tech fest was a testament to the power of computer vision technology to create innovative and responsive user interfaces. It exemplified the fusion of technology and intuitive design, and highlighted the potential of technology to elevate the user experience and promote greater efficiency in various applications.

Flappy Bird Game

Flappy Bird is a popular mobile game that involves navigating a bird through a series of obstacles by tapping the screen to make the bird flap its wings. The game is known for its simple yet addictive gameplay, and has gained a massive following since its release in 2013. In the game, the player controls a bird that must navigate through a series of pipes by flapping its wings. The player must tap the screen to make the bird flap its wings, and must time the taps carefully to avoid colliding with the pipes. The game becomes progressively more difficult as the player progresses, with the pipes becoming more numerous and the gaps between them becoming smaller. The game's popularity can be attributed to its simple yet challenging gameplay, as well as its colorful and engaging graphics. The game has been praised for its ability to provide a quick and satisfying gaming experience, making it a popular choice for casual gamers. The demonstration of the Flappy Bird game at the tech fest was a testament to the enduring appeal of this classic game. It exemplified the fusion of

technology and entertainment, and highlighted the potential of games to provide a fun and engaging user experience. The success of the demonstration was a clear indication that the tech fest had succeeded in its mission to foster a spirit of innovation and learning, inspiring the next generation of leaders and thinkers.

Foggy Road Alert System

The Foggy Road Alert System is an innovative safety solution designed to enhance visibility and mitigate the risks associated with driving in foggy conditions. During the tech fest, this system was demonstrated using a miniature model of a parking lot to showcase its functionality and potential real-world applications. The system operates by utilizing various sensors, such as fog density sensors and proximity sensors, to detect the presence and severity of fog in the surrounding environment. Once fog is detected, the system activates visual and auditory alerts to warn drivers and pedestrians of the reduced visibility conditions. These alerts can be in the form of flashing lights, illuminated signs, or audible warnings, providing crucial information to help individuals make informed decisions and adapt their behavior to the prevailing conditions. The miniature model of a parking lot served as an effective visual aid to demonstrate how the Foggy Road Alert System can be deployed in real-world settings. By simulating foggy conditions within the model, the demonstration illustrated how the system's alerts can effectively communicate the presence of fog and help prevent accidents or collisions. Overall, the demonstration of the Foggy Road Alert System using the miniature model of a parking lot exemplified the potential of technology to enhance safety and situational awareness in adverse weather conditions. It underscored the importance of proactive safety measures and the role of innovation in addressing real-world challenges, particularly in the context of road safety.

Third Eye & Drawbot

"Third Eye" is a revolutionary smart device designed to assist visually impaired individuals in their daily lives. It incorporates cutting-edge technology, including deep learning and artificial intelligence, to provide a range of features and capabilities aimed at empowering and supporting visually impaired users.

Key features of the "Third Eye" include:

1. Assistance for everyday life: The device aims to alleviate the difficulties faced by visually impaired individuals, providing them with efficient and safe guidance in various activities.
2. Smart AI assistant: The inclusion of an AI assistant enables the device to understand vocal commands and provide necessary information through auditory feedback, enhancing user interaction and usability.

3. High accuracy in image detection: Utilizing advanced image detection technology, the device offers precise identification of objects and obstacles in the user's environment.
4. Hybrid power charging: The "Third Eye" incorporates hybrid power charging, utilizing both solar and battery power sources for enhanced convenience and sustainability.
5. Stylish and user-friendly design: The smart glasses are designed to be both smart and stylish, ensuring ease of use and a positive user experience.
6. Global positioning system (GPS): Integration of GPS technology enables accurate location tracking and navigation support for users.
7. Easy to use: The device is designed with user-friendliness in mind, ensuring that visually impaired individuals can easily utilize its features and capabilities.

The "Third Eye" represents a significant advancement in assistive technology, offering a comprehensive solution to help visually impaired individuals navigate their surroundings safely and effectively. By leveraging deep learning, artificial intelligence, and advanced sensor capabilities, the device aims to provide a smart and supportive environment for its users.

The Drawbot is a unique and innovative robot that is designed to create images in the traditional analog paper and pencil format. This robot is equipped with a specialized drawing arm that can be programmed to create intricate and detailed images, using a variety of different pencils and pens. The Drawbot operates by receiving input from a computer or other device, which is used to program the robot's movements and drawing patterns. Once the program is initiated, the robot's arm moves across the paper, creating lines and shapes that gradually form into a complete image. The Drawbot is a versatile and flexible tool that can be used for a wide range of applications, including art, design, and engineering. It offers several advantages over traditional drawing methods, including increased precision, speed, and consistency. Additionally, the Drawbot can be programmed to create complex and intricate designs that would be difficult or impossible to achieve by hand. The demonstration of the Drawbot at the tech fest was a testament to the power of technology to create innovative and impactful solutions to real-world problems. It exemplified the fusion of technology and art, and highlighted the potential of technology to enhance creativity and self-expression. The success of the demonstration was a clear indication that the tech fest had succeeded in its mission to foster a spirit of innovation and learning, inspiring the next generation of leaders and thinkers.

Single Board Computer Using NVIDIA Action Nano

The NVIDIA Jetson Nano is a single board computer designed for AI and machine learning applications. It features a quad-core ARM Cortex-A57 CPU, along with a 128-core NVIDIA

Maxwell GPU, making it a powerful platform for running AI workloads at the edge. The Jetson Nano is known for its low power consumption and small form factor, making it suitable for a wide range of embedded and IoT applications. The Jetson Nano is equipped with 4GB of LPDDR4 memory and provides connectivity options such as Gigabit Ethernet, USB 3.0, and HDMI. It also supports popular AI frameworks such as TensorFlow, PyTorch, and Caffe, enabling developers to easily deploy and run their AI models on the device. The use of the NVIDIA Jetson Nano in a single board computer configuration offers a compact and efficient solution for AI and machine learning tasks, making it ideal for applications such as robotics, smart cameras, and intelligent IoT devices. Its combination of high-performance computing and AI capabilities in a small form factor makes it a popular choice for developers and hobbyists looking to integrate AI into their projects.

TV Remote Controller Robot

Components:

- **Arduino Uno board:** Acts as the brain of the car, receiving signals and controlling the motors.
- **L293 Motor driver:** Helps control the motors' direction and speed.
- **Battery:** Powers the Arduino and motors.
- **Metal body:** Provides the structure for the car.
- **Wheels:** Enables movement.
- **Infrared receiver:** Allows the Arduino to receive signals from a remote.

Steps:

1. **Assemble the Car:** Build the physical structure of the car by attaching the wheels to the motors and mounting them on the metal body.
2. **Connect the Components:** Wire the motors to the L293 motor driver, and then connect the motor driver to the Arduino Uno. Connect the infrared receiver to the Arduino as well.
3. **Code the Arduino:** Write code for the Arduino Uno to interpret signals received from the infrared receiver. The code should include commands to control the motors based on the signals received.
4. **Test and Debug:** Upload the code to the Arduino and test it by sending commands from a compatible remote. Debug any issues encountered during testing.
5. **Fine-tuning and Enhancements:** Adjust motor speeds, refine control functions, and consider adding additional features like sensors.

Self Balancing Robot

Components Needed:

1. Arduino (Uno or similar)
2. MPU6050 (gyroscope and accelerometer sensor)
3. Motor driver
4. Gear motors or DC motors with encoders
5. Chassis
6. Power source (battery or adapter)

7. Jumper cables

Steps to Build:

8. Construct the Chassis:
 - Assemble a stable chassis to hold the motors, Arduino, and sensors securely.
9. Mount Motors and Wheels:
 - Attach the motors to the chassis, ensuring they can drive the wheels effectively.
10. Connect MPU6050:
 - Wire the MPU6050 sensor to the Arduino. The sensor provides information about the robot's tilt and acceleration.
11. Motor Driver Setup:
 - Connect the motor driver to the Arduino and motors. This enables the Arduino to control the motors' speed and direction.
12. Write and Upload Code:
 - Develop code that reads data from the MPU6050 sensor to determine the robot's tilt and uses this data to adjust the motors' speed, aiming to maintain balance.
 - Implement a PID (Proportional-Integral-Derivative) control algorithm for stability.
 - Upload the code to the Arduino.
13. Power and Test:
 - Power up the robot using a suitable power source.
 - Test the robot's balance by gently tilting it and observing if it adjusts to maintain balance.

14. Fine-Tuning and Calibration:

- Fine-tune the PID values and sensor calibration to improve the robot's balance and responsiveness.

Applications

15. Educational Tool: Use it as an educational aid to demonstrate concepts of robotics, sensor integration, and control systems in schools or workshops.
16. Assistance for Physically Impaired: Develop a more advanced version to assist individuals with mobility issues by providing a stable platform for support or transportation.
17. Surveillance and Security: Equip the robot with sensors and cameras to create a mobile surveillance system for monitoring indoor spaces, enhancing security.
18. Delivery Robot: Adapt the self-balancing mechanism for delivery purposes in a controlled environment, transporting small items from one point to another efficiently.
19. Entertainment and Performance: Program the robot to perform tricks or entertain by showcasing its balance and movement capabilities, appealing to audiences at events or shows.

Fire Detector with Automatic Emergency Exit

Components:

- 1.Arduino Uno
- 2.4 led
- 3.5v relay module
- 4.Micro servo motor

5.IR sensor

- 6.Bread board
- 7.Jumper cables

Working

1. Set Up the Components:
 - Connect the Arduino Uno to the breadboard.
 - Place the IR sensor on the breadboard.
 - Connect the 4 LEDs and the micro servo motor to the breadboard using jumper cables.
 - Connect the relay module to the Arduino Uno.

2. IR Sensor Setup:

- Wire the IR sensor to the Arduino. Connect its VCC to 5V, GND to GND, and the signal pin to a digital pin on the Arduino (like Pin 2).

3. LED Connection:

- Connect the positive (longer leg) of each LED to a digital pin on the Arduino using a current-limiting resistor. Connect the negative (shorter leg) of all LEDs to the GND.

4. Servo Motor Connection:

- Connect the servo motor's signal pin to a digital pin on the Arduino (e.g., Pin 9), VCC to 5V, and GND to GND.

5. Relay Module Setup:

- Wire the relay module to the Arduino according to its datasheet or a provided guide. Usually, it involves connecting VCC and GND pins to 5V and GND on the Arduino and connecting the signal pin to a digital pin (e.g., Pin 7).

6. Coding:

- Write a code that reads the IR sensor's input. When motion is detected, activate the servo motor (simulate doorbell ringing) and light up specific LEDs for indication. Also, trigger the relay module to create the doorbell sound effect.

7. Upload Code:

- Upload the code to your Arduino Uno.

8. Testing:

- Test the system by moving in front of the IR sensor. You should see the LEDs light up, the servo motor move, and the relay module simulate the doorbell sounds.

Applications

1.Home Security Enhancement:

Use this system as an added security feature by placing it near your entrance. It can alert you to movement outside your door, providing a notification when someone approaches.

2.Assistance for the Elderly or Disabled:

For individuals with mobility issues, this system can serve as an accessible doorbell, allowing them to be alerted when someone is at the door without the need to physically reach the doorbell.

3.Interactive Display or Signaling System:

Employ the LEDs as an interactive display, using different lighting patterns or colors

to signify different events or messages (e.g., specific patterns for specific guests or delivery notifications).

4. Educational Tool:

It can serve as an educational tool, helping students learn about sensors, basic circuits, and programming concepts in a practical and engaging way.

Automatic Dustbin

Components Needed:

1. Arduino Uno
2. Ultrasonic sensor
3. Servo motor
4. Dustbin or container
5. Jumper cables
6. Power source

Steps to Build:

7. Set Up the Hardware:
 - Fix the ultrasonic sensor at the top of the dustbin, facing downwards to detect objects.
 - Connect the ultrasonic sensor's VCC and GND pins to the respective 5V and GND pins on the Arduino.
 - Connect the sensor's Echo and Trig pins to any two digital pins on the Arduino (e.g., pins 2 and 3).
 - Connect the servo motor's signal pin to another digital pin (e.g., pin 9), VCC to 5V, and GND to GND.
8. Code the Arduino:
 - Write code that reads the distance detected by the ultrasonic sensor.
 - Set a threshold distance; when an object is within this range, trigger the servo motor to open the lid of the dustbin.
 - After a certain delay or when the object moves away, close the lid.
9. Upload the Code:
 - Upload the code to the Arduino board.

10. Testing:

- Test the system by placing an object within the specified range of the ultrasonic sensor. The servo motor should open the lid of the dustbin automatically. When the object is removed or moves away, the lid should close.

Applications

11. Home Use: Simplifies waste disposal by automatically opening the lid when someone approaches, promoting cleanliness and convenience.
12. Public Spaces: Implement in public areas like parks, malls, or streets to encourage proper waste disposal and maintain cleanliness.
13. Smart Waste Management: Incorporate IoT capabilities to monitor waste levels and optimize garbage collection schedules for more efficient city waste management.
14. Healthcare Settings: Utilize in hospitals or clinics to ensure touchless waste disposal, maintaining a hygienic environment.
15. Educational Tool: Employ as a learning project in schools or workshops to teach about sensors, automation, and waste management technologies.

Hand Gesture Robot

Components:

1. Arduino Uno Board: Acts as the main microcontroller.
2. Gesture Recognition Sensor: This could be a camera or another sensor capable of capturing and recognizing hand gestures. Popular choices include cameras or sensors with image processing capabilities.
3. Motor Drivers: To control the robot's motors and actuators.
4. Motors and Wheels (or Legs): Responsible for the robot's movement.
5. Power Supply Typically, a battery to power the Arduino and the motors.

Steps:

1. Connect Gesture Recognition Sensor:

- Wire the gesture recognition sensor (camera or other) to the Arduino Uno. Follow the sensor's datasheet or documentation for wiring details.

1. Program Arduino Uno:

- Write a program for Arduino that reads data from the gesture sensor, processes it, and translates recognized gestures into motor control commands. You might need additional libraries or modules for gesture recognition.

2. Connect Motor Drivers:

- Wire the motor drivers to the Arduino Uno. Connect the motors to the motor drivers.
3. Integrate Motor Control:
 - Modify the Arduino program to include motor control logic based on recognized gestures. Define how different gestures correspond to robot movements.
 4. Power Supply:
 - Connect the power supply (battery) to the Arduino and the motors, ensuring it provides enough power for all components.
 5. Testing:
 - Upload the program to the Arduino Uno and test the system. Ensure that the robot responds appropriately to different hand gestures.
 6. Optimization and Refinement:
 - Refine your code, adjust gesture recognition thresholds, and optimize the robot's movements for better performance.
 7. Optional Features:
 - Consider adding additional features such as wireless communication, feedback sensors, or a user interface if desired.

Line Following Robot

A line follower robot, powered by an Arduino and IR sensors, autonomously tracks and follows a designated line until its end. Ideal for industrial use, it safely transports products and aids in risky environments, such as handling radioactive materials.

Components:

- 2WD Car Chassis
- Wheels
- DC Motors
- UNO
- L293D
- IR Sensor x2
- Battery Holder
- F-F Jumper Wire

- Black Tape
Working:
- Line follower robot is one kind of autonomous robot which follows a line until that line exists.
- Reading the pre-defined line by IR sensor array which is installed on the front-down side of the robot and sends those readings to the Arduino. The ATmega microcontroller which is built in on Arduino analyzes those readings and do the particular operations.
- Three wheels are used, two wheels are on the back part connected with the motors and one independent wheel on the front-middle part of the robot.
- Line follower robots can be used in many industrial purposes. It can be used in carrying heavy and risky products. Radioactive products transportation inside a factory is very much risky for human life. A line follower robot can help in that section.

There are four possible sensor outcomes:

Case 1:- In this case, both the sensors don't detect the line. Both the motors rotate forward. As a result, the car moves forward.

Case 2:- In this case, only the left sensor detects the line which means that the car requires to turn in the left direction. The left motor rotates backward and the right motor rotates forward. As a result, the car turns left.

Case 3:- In this case, only the right sensor detects the line which means that the car requires to turn in the right direction. The left motor rotates forward and the right motor rotates backward. As a result, the car turns right.

Case 4:- In this case, both the sensors detect the line. This means that the end has come. Both the motors stop rotating. As a result, the car stops.

Home Security System

Components Needed:

1. Arduino Uno
2. GSM Module
3. Voltage Regulator Step Down
4. PIR Sensor
5. Buzzer
6. LED
7. 220k Resistors

Steps to build:

8. **Arduino Setup:** Connect your Arduino board to a power source and upload a basic sketch to ensure it's functioning. Install the Arduino IDE on your computer if you haven't already.
9. **Sensor Connections:** Connect PIR motion sensor to the Arduino using appropriate pins. Ensure proper power and ground connections.
10. **Alarm System:** Connect an alarm or buzzer to the Arduino. Program it to activate when sensors detect unauthorized entry or movement.
11. **Power Supply:** Set up a reliable power supply for your Arduino and components. Consider using an external power source or a battery, especially if you want the system to function during power outages.
12. **Programming Logic:** Write the Arduino code to define the logic of your security system. Include routines to monitor sensors and activate the alarm. You may also implement features like SMS notifications using GSM modules.
13. **Testing:** Test each component individually and then the entire system. Ensure sensors detect motion or intrusion and the alarm activates as intended.
Applications:
14. **Intruder Detection and Alert:** PIR sensors can detect motion, and when an intrusion is detected, the system can send an alert via SMS through the GSM module to the homeowner's mobile phone.
15. **Remote Monitoring:** The GSM module allows for remote monitoring of the security system. Homeowners can receive real-time updates on their phones, enabling them to stay informed about the security status of their home from anywhere.
16. **Automation Integration:** Integrate the security system with home automation features. For example, the system could automatically turn on lights when motion is detected, creating a deterrent effect for potential intruders.
17. **SOS Feature:** Incorporate a panic button that, when pressed, triggers an emergency alert via the GSM module. This can be useful in situations where immediate help is required.

Smart Car Parking

Components Needed:

- Arduino Mega
- Ultrasonic sensors (multiple, depending on the parking slots)
- Micro servo motor

- LEDs
 - Breadboard and jumper wires
 - Resistors (for the LEDs)
- Steps:
1. Setting up Ultrasonic Sensors:
 - Connect ultrasonic sensors to the Arduino Mega using jumper wires.
 - Power the sensors and ensure they are correctly interfaced with the Arduino.
 2. Connecting LEDs:
 - Wire the LEDs to the Arduino Mega, making sure to use appropriate resistors to prevent burnout.
 - LEDs will indicate the availability of parking slots.
 3. Configuring the Servo:
 - Connect the micro servo to the Arduino Mega.
 - The servo will control the barrier arm or gate of the parking lot.
 4. Writing Arduino Code:
 - Write code to read data from the ultrasonic sensors to detect cars in the parking slots.
 - Use the servo to control the barrier arm based on parking availability.
 - Control the LEDs to signal which parking spots are vacant or occupied.
 5. Testing and Calibration:
 - Upload the code to the Arduino Mega.
 - Test the system by simulating cars entering and leaving the parking spaces.
 - Adjust the code or sensor positions if needed for accurate readings.

Application:

 - Smart Parking Management:
 - The system can manage parking spaces efficiently by indicating which slots are free or occupied using LEDs.
 - Automate the opening and closing of the parking gate/barrier with the servo motor based on availability.
 - Real-time Data and Alerts:

- Collect data on parking availability for analysis and optimization.
 - Send alerts or notifications to a mobile app or display board indicating available spaces to drivers.
 - Efficient Space Utilization:
 - Optimize parking space usage by efficiently managing the available slots, reducing congestion and streamlining entry and exit.
- By integrating these components and functionalities, the smart car parking system enhances user experience and contributes to efficient parking space management

Prizes

The first prize was won by the team consisting of:

- Chithira T.C
- Arun Kumar N.V
- Allen Don S. Thekkan
- Adarsh M.D
- Sagar R

The second prize was won by two teams consisting of:

1. III BSc Computer Science

- Shanik YS
- Steeve Wilson
- Clint Rovea Ross
- Parvathy Kuruppath
- Mohammed Faris

2. I BSc Computer Science

- Joseph Harry
- Sagar K
- Sachu TS
- Madhav M

Images

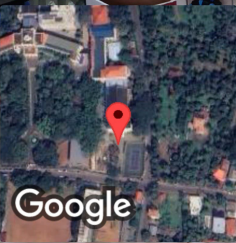






 GPS Map Camera

Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.35455°
Long 76.214393°
13/12/23 01:48 PM GMT +05:30



Google




 GPS Map Camera

Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354716°
Long 76.214382°
14/12/23 01:40 PM GMT +05:30



Google



 GPS Map Camera



Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354779°
Long 76.214348°
14/12/23 01:30 PM GMT +05:30



 GPS Map Camera



Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354749°
Long 76.21438°
14/12/23 01:28 PM GMT +05:30



 **GPS Map Camera**



Google

Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354743°
Long 76.214344°
14/12/23 01:27 PM GMT +05:30



 **GPS Map Camera**



Google

Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354668°
Long 76.214348°
14/12/23 01:21 PM GMT +05:30



Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354708°
Long 76.214399°
14/12/23 11:25 AM GMT +05:30



Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354696°
Long 76.214421°
14/12/23 11:24 AM GMT +05:30





AUDIO SIGN LANGUAGE TRANSLATOR
It is a hand system which assists the speech in sign and converts it to corresponding audio language for benefit of hearing and deaf people.

METHODOLOGY
1. Audio input is received from microphone and processed.
2. The audio is converted into text using speech-to-text API.
3. The text is then converted into sign language using a pre-trained model.
4. The sign language is displayed on the screen.

FUTURE SCOPE
1. The system can be extended to support multiple languages.
2. The system can be integrated with other assistive technologies like Braille display, screen reader, etc.
3. The system can be used for educational purposes to help deaf students learn sign language.

 **GPS Map Camera**



Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354766°
Long 76.214383°
14/12/23 11:10 AM GMT +05:30



 GPS Map Camera

Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354698°
Long 76.214405°
14/12/23 10:59 AM GMT +05:30





Day 3

Events

Secret Shadows (Group of 5)

The "Treasure Hunt" competition is a test of aptitude and problem-solving skills, designed to challenge the participants in a fun and engaging manner. The competition rules specify that individual participation will not be entertained, with a maximum of five participants allowed on each team. It is required that at least one of the team members register the form for participation. The competition welcomes multiple teams from the same college, fostering a spirit of camaraderie and healthy competition. However, student participants visiting from other colleges are required to register online, while those from Christ College will have the convenience of spot registration. To ensure a fair and respectful environment, the rules emphasize that any misconduct will lead to the disqualification of the participants involved. As the competition progresses, only four teams will qualify for the final level, adding an element of excitement and challenge to the event. Throughout the competition, the decision of

the jury panel will remain final and binding, ensuring that the rules and spirit of the competition are upheld.

Clash of Geeks (Individual)

Each team can consist of a maximum of 5 members, with each participant required to register through the provided registration link. It is essential for all participants to bring their own laptops for the competition. In the event of any misconduct, the entire team will face disqualification. The competition will feature knockout rounds before the final round, and the decision of the jury panel will serve as the ultimate judgment. In this competition, teamwork and individual conduct are of utmost importance. By adhering to the rules and regulations, participants can ensure a fair and competitive environment. The knockout rounds will test the skills and abilities of each team, leading up to the final round where the jury panel's decision will ultimately determine the winners. It is crucial for all participants to uphold the highest standards of sportsmanship and professionalism throughout the competition.

E-Football (Individual)

The E-Football competition at the Zephyrus Tech Fest of 2023, hosted by Christ College Irinjalakuda, is set to be an exciting and competitive event. The contest is only open to registered individual participants, emphasizing the importance of individual skill and talent. Participants should register through the provided online registration link, ensuring a smooth and organized entry process.

The competition will be in knockout format, adding an element of challenge and excitement to the event. Participants are allowed to use only 3 Epic/Big Time/Show Time cards, ensuring a level playing field for all involved. To ensure fair play and cybersecurity, the "Sophos Intercept X for Mobile" application must be installed by all participants. Any malware found on devices will lead to automatic disqualification, emphasizing the importance of cybersecurity and fair play.

In the event of misconduct, the individual will be disqualified, emphasizing the importance of sportsmanship and integrity throughout the competition. The decision of the jury panel will remain final and binding, ensuring that the rules and spirit of the competition are upheld. The competition promises to be an engaging and challenging event, providing participants with the opportunity to showcase their gaming skills and compete against their peers in a fair and competitive environment.

The Kube (Individual)

The competition is designed to be a test of individual skill and speed, as team participation will not be entertained. It will consist of two rounds, with the judgment based on the minimal

time taken to solve the cube. Participants who qualify the first round will have the opportunity to showcase their abilities in the final round. At the venue, the committee will provide the cube for the competition, ensuring a level playing field for all participants. Additionally, detailed instructions regarding the setting of the timer will be given to the participants at the time of the competition. This will help ensure that the timing process is fair and transparent for all involved. It's important to note that the decision of the jury panel will hold significant weight throughout the competition, as it shall remain final and binding. This will add an extra layer of excitement and anticipation to the event, as participants strive to showcase their skills and impress the judges with their speed and precision in solving the cube.

Blitz (Individual)

This competition is designed to test the knowledge and skills of individual participants, as team participation will not be entertained. The quiz will consist of three sections, with the preliminary round being a computer-based test (offline) consisting of 25 questions. The top scorers from this round will be qualified to move on to the next round. Each question in the quiz will carry 2 marks, with a negative (-1) mark for each wrong answer. This will encourage participants to think carefully before answering each question, as incorrect responses will result in a deduction of marks. It is important to note that the usage of any electronic devices, such as mobile phones, tablets, or any other digital devices, is strictly prohibited during the competition. This will ensure that all participants are on a level playing field and that the competition is fair and transparent. Any malpractices found during the event will lead to disqualification, emphasizing the importance of honesty and integrity throughout the competition. The decision of the jury panel will remain final and binding, adding an extra layer of excitement and anticipation to the event as participants strive to showcase their knowledge and skills. Overall, this competition provides an excellent opportunity for individuals to test their knowledge and compete against their peers in a fair and challenging environment.

BGMI (Group of 4)

The Battlegrounds Mobile India competition at the Zephyrus Tech Fest of 2023, hosted by Christ College Irinjalakuda, is set to be an exhilarating and competitive event. The contest will feature squad games consisting of 4 players, adding an element of teamwork and strategy to the competition. To participate, contestants must register online through the provided registration link, ensuring a smooth and organized entry process. The game will be played in classic matches, providing a familiar and challenging environment for the participants. To ensure fair play and cybersecurity, the "Sophos Intercept X for Mobile" application must be installed by all contestants. Any type of misconduct from a player can lead to the entire squad

being disqualified, emphasizing the importance of sportsmanship and integrity throughout the competition. Contestants are not allowed to bring or use tablet devices, including iPads, during the competition. This rule is in place to maintain a level playing field and to ensure that all participants are using the same type of device. The decision of the jury panel will remain final and binding, ensuring that the rules and spirit of the competition are upheld. The competition promises to be an engaging and challenging event, providing participants with the opportunity to showcase their gaming skills and teamwork in a competitive and fair environment.

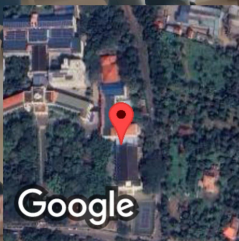
Images:





 GPS Map Camera

Irinjalakuda, Kerala, India
9647+2PF, Irinjalakuda, Kerala 680125, India
Lat 10.355118°
Long 76.21432°
15/12/23 12:24 PM GMT +05:30

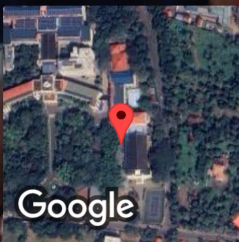


Google



 GPS Map Camera

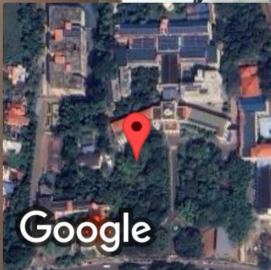
Irinjalakuda, Kerala, India
9647+2PF, Irinjalakuda, Kerala 680125, India
Lat 10.354997°
Long 76.214225°
15/12/23 11:13 AM GMT +05:30



Google



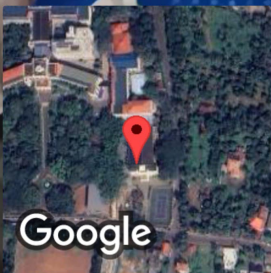
 **GPS Map Camera**



Irinjalakuda, Kerala, India
9647+48F, Christ College Road, Irinjalakuda, Kerala 680125,
India
Lat 10.355174°
Long 76.213212°
15/12/23 10:49 AM GMT +05:30



 **GPS Map Camera**



Google

Irinjalakuda, Kerala, India
9637+VPM, Irinjalakuda, Kerala 680125, India
Lat 10.354773°
Long 76.214343°
15/12/23 10:41 AM GMT +05:30



Day 4

Events

Techathon (Group of 5)

The hackathon, a prominent event within the Zephyrus Tech Fest of 2023 at Christ College Irinjalakuda, is set to be an exciting and competitive showcase of technological skill and innovation. Each team is allowed a maximum of 5 members, with one participant required to register the team through the provided registration link. It is essential for all participants to bring their own laptops to the event, as no internet will be provided, and students must use their own internet connection if needed.

To ensure a fair and respectful environment, the rules emphasize that any misconduct will lead to the disqualification of the entire team. The competition will feature knockout rounds before the final round, adding an element of challenge and excitement to the event.

Throughout the competition, the decision of the jury panel will remain final and binding, ensuring that the rules and spirit of the competition are upheld.

The hackathon promises to be a thrilling and competitive event, providing participants with the opportunity to showcase their technological prowess and problem-solving abilities. With the emphasis on teamwork, innovation, and fair play, the event is set to be a highlight of the Zephyrus Tech Fest, offering an engaging and challenging experience for all involved.

DesignX (Individual)

The web designing competition at the Zephyrus Tech Fest of 2023, hosted by Christ College Irinjalakuda, is set to be a creative and challenging event. The competition rules specify that team participation will not be entertained, emphasizing the focus on individual skill and talent. Late entries will be disqualified, ensuring that all participants have an equal chance to submit their best work.

The contest will be open only to registered participants, with a maximum of 1 entry allowed per person. Participants are required to design their site using Google Sites or Wix, with the choice left up to the participant. Usage of pre-built sites/templates is prohibited, ensuring that all entries are original and created within the given timeframe.

To ensure a fair and respectful environment, the rules emphasize that any plagiarism of content will lead to the disqualification of the participants involved. The submissions will be graded based on the content, text, readability, responsiveness, and other aesthetics, ensuring a comprehensive and fair assessment of each entry. The decision of the jury panel will remain final and binding, ensuring that the rules and spirit of the competition are upheld.

The web designing competition promises to be an engaging and challenging event, providing participants with the opportunity to showcase their creativity and technical skills. With the emphasis on originality, skill, and fair play, the event is set to be a highlight of the Zephyrus Tech Fest, offering an entertaining and competitive experience for all involved.

Snap It (Individual)

The photography competition is an opportunity for participants to showcase their artistic skills and creativity. As team participation is not allowed, the focus is on individual entries. Late entries will be disqualified, ensuring that all participants have an equal chance to submit their best work. The competition is open only to registered participants, with a maximum of five entries allowed per person. To submit their entries, participants should email their photographs to the designated email address in JPEG, RAW, or DNG format. All editing and modifications are prohibited, and participants must not tamper with the EXIF data, which includes details about the camera make, model, aperture, shutter, and ISO settings. Images should not have any watermarks or captions on them, as copied entries, if found with valid proof, will be disqualified. The final judgment will be based on the presentation of the entries,

ensuring that the competition remains a test of each participant's photographic skills and creativity.

Face Invasion (2 Members)

The face painting competition, a captivating event within the Zephyrus Tech Fest of 2023 at Christ College Irinjalakuda, is set to be a colorful and creative showcase of artistic talent. Each team must consist of two competitors: the artist and the model. It is the responsibility of the artists to provide their own models for the competition. Competitors are required to supply all necessary equipment and products, including paints, brushes, water buckets, and any other tools needed to achieve their designs.

The designs must be painted exclusively on the face, and they should reflect the theme of the competition, which will be revealed at the spot. The duration of the competition will be 1 hour, adding an element of challenge and excitement to the event. To ensure a respectful and professional environment, any misconduct or use of profane language by any entrant or spectator is strictly prohibited and will lead to disqualification.

The competition promises to be a vibrant and engaging event, providing participants with the opportunity to showcase their artistic abilities and creativity. With the emphasis on skill, imagination, and fair play, the event is set to be a highlight of the Zephyrus Tech Fest, offering an entertaining and challenging experience for all involved. The decision of the judges will be final, and no negotiations are encouraged, ensuring that the rules and spirit of the competition are upheld.

Reelistic (Individual)

The Instagram Reel Making competition at the Zephyrus Tech Fest of 2023, hosted by Christ College Irinjalakuda, is set to be a creative and engaging event. Individual participation is allowed, with only one video per participant permitted. The maximum time limit is 60 seconds, while the minimum time limit is 30 seconds. The reel must be an original creation and must be related to the event Zephyrus at Christ College. Participants can only be inspired by existing trends online, ensuring a unique and creative approach to the competition.

Plagiarized content will lead to disqualification, emphasizing the importance of originality and creativity. The reel should not include any obscene, name-calling, derogatory remarks, or regional slang towards any person or community. The decisions of the organizing committee will be final, ensuring that the rules and spirit of the competition are upheld.

The competition promises to be an engaging and creative event, providing participants with the opportunity to showcase their artistic skills and creativity. With the emphasis on originality, skill, and fair play, the event is set to be a highlight of the Zephyrus Tech Fest, offering an entertaining and challenging experience for all involved.

Ending Ceremony

Khanaan Students Band

The Khanaan Students Band is set to deliver a captivating performance during the closing ceremony of the Zephyrus Tech Fest. Their musical talents and vibrant energy will provide an unforgettable conclusion to the event, leaving a lasting impression on all attendees. The band's participation promises to elevate the festive atmosphere and create a memorable experience for everyone in attendance. Their performance is anticipated to be a highlight of the closing ceremony, adding a touch of musical excellence to the culmination of the Zephyrus Tech Fest.

Step and Synchro (2 Members)

The competition requires each team to have two participants, with each participant required to register through the provided registration link. Multiple teams from the same college are allowed to participate. The maximum time limit for each team's performance is 5 minutes. It is essential for all participants to adhere to the rules and regulations of the competition. In the event of any misconduct, the entire team will face disqualification. The performance of each team will be evaluated based on their creativity and coordination. The judges will assess each team's ability to work together and showcase their unique talents. The decision of the jury panel will serve as the final and binding judgment for the competition. This competition provides an opportunity for participants to showcase their skills and abilities while working collaboratively with their teammates. By following the rules and regulations, participants can ensure a fair and competitive environment. The judges will evaluate each team's performance based on their creativity and coordination, ultimately determining the winners of the competition.

Closing Ceremony and Coupon Draw

The closing ceremony and coupon draw of the Zephyrus Tech Fest, hosted at Christ College Irinjalakuda, is the highly anticipated culmination of the event. This final gathering marks the conclusion of the festival and is set to be an unforgettable experience for all attendees. The Coupon Draw, a highlight of the closing ceremony, will provide attendees with the opportunity to win exciting prizes. The draw will be conducted fairly and transparently, ensuring that all participants have an equal chance to win. This celebratory occasion promises to be a memorable and exciting conclusion to the Zephyrus Tech Fest, providing attendees with a chance to celebrate the festival's success and enjoy the final moments of the event.