

Hack-AI-Thon

About the Event

Rhapsody' 25 present IISc's **Hack-AI-Thon**, in association with **Atlas Copco** as our event sponsor.

HACK-AI-THON is a premier AI-focused hackathon designed to challenge participants in developing innovative AI solutions. The event will be conducted entirely **online**, allowing participants to join from anywhere. Participants will have **15 days to register and submit their solutions**. This online hackathon provides an opportunity for AI enthusiasts to showcase their skills and develop cutting-edge AI-driven solutions.

This event provides a platform for tech enthusiasts to explore AI applications across machine learning, deep learning, computer vision, NLP, and automation. With endless possibilities, Hack-AI-thon is the perfect stage to experiment, innovate, and compete with the best minds in AI turning bold ideas into reality.

Event Details

Participants will have to register and submit their solutions online via the registration link which involves idea submission and shortlisting, followed by the final round, where teams present their technical solutions for evaluation based on feasibility, impact, and execution. It's a **group event**, participant must form a **team of 4 member** including a team leader to participate.

Objective: Participants must propose innovative solutions to address the given problem statements.

Submission Format for pdf document

A structured **2-3-page document** detailing the following:

1. Problem statement:
2. Proposed Solution:
 - a. A concise explanation of the proposed solution.

3. Impact & Feasibility:

a. How does the idea contribute to sustainability and efficiency?

b. How practical is the implementation?

4. Originality:

a. What differentiates it from existing solutions (if any)?

NOTE: In the case of substantial number of registrations, a screening process is conducted to determine the top 15-20 qualifying teams further for evaluation of solution through video. For those teams that make the cut. And based on presentation video winner will be decided, so make sure to create good report.

Submission Format for Video

Presentation Format: A 10-15 minutes presentation.

1. Demonstration & Testing:

a. Showcase the solution in action, providing evidence of feasibility and effectiveness.

2. Implementation Strategy:

a. Define the resources, tools, and methodologies used to build the solution.

3. Impact & Performance Evaluation:

a. Assess the real-world impact, efficiency, and sustainability of the solution.

4. Scalability & Future Improvements:

a. Explain how the solution can be scaled or improved upon in the future.

Evaluation Criteria (100 Points Total)

1) Problem-Solution Fit (20 points)

Does the idea clearly address a pressing problem?

Is the solution innovative or just an incremental improvement?

Does the solution offer a novel or significant way of solving the problem?

Has the team demonstrated the real-world impact of the problem and the solution's relevance?

2) Market Viability & Scalability (20 points)

How large is the total addressable market (TAM)?

Can the idea be scaled beyond a niche market?

Does the team have a clear understanding of their competition and how they differentiate themselves?

3) Revenue Model & Feasibility (20 points)

Is the business model sustainable and financially viable?

Has the team outlined a clear monetization strategy?

4) Presentation & Communication (15 points)

Was the pitch clear, engaging, and well-structured?

Did the team use visuals effectively to convey information?

Did the presenter maintain confidence & persuasion?

5) Innovation & Uniqueness (15 points)

Does the idea bring significant technological or business innovation?

Is the idea a first - mover in the industry, or does it have unique intellectual property?

6) Q&A Handling & Adaptability (10 points)

Did the team handle tough questions with confidence?

Were they open to feedback and demonstrated adaptability.

Presentation Guidelines & Rules

1. **Adhere to time limits** - Exceeding allotted time results in penalties.
2. **Engaging storytelling** - Avoid excessive technical jargon.
3. **Visual-oriented pitch decks** – Use minimal text.
4. **Live demos encouraged** - Working prototypes will enhance scores.

Disqualification Criteria

1. **Plagiarism** - Any instance of copied ideas from existing startups will lead to disqualification.
2. **Incomplete Submissions** - Teams failing to submit a full deck will be disqualified.
3. **Unprofessional Conduct** - Fake credentials or submission of solution in the name of student who is currently in university, but solution is actually developed by someone else.

Problem statement

1. Challenge: Intelligent Knowledge Management System

Overview

Organizations today accumulate vast amounts of data across diverse domains including Mechanical, Embedded Systems, Apps & Software, Electrical, and Data & Analytics. While explicit knowledge (stored in PDFs, Word documents, Excel files, emails, reports, multimedia, etc.) is relatively easy to capture, a wealth of implicit knowledge such as insights from subject matter experts, decision-making patterns, and tacit best practices remains largely inaccessible. The challenge lies in efficiently extracting, integrating, and utilizing both forms of knowledge from scattered and unstructured sources.

Challenge Objectives:

1. Implicit Knowledge Capturing

- a. Develop methods to harvest tacit insights from expert interactions.
- b. Example: Utilize AI agents capable of initiating calls or chats to extract subject matter intelligence autonomously.

2. Knowledge Gap Identification

- a. Identify areas where knowledge management systems face gaps.
- b. Highlight critical missing or underrepresented information.
- c. Integrate various forms of explicit data with implicit insights to create a comprehensive knowledge map.

3. Efficient Retrieval

- a. Design a system that offers rapid, computationally efficient access to stored information.
- b. Ensure the system can handle a high volume of data from multiple sources.

4. Integration of Explicit & Implicit Knowledge

- a. Seamlessly combine structured data (documents, records) with unstructured data (conversations, expert insights).
- b. Provide enriched insights that reflect both factual and experiential dimensions of knowledge.

5. User-Friendly Platform

- a. Create an intuitive interface that simplifies design, integration, and navigation of the knowledge base.
- b. Focus on ease-of-use to encourage adoption across various teams.

6. Defined Entity Relationships

- a. Map relationships between different data entities such as individuals, teams, and documents.
- b. Maintain clear links among people, data, and organizational units to enhance system utility.

7. Actionable Insights Conversion

- a. Enable the system to translate retrieved information into actionable recommendations.
- b. Tailor outputs to address domain-specific challenges (e.g., CAD design issues for Mechanical teams, custom software solutions for Apps & Software teams, etc.).

Deliverables:

A working prototype demonstrating:

Efficient data storage, indexing, and retrieval of both explicit and implicit knowledge.

- o Integration of various data formats and the conversion of raw data into actionable insights. A detailed technical overview including:

References:

Potential architectures and design strategies.

- o Knowledge mapping techniques leveraging data from Mechanical, Embedded Systems, Apps & Software, Electrical, and Data & Analytics domains.

a) AI agent for knowledge management: Key capabilities, use cases, benefits, and implementation.

b) AI in Knowledge Management: Benefits, Concerns, and Future.

c) The Ultimate Guide to Knowledge Management: Strategies, Tools, and Best Practices (Creately). d)

The power of AI in knowledge management: Transforming organizations with data-driven insights.

e) Unleashing the Future of Knowledge Management with Agentic AI.

f) How a Knowledge Management System Can Help Customer Service.

2. Challenge: Conversational 3D CAD Modelling Interface

Challenge Statement:

Develop an AI-powered chat interface that transforms natural language prompts into fully editable 3D models ready for use in popular CAD software (e.g., Autodesk). Your solution should not only generate a 3D model from a given prompt but also allow for real-time modifications based on subsequent instructions. For instance, a user might first request a model with a prompt like, "Create a 3D model of a bracket with standard dimensions," and then follow up with, "Increase the length on the left side by 2 mm and decrease the overall thickness by 1 mm."

Key Requirements:

1. Chat-Driven 3D Model Generation

Build a chat interface that accepts natural language prompts and outputs a 3D model.

b. Ensure that the initial model creation leverages state-of-the-art AI techniques.

2. Dynamic Model Modification

a. Enable users to modify the generated 3D model via subsequent prompts.

b. For example, users should be able to command changes like "increase the left side by 2 mm" and see the model update accordingly.

3. CAD Software Compatibility

a. The generated and modified 3D models should be in a format that can be imported into and edited within CAD software such as Autodesk.

b. Ensure interoperability and ease of integration with existing CAD tools.

4. Integration with CAD Environments

a. Design the interface so it can be integrated within CAD environments, with a particular focus on Autodesk.

b. Consider developing APIs or plugins that facilitate this integration.

Bonus Considerations:

User Experience (UX): A seamless and intuitive chat interface that lowers the barrier for users who may not have extensive technical knowledge.

Performance: Optimize the system to handle real-time requests and modifications.

Scalability: Ensure your solution is modular and extensible to support future enhancements or additional CAD platforms.

Example Case:

Explore and implement innovative methods, such as NVIDIA's LLM-based meshing for creating and refining 3D models.

Consider alternative advanced algorithms to enhance model quality and generation speed.

Priority will be given to innovative methods or optimizations in LLaMA-Mesh for more accurate models with smaller LLM parameters.

Submission Guidelines specific to 2nd problem:

- Provide a working demonstration of the chat interface generating and modifying a 3D model. Include documentation outlining the architecture, tools used, and instructions for integration with CAD software.

Highlight any innovative techniques used, such as NVIDIA's LLM-based meshing, and mention alternative methods explored.

Prizes pool: Rs 30,000

Coordinators Contact

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Join us and take part in the future of innovation!

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