

# Genethon

About Genethon :

Gyanotsav 2025 Techfest of Gyan Ganga Group of Institutions Jabalpur MP has launched a internal Hackathon “**Genethon**” intending towards solving the problems faced by organizations, society through innovative solutions developed by students.

The event will provide a platform to young students by enabling them to identify real life problems and to think, design and develop modern solutions for them which is viable enough to be transformed into a **business startup**.

## **Problem Statement Themes:**

- **Smart Automation**
- **Healthcare & Biomedical devices**
- **Agriculture & Rural Development**
- **Smart Vehicles**
- **Food Technology**
- **Robotics and Drones**
- **Waste management**
- **Security & Surveillance**
- **Blockchain & Cybersecurity**
- **Artificial Intelligence (AI)**

- **Smart Education**
- **Disaster Management**
- **Transportation & Logistics**
- **Travel & Tourism**
- **Space Technology**
- **Renewable & Sustainable Energy**
- **Smart Grid**

### **Selection Criteria:**

The proposed solutions will be evaluated by experts on the basis of **novelty of the idea, complexity, clarity, detailed document, feasibility, practicability, sustainability, the scale of impact, user experience, and potential for future work progression.**

### **General Overview**

- **Duration:** 24 hours
- **Format:** Teams of 2-6 members (team sizes may vary)
- **Registration Fees** – Rs 599/-
- **Categories:** Various problem statements are provided across different categories.
- **Registration:** Usually requires online registration before the event starts. Teams often need to submit a brief on their ideas or tech stack ahead of time.
- **Eligibility:** Open to all college students (undergraduate and postgraduate)

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### **Key Stages of the Hackathon**

#### **1. Pre-Hackathon: Registration & Preparation**

- **Registration Process:**

- Teams will register in advance via the official Techfest website **www.gyanotsav.com**
- Teams will need to create an account, register themselves and their members, and possibly submit an idea or project summary for approval.
- **Pre-Hackathon Preparation:**
  - Participants are encouraged to familiarize themselves with the tech stack and APIs that might be used.

## 2. The Hackathon Begins (Kick-off)

- **Introduction Session:**
  - On the day of the event, the organizers usually provide an orientation session where the rules, judging criteria, and technical resources are explained.

## 3. Development Phase

- **Coding & Prototyping:**
    - The core of the hackathon is the coding phase, which lasts around 18-20 hours. Teams develop their projects from scratch, using various tools, technologies.
  - **Collaborating:**
    - Teams should maintain effective communication throughout the event, working together to tackle challenges, debug code, and integrate components. This is critical since time is extremely limited.
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## 4. Progress Check-ins (Midway)

- **Optional Check-ins:**
    - **Progress check-ins** during the 24-hour period where teams share updates on their work, receive feedback, and ensure they are on track.
    - This helps teams re-align if they face technical blockers or need advice on improving their solution.
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## 5. Final Stage (Presentation & Submission)

- **Wrapping Up the Code:**
    - As the 24-hour deadline approaches, teams begin wrapping up their projects. This includes ensuring that the project is functional, integrating all components, and preparing a **working demo**.
  - **Presentation Preparation:**
    - Teams need to prepare their final **pitch** and **presentation slides**. Typically, teams have 5-10 minutes to present their project to the judges.
    - The presentation should include:
      - Problem definition
      - The solution they've built and how it solves the problem
      - Demo of the working prototype
      - Technologies and tools used
      - The impact and scalability of the solution
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## 6. Submission:

- **Code Submission:**
    - Teams usually need to submit their source code, project files, and any relevant documentation via an online portal (e.g., GitHub, Google Drive) by the end of the 24-hour period.
  - **Final Presentations (Judging):**
    - Teams present their project in front of a panel of judges, which typically includes industry experts, professors, and experienced developers. The presentation is followed by a Q&A session where judges ask questions to evaluate the team's problem-solving approach and understanding of the solution.
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## 7. Judging Criteria:

The judging panel evaluates the teams based on the following criteria:

- **Innovation:** How creative and original is the solution? Does it introduce something novel to the problem?
  - **Technical Difficulty:** How technically complex is the project? Did the team tackle challenging problems?
  - **Functionality:** Does the solution work as intended? How complete is the product?
  - **Impact:** How significant is the problem being solved? What impact could the solution have in the real world?
  - **Presentation:** Was the solution communicated effectively? How well did the team explain their approach and showcase their product?
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## **8. Winners Announcement & Closing Ceremony:**

- **Awards and Recognition:**
  - The top teams are awarded rewards, which may include **startup funding, tech gadgets, internships, mentorships**, or even **job offers, certificates** of participation.
  - **Special prizes** for categories like "Best Innovation," "Best Design," or "Most Impactful Solution."



# **GENETHON (THEMES)**

## **RENEWABLE & SUSTAINABLE ENERGY**

- Development of a non-electrical device for tracking the movement of the sun for movement of the solar panels, increasing their efficiency.
- Design/Development of an efficient Energy Storage System (ESS) to integrate intermittent Renewable Energy sources and to support/stabilize the grid.
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- Sustainable Utilization of 100% of Ash from Coal based Thermal Power Plants.
- Innovation Ideas by Students
- A web application specifically designed for Indian coal mines to quantify their carbon footprint and explore pathways to carbon neutrality.

## **SECURITY & SURVEILLANCE**

- AI-Powered Threat Detection in Real-Time Video Feeds
- Smart Perimeter Monitoring System
- Facial Recognition for Multi-Camera Networks
- Anomaly Detection in Public Spaces
- Drone Surveillance and Threat Analysis
- Cybersecurity for Surveillance Networks

## **SPACE AND TECHNOLOGY**

- Innovation Ideas by Students
- Automatic Change detection in Synthetic Aperture Radar satellite images
- Automatic Road Extraction and alert generation for new roads
- Enhancement of Permanently Shadowed Regions (PSR) of Lunar Craters Captured by OHRC of Chandrayaan-2
- SAR Image Colorization for Comprehensive Insight using Deep Learning Model (h)

## **TRAVEL & TOURISM**

- Innovation Ideas by Students
- Online Chatbot based ticketing system
- Development of a mobile application to provide recreational suitability information of beach locations across India.

## **DISASTER MANAGEMENT**

- Innovation Ideas by Students
- Enhancing body detection in CSSR Operations Using Advanced Technology
- Early Warning System for Glacial Lake Outburst Floods (GLOFs)

## **ROBOTICS AND DRONES**

- Innovation Ideas by Students
- Drone-based Intelligent ET sensing system and irrigation water use accounting system for irrigation commands.
- Research and develop a design on “ autonomous water surface cleaning robot “
- Micro-Doppler based Target Classification
- Online monitoring of Unauthorized construction across the city.
- Gamification for Rural Planning using Drone land survey maps and GIS data.

## **AGRICULTURE & RURAL DEVELOPMENT**

- Innovation Ideas by Students
- Smart Irrigation System for Precision Farming
- Drone-Based Intelligent System for Apple Orchard Management in Himachal Pradesh
- Mobile App for Direct Market Access for Farmers
- AI-Driven Crop Disease Prediction and Management System



## **SMART VEHICLES**

- Innovation Ideas by Students
- Automated Bus Scheduling and Route Management System for Delhi Transport Corporation

## **FOOD TECHNOLOGY**

- Affordable, Sustainable, and User-friendly Solutions for Semen Dose Storage and Distribution
- Development of AI-ML based models for predicting prices of agricultural commodities such as pulses and vegetable (onion, potato, onion)
- Farmers Disease Diagnostic/Reporting Portal - Mobile Portal AI Based

## **SMART EDUCATION**

- Innovation Ideas by Students
- Developing writing pen and writing pad for children with Specific learning disability.
- Enhancing Monitoring and Management of Research, IPR, Innovation, and Start-ups in Gujarat State
- Implementation of the Alumni Association platform for the University/Institute.
- Automated System for Career Advancements of the Faculties of Higher Education
- AI-Enhanced Career Guidance System for Personalized Career Pathways

## **SMART AUTOMATION**

- AI-based automated defective exhibit identification system placed in a gallery.
- Innovation ideas by students
- Develop a functional solution that demonstrates the hardware enabled root of trust.
- Personalized testing kits for testing Residual Chlorine level at delivery points
- Conversational Image Recognition Chatbot
- A smart AI based solution for traffic management on routes with heavy traffic from different directions, with real-time monitoring and adaptation of traffic light timings

## **HEALTHCARE & BIOMEDICAL DEVICES**

- Rapid colorimetric and artificial intelligence-based methods for determining the microbial quality of raw milk, processed milk, and milk products
- Wearable sensor with Artificial Intelligence for prevention of falls in elderly people
- Development of cost-effective myoelectric prosthesis.
- Queuing models in OPDs/ availability of beds/ admission of patients. A hospital based solution is ideal which can be integrated with city wide module
- Online testing and monitoring of quality of medicines and consumables

## **WASTE MANAGEMENT**

- Smart Waste Bin Monitoring
- Waste Segregation Using AI
- E-Waste Management System
- Smart Composting Solution
- Hazardous Waste Tracking System
- AI for Predictive Waste Generation

## **ARTIFICIAL INTELLIGENCE (AI)**

- Personalized Learning Assistant
- AI-Powered Healthcare Diagnostics
- Predictive Maintenance for Machinery
- AI-Powered Resume Screening
- Personalized Fitness and Nutrition Coach
- AI for Supply Chain Optimization
- Virtual Voice Assistant for the Visually Impaired

## **BLOCKCHAIN & CYBERSECURITY**

- Innovation Ideas by Students
- Solution for end-to-end tracking of dual use chemicals used in both legitimate industries and illicit drug production from point of manufacture to point of end use/export.
- DDoS Protection System for Cloud: Architecture and Tool
- Creating an application to identify the presence of government issued personally identifiable information (PII) embedded in documents and data, inadvertently or otherwise.

## **TRANSPORTATION & LOGISTICS**

- AI based acoustic wave monitoring of rail defects like cracks, fracture and prediction for rail wear, quality along with other parameter.
- Development of a versatile and fast algorithm for the optimal ship routing
- Enhancing Navigation for Railway Station Facilities and Locations
- Road Transport Network Telematics Develop a telematics solution to enable efficient trucking operations for the long haul to connect the country through route optimization, live tracking and monitoring, optimal capacity utilization analysis and to enable appropriate response.

# SMART GRID

- Electricity theft detection in Smart Grid with AI application.
- Application of AI and Machine Learning for load forecasting in Smart Grid.
- Application of distributed energy resources for grid stability.
- Developing an intelligent demand response and energy efficient framework for smart grid.
- Monitor and manage real-time data in a smart grid with cloud-based platforms.
- Challenges in EV integration in Smart Grid.
- Develop a creative energy storage mechanism to combine intermittent renewable energy sources for grid stability.

