Ministry of Environment, Forest and Climate Change

SUSTAINABLE DEVELOPMENT GOALS

INSTITUTION'S INNOVATION COUNCIL
(Ministry of Education Initiative)

Junk 2 Genius 2025

IDEATHON

under

Environment Education Programme

(18th April 2025 @ RIMT University, Mandi Gobindgarh)

catalysed by

State Nodal Agency

Punjab State Council for Science & Technology

supported by

Ministry of Environment, Forest & Climate Change, GoI

organized by

RIMT UNIVERSITY

About Junk2Genius Ideathon

The Junk2Genius Ideathon is an exciting platform where participants will develop top-notch i that harness technology to solve waste-related challenges. The goal is to transform the way we perceive and manage waste. Rather than seeing waste as something to discard, Junk2Genius aims to turn it into valuable resources through innovative technological solutions. This ideathon invites students, professionals, environmentalists, and innovators to collaborate and showcase their skills and solutions in the field of waste management. The event serves as an opportunity to bring together the brightest minds who are passionate about contributing to a cleaner, greener, and more sustainable

Why Participate?

Participating in the Junk2Genius Ideathon goes well beyond a typical competition—it's a springboard for tackling urgent waste management challenges, gaining hands-on experience, and collaborating with leading experts. You'll explore real-world issues, craft sustainable and tech-driven solutions that can positively impact communities, and vie for valuable prizes and recognition. This platform also enables you to highlight your unique abilities—whether you excel in technology, design, or environmental advocacy—while receiving mentorship from industry specialists who can help refine your ideas for greater impact. Beyond the immediate rewards, you'll strengthen your professional profile, earn certifications, and expand your network, setting you on a path to excel in both academic and professional arenas.

Problem Statements

Following are the problem statements to be addressed but not limited too; Candidates may consider their own ideas and problem statements to be solved using cutting-edge technology such as AI, ML, Drone, IoT and others

AI and Computer Vision in Waste Management

1

Smart Waste Sorting System Using AI and Computer Vision

Waste sorting at recycling facilities is often inefficient and labor-intensive. Using AI and computer vision, develop a system that can automatically sort different types of waste materials (plastic, paper, metal, etc.) at the point of collection or at recycling plants to improve efficiency and reduce human errors.

2

AI-Based Predictive Garbage Collection and Waste Route Optimization

Municipal waste collection often suffers from inefficiencies due to static schedules and unpredictable waste generation. How can AI and data analytics predict waste generation patterns in different neighborhoods and optimize garbage collection routes in real-time, reducing costs, emissions, and improving waste management efficiency?

3

AI-Driven Smart Inventory Management for Food Waste Reduction

Restaurants, grocery stores, and households often struggle with food waste due to poor inventory management. Develop an AI-powered system that predicts food consumption patterns and suggests optimal purchasing and storage strategies to reduce food waste.

4

AI-Driven Waste-to-Energy Solutions

Municipal solid waste often ends up in landfills, contributing to environmental degradation. How can AI be used to analyze waste composition and predict the best waste-to-energy conversion methods (such as anaerobic digestion or incineration) to produce sustainable energy from waste?

Problem Statements

AI and Computer Vision in Waste Management

5 AI-Powered Plastic Waste Identification and Recycling

Plastic waste is a major environmental challenge. Develop an AI-powered system that can identify and categorize plastic types and automate the recycling process to ensure maximum reuse, especially in regions with low recycling rates or informal waste sectors.

6 AI for Ocean Plastic Waste Detection and Removal

Plastic waste in oceans poses a major threat to marine life. Develop an AI-powered system that uses drones or underwater robots to detect, classify, and remove plastic waste from oceans efficiently.

7 AI for Illegal Dumping Detection Using Drones

Illegal dumping of waste is a major environmental issue in many urban and rural areas. How can drones equipped with AI-based image recognition technology be deployed to detect and report illegal waste dumping in real-time?

8 AI-Powered Waste Heat Recovery in Industries

Industries release large amounts of waste heat that goes unused. How can AI and IoT be integrated into industrial processes to identify, capture, and optimize the use of waste heat for energy efficiency and sustainability?

Problem Statements

Blockchain for Waste Management

9

Blockchain-Based Waste Tracking System

Waste management systems often lack transparency, leading to mismanagement and illegal dumping. How can blockchain technology be used to track the entire lifecycle of waste—from generation to disposal—to ensure compliance, reduce fraud, and improve accountability in waste management?

10

Blockchain-Enabled Municipal Waste Management Transparency

Transparency in waste management is crucial to prevent illegal dumping, misreporting, and ensure proper disposal. How can blockchain technology be used to track the collection, processing, and disposal of waste, ensuring a transparent, tamper-proof system for municipalities to improve accountability and public trust?

11

Incentive-Based Blockchain Waste Recycling System

Recycling rates are low in many regions due to lack of motivation. How can blockchain be used to create an incentive-based system where individuals or businesses earn digital tokens for proper waste disposal and recycling, which can be redeemed for services or discounts?

12

Blockchain-Driven Waste Audit System

Inconsistent and inaccurate waste auditing often leads to inefficiencies and failure to identify areas for improvement in waste management. How can blockchain technology be leveraged to create a secure, transparent, and immutable waste audit system that allows for accurate tracking , improving overall system performance and sustainability?

Problem Statements

IoT-Based Waste and Water Management

13 IoT-Enabled Industrial Wastewater Monitoring System

Industries discharge wastewater that often contains harmful pollutants, leading to environmental damage. How can IoT sensors be used to continuously monitor and analyze wastewater discharge, ensuring compliance with environmental regulations and enabling early detection of pollution?

14 IoT-Enabled Smart Bins for Waste Monitoring and Collection

Overflowing bins and inefficient collection schedules lead to littering and poor waste management. Design an IoT-based smart waste bin that can monitor fill levels, track waste types, and automatically alert waste collection services for timely pickups, optimizing resources and reducing public litter.

15 Advanced Waste Composting System Using IoT Sensors

Organic waste is often underutilized in urban areas. Design an IoT-based composting system for households or businesses that uses sensors to monitor temperature, moisture, and other conditions to optimize composting, making it easier and more efficient for users to recycle organic waste.

16 IoT-Integrated Landfill Gas Monitoring System

Landfills produce harmful gases like methane, contributing to climate change. Develop an IoT-based system that monitors landfill gas emissions in real-time and provides data for methane capture and utilization.

Problem Statements

Machine Learning and Data Analytics for Waste Management

17

Data Analytics for Predicting Waste Generation Patterns

Waste management systems often fail to anticipate when and where waste generation peaks, resulting in inefficient resource allocation. How can data analytics be used to predict waste generation patterns, helping waste management authorities plan more effectively and reduce costs?

18

Waste Management Prediction Using Machine Learning

Waste management systems often fail to anticipate when and where waste generation peaks, resulting in inefficient resource allocation. How can data analytics be used to predict waste generation patterns, helping waste management authorities plan more effectively and reduce costs?

19

AI-Based Smart Packaging Waste Management

Excessive packaging waste is generated by e-commerce and retail industries. How can AI and data analytics be used to optimize packaging design, reduce material usage, and recommend sustainable packaging alternatives without compromising product protection?

20

AI-Powered Water Waste Detection System

Municipalities often struggle with water waste due to leaks, unauthorized use, or inefficient water distribution systems. How can AI be used to monitor water pipelines in real time, detect leaks, and predict areas of high water wastage? This system could help municipalities reduce water loss, improve distribution efficiency.

Problem Statements

Waste Reduction and Circular Economy

21

Mobile App for Household Waste Reduction

Household waste generation continues to rise due to lack of awareness and incentive systems. Create a mobile app that uses gamification, rewards, and personalized waste-reduction tips to encourage individuals to reduce, recycle, and properly dispose of waste at home, ultimately decreasing household waste.

22

Circular Economy-Based Mobile Marketplace for Waste Exchange

Many businesses and individuals generate waste that could be repurposed or recycled. How can a mobile platform be developed where users can exchange waste materials (e.g., scrap metal, plastic, textiles) for reuse in manufacturing or as raw materials for other industries, promoting a circular economy?

23

Gamification-Based Recycling Awareness App

Lack of awareness and motivation leads to poor recycling habits. How can a mobile app with gamification elements (challenges, leaderboards, rewards) be designed to encourage people, especially students, to actively participate in recycling programs?

24

Sustainable Fashion: Waste Management in the Textile Industry

The fashion industry is one of the largest contributors to waste. How can technology be used to track textile waste, encourage upcycling, and promote circular economy practices in fashion?

Problem Statements

Innovative E-Waste Management Solutions Using Emerging Technologies

25

AI-Powered Refurbishment and Resale Platform for E-Waste

Many electronic devices are discarded while still functional or repairable. How can AI be used to assess the usability of old electronics, suggest necessary repairs, and connect users with refurbishment centers or resale markets, reducing e-waste?

26

Robotics-Based E-Waste Dismantling System

Waste management systems often lack transparency, leading to mismanagement and illegal dumping. How can blockchain technology be used to track the entire lifecycle of waste—from generation to disposal—to ensure compliance, reduce fraud, and improve accountability in waste management?

27

Biodegradable and Eco-Friendly Alternatives for Electronic Components and Lithium batteries

Traditional electronic components contribute to hazardous waste. How can material science and biotechnology be leveraged to develop biodegradable or sustainable alternatives for circuit boards, casings, and other electronic parts to reduce e-waste pollution?

28

Smart Consumer Awareness App for E-Waste Reduction

Many consumers are unaware of proper e-waste disposal methods. How can an AI-driven mobile application educate users on sustainable disposal options, locate nearby e-waste collection centers, and offer rewards for responsible recycling?

Why Join Junk2Genius Ideathon?

- **Be a Catalyst for Change**: Step into a platform that empowers you to transform waste management challenges into groundbreaking opportunities, redefining the way society perceives waste.

- **Leverage Cutting-Edge Technologies**: Utilize the latest innovations—from AI and IoT to sustainable engineering—to craft solutions that are not only inventive but also transformative.

- **Collaborate with Trailblazers:** Join forces with a diverse community of students, professionals, and environmental advocates, fostering cross-disciplinary partnerships that spark creative breakthroughs.

- **Make a Real-World Impact**: Tackle tangible challenges with solutions that have the potential to drive significant environmental and societal benefits, contributing to a cleaner, more sustainable future.

- **Accelerate Your Career:** Enhance your portfolio, earn certifications, and build a robust professional network that positions you as a forward-thinking innovator in your field.

- **Earn Recognition and Rewards:** Stand out with your innovative ideas, win attractive prizes, and receive recognition that can propel you to new heights in your academic and professional journey.

Timeline

1
Launch of the Ideathon
15 Mar 2025

2
Registration Open
15 Mar 2025

3
Idea Submission Open
15 Mar 2025

4
Idea submission Close
15 Jun 2025

5
Mentoring Session
June Onwards

6
Upload the Idea PPT
25 July 2025

7
Announcement of Shortlisted School teams for Grand Finale
01 Aug 2025

Grand Finale
29 August 2025

Prizes & Rewards

PRIZE POOL OF 1,50,000/-

1. CONQUERING HERO - 51,000
2. 1ST RUNNER-UP - 31,000
3. 2ND RUNNER-UP - 21,000
4. Best Girls Team-11000
5. Innovative Idea-11000
6. Best Demonstration-11000

Funding ranging from **₹1 lakh to ₹5 lakh** will be provided to teams working on innovative and viable startup ideas By **EDC India.**

FAQs

1. What is the Junk2Genius Ideathon about?

The Junk2Genius Ideathon is an innovative challenge aimed at transforming waste materials into valuable products or solutions. Participants are encouraged to develop creative ideas that promote recycling, upcycling, and sustainable practices to address environmental issues.

2. Who can participate in the Junk2Genius Ideathon?

The ideathon is open to students, professionals, and innovators passionate about sustainability and environmental conservation. Individuals or teams interested in creating impactful solutions from waste materials are encouraged to join. Each team can have maximum 3 participants including team leader.

3. How can I register for the ideathon?

To register, visit the official Junk2Genius Ideathon website and complete the registration form by providing the required details. Ensure you submit your innovative idea or project proposal during the registration process.

4. What resources are available to participants?

Participants will have access to webinars, mentorship sessions with industry experts, and relevant materials to guide their project development throughout the ideathon.

FAQs

5. Are there specific problem statements or themes?

Yes, participants are encouraged to focus on themes such as Innovative recycling methods, Upcycling waste materials into functional products, Developing sustainable solutions for waste reduction, Creating awareness campaigns on environmental conservation

6. How will the submissions be evaluated?

Submissions will be assessed based on innovation, feasibility, impact on environmental sustainability, and the practicality of implementation. A panel of judges with expertise in sustainability and innovation will review the entries.

7. What are the prizes and recognition for winners?

The ideathon offers a total prize pool of ₹1,50,000 distributed among the top-performing teams. Winners will also receive certificates and opportunities for mentorship to further develop their ideas.

8. Is there a participation fee?

Participation Cum Registration Fee in the Junk2Genius Ideathon is ₹ 500/- only per team. And participation fees for all girls team is ₹ 250/- (for college/university)
For School students, the participation fees is ₹ 100/-

FAQs

9. Who can particiopate?

The Junk2Genius Ideathon is open to students from all across India. Participation is welcome from school students, college students pursuing undergraduate, postgraduate, or diploma courses, and individuals from any recognized educational institution. Whether you belong to a government or private school, a university, or a technical institute, you are eligible to join. The ideathon encourages young minds from diverse educational backgrounds—technical or non-technical—to come forward and showcase their creativity. No matter where you're from, if you're passionate about innovation and sustainability, this platform is for you

10. Is there a participation fee for school students?

Participation Cum Registration Fee in the Junk2Genius Ideathon is ₹ 100/- per team

About RIMT University

RIMT University is a hub of excellence and innovation, dedicated to shaping future leaders and changemakers. Located in the heart of Punjab, it offers a cutting-edge learning environment where academic rigor meets creativity and innovation. With a strong emphasis on industry-aligned programs, advanced research, and experiential learning, the university equips students with the knowledge and skills needed to excel in a rapidly evolving world.

From state-of-the-art infrastructure to a highly accomplished faculty, RIMT University stands out as a pioneer in delivering world-class education across diverse disciplines. Its commitment to fostering critical thinking, innovation, and professional excellence ensures that graduates are not only career-ready but also prepared to drive meaningful change in their communities and beyond.

At RIMT University, the pursuit of excellence is a way of life, empowering students to transform challenges into opportunities and aspirations into achievements.

ADDRESS

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