Dynamic
Hackathon

Empowering Innovators to Revolutionize
Safety and Efficiency in Crane Operations
and material handling industry

Organized by   **Powered by**

DYNAMIC

i4C

About Dynamic Hackathon

Dynamic Hackathon is an exciting platform designed to ignite innovation and tackle real-world challenges in crane safety, heavy machinery operations, and industrial automation. Organized by Dynamic Crane Engineers Pvt. Ltd. in collaboration with i4C, this hackathon brings together students, developers, and technology enthusiasts to build impactful solutions using cutting-edge technologies like IoT, AI/MI, LIDAR, and data analytics, embedded electronics, etc

Participants will have the opportunity to solve industry-specific problems, gain mentorship from experts, and showcase their technical and creative abilities. With a focus on improving safety, efficiency, and predictive analytics in industrial operations, Dynamic Hackathon serves as a launchpad for breakthrough ideas and industry advancements.

Why is Crane Safety Innovation Crucial?

Recently, a devastating crane collision at a construction site resulted in severe damage to property and multiple injuries, highlighting the urgent need for advanced safety solutions. Investigations revealed gaps in communication systems, lack of predictive tools, and inadequate monitoring of crane movements, emphasizing the critical role technology can play in preventing such incidents.
With rapid urbanization and infrastructure development, the demand for safer and smarter crane operations is higher than ever. Innovating in crane safety not only safeguards lives and assets but also boosts efficiency, reduces downtime, and ensures compliance with safety regulations.

Problem Statements

1

Unified Safety System for Collision Prevention and Hazard Alerts

Develop an integrated system that combines proximity monitoring and obstacle detection to ensure safe crane operations. Using LIDAR, GPS, ultrasonic sensors, and AI-powered image recognition, the system should prevent collisions by monitoring proximity, defining geofenced hazardous zones, and detecting obstacles in real-time. It should automatically trigger slowdowns or emergency stops and provide alerts to operators to ensure safety.

2

Remote Equipment Monitoring and Predictive Maintenance Dashboard

Design an IoT-enabled platform that aggregates real-time data from all equipment into a centralized dashboard. The system should monitor metrics such as vibration levels, fuel consumption, operating hours, and temperature while providing predictive maintenance alerts, trend analysis, and historical records.

3

Predictive Maintenance and Consumable Replacement System

Create an AI-driven system that combines predictive maintenance with consumable monitoring. It should analyze performance data, detect wear patterns, and predict failures in components like brakes, filters, and cables. The system should automatically schedule maintenance and alert teams to consumable replacement needs to reduce downtime and improve efficiency.

4

Drone-Enabled Lift Zone Surveillance and Hazard Detection

Develop a drone-based system for real-time aerial surveillance of crane lift zones. The drones should relay live video feeds, use AI to detect hazards and obstacles, and assist operators and site managers in planning and executing complex lifts with improved situational awareness.

Problem Statements

5

Integrated Diagnostic and Maintenance Management System

Design a comprehensive system that combines automated pre-operational diagnostics with a digital maintenance logbook. Using IoT sensors, the system should check critical parameters like vibration, fuel levels, and structural integrity before operations. It should also consolidate maintenance records, inspection results, and IoT-collected data into an accessible digital logbook, generating automated reports for real-time insights.

6

Energy Optimization and Remote Monitoring System

Create an IoT-based system that tracks and optimizes energy and fuel consumption in real-time. By analyzing operational data, the system should identify inefficiencies, provide actionable recommendations for optimization, and issue alerts for refueling or charging to maintain uninterrupted operations.

7
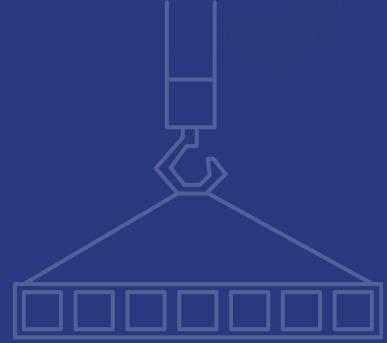
Load Monitoring and Balancing System for Safe Operations

Develop a system that monitors load parameters, such as weight distribution, radius, wind speed, and stability, during lifting operations. It should provide real-time feedback to operators to ensure safe and balanced lifting and halt operations if unsafe conditions are detected.

8

Web-Based Crane Comparison and Decision Support Platform

Design a web-based platform for comparing cranes based on operational parameters such as maximum lift capacity, radius, wind tolerance, and speed. The system should also analyze load distribution and provide recommendations for safe lifting operations, ensuring optimal equipment usage.

Why Join Dynamic Hackathon?

- **Solve Real-World Problems** – Tackle critical safety and efficiency issues in crane operations.
- **Showcase Your Skills** – Demonstrate expertise in AI, IoT, and LIDAR technologies.
- **Win Rewards & Recognition** – Attractive cash prizes, certificates, and awards for outstanding innovations.
- **Industry Exposure** – Collaborate with top industry experts and mentors.
- **Career Growth** – Enhance your resume and gain visibility among recruiters.

Get ready to innovate, compete, and create solutions that redefine the future of crane safety and material handling systems.

Timeline

1 — **Launch of the Hackathon**
17-Jan-25

2 — **Registration & Idea Submission Open**
17-Jan-25

3 — **Interactive Sessions (Webinars)**
20-Jan-25 to 10 Feb-25

4 — **Registration & idea submission Close**
20-Feb-25

5 — **Pre finale Evaluation Round**
21-Feb-25 to 27-Feb-25

6 — **Announcement of Shortlisted teams**
28-Feb-25

7 — **Mentoring Sessions**
3-Mar-25 to 15-Mar-25

Grand Finale (The Demo Day)
21-Mar-25

Prizes & Rewards

PRIZE POOL OF 4,00,000

1 WINNER - 1,00,000

2 1ST RUNNER-UP - 75,000

3 2ND RUNNER-UP - 50,000

BEST DEMONSTRATION AWARD	30,000
BEST PRESENTATION AWARD	15,000
INNOVATIVE IDEA	30,000
BEST GIRLS TEAM	30,000
BEST SPOC AWARD-1 (HIGHEST NUMBER OF TEAM REGISTRATIONS & IDEA SUBMISSION)	25,000
BEST SPOC AWARD-2 (2ND HIGHEST NUMBER OF TEAM REGISTRATIONS & IDEA SUBMISSION)	15,000
CENTER OF EXCELLENCE AWARD FOR COLLEGE WITH HIGHEST NUMBER OF TEAMS REGISTRATIONS AND IDEA SUBMISSION	30,000

FAQs

1. **Who can participate in the Dynamic Hackathon?**
- Students from Higher Education Institutes such as engineering colleges and universities can participate in the hackathon.

2. **How does the form a team?**
All participants must be from the same college or school; inter-college/school teams are not permitted.
- Members from different branches or disciplines within the same institution may form a team.
- Each team must comprise of minimum 2 students and a maximum of 6 students.
- We encourage multi-disciplinary teams – which means your team should have a good mix of Computer engineers, Mechanical Engineers, Electronic Engineers, Product Designers, Programmers, etc.

3. **How to register for the Dynamic Hackathon?**
- Option 1: – Participating colleges can register through the Teachers / Professors of the college, who are called SPOC. The SPOC in turn can create teams of students from within the college, to solve the problem statements assigned.
- Option 2: – Students can register their Teams directly. One student from the team who is the Team leader must register & choose the designation as Team leader as mentioned on the portal and the team members.

4. **I am a student of Higher Education Institutes (HEIs) pursuing PhD. Can I participate?**
- Yes, students pursuing PhD can participate in the hackathon.

FAQs

5. How should the teams come up with ideas? How are the ideas to be submitted?

- 10 problem statements have been shared on website and brochure. Teams are free to select any problem statement that appeals to them.
- There is one wild card entry, which encourages students to come up with Out Of The Box Solutions to a problem they foresee.
- Teams may apply to multiple problem statements, however, if multiple submissions are selected and the team gets a chance to go into the finals, then the team may only participate in 1 problem statement for the final event.
- Participants have to submit the idea on the portal.

6. What is the selection criteria?

- Post Idea submission process, the ideas will be evaluated by experts.
- Evaluation criteria will include novelty of the idea, complexity, clarity, and details in the prescribed format, feasibility, sustainability, the scale of impact, user experience, creativity and simplicity and potential for future work progression.

7.How would the students receive Event updates?

- All updates related to the hackathon will be given on the website itself and email will be sent for ease of communication.
- We would recommend regularly following the i4C website, to avoid inadvertently missing any emails. Please add support@i4c.in to avoid emails from us going into your Spam / Junk folder.

FAQs

8. Will this hackathon be organised digitally or in-person mode?
- The grand finale of the hackathon may be online or in-person, depending on the circumstances. Selected teams will be notified prior to the grand finale dates.

9.What are the prizes to be won?
- The Prizes will be mentioned in detail on our Landing page and brochure.
- If there is a tie between two or more teams, the final decision of the prize money distribution will be taken by the organizer of the event, and all decisions are final.
- Organizers have right of not announcing the prize money or winner if the idea or solution is not satisfactory or deserving.
- The team members of every winning team will be individually awarded a certificate.
- Apart from the winners, all other teams who submitted the idea will get Participation certificate and teams selected for finale will get Finale certificate.

Miscellaneous Information

- Intellectual property (IP) of all submitted ideas shall lie with the student innovators.
- If the ideas are selected for further development support, IP sharing would be applicable, and details will be decided upon and formalized accordingly.
- The ideas or solutions provided/developed/proposed by the team must be new and must not have been present in any previous event/program of any sort. Any IP infringement will not be tolerated and will be dealt with seriously

About Dynamic Crane Engineers Pvt.Ltd.

Dynamic Crane Engineers Pvt. Ltd., established in 2001, is a leading provider of premium crane safety systems and solutions in India. With expertise in telescopic, lattice boom, offshore cranes, and more, the company offers advanced electronic systems like load indicators and wind speed monitors. Backed by a technical team with over 35 years of combined experience, Dynamic also specializes in JCB construction equipment trading and innovative electric scissor lifts. Additionally, they provide rental services for construction lifts, man & material hoists, and AWPs to ensure safety and efficiency on job sites. Dynamic remains a trusted partner for empowering safe and efficient construction operations.

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About Inter-institutional inclusive Innovation Centre

Inter-Institutional Inclusive Innovations Centre (i4C) is a non-profit organization dedicated to fostering a culture of innovative thinking and developing impactful solutions. It serves as a platform to mentor, incubate, and promote disruptive

technology innovations, transforming ideas into high-value products. i4C organizes national-level & international level hackathons, like Smart India Hackathon, Smart School Hackathon, and industry-focused challenges like Binance Ideathon and NPCI Blockchain Hackathon. By collaborating with MOE, AICTE, and various industry leaders, i4C supports India's innovation ecosystem. Its initiatives empower the young generation to create solutions addressing real-world challenges and improve lives.

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Scan the QR code to register now!