VAZHITHEER
ROAD SAFETY HACKATHON

COMPETITION
RULEBOOK

CONTENTS

PROBLEM STATEMENTS

ATTEMPT ONLY ONE OF THE FIVE

Problem Statement 1

Overview

With India's unique linguistic terrain, ensuring road safety messages and government regulations reach every population in their local language is a significant challenge. Current practices have shortcomings unable to have effective reach to every road user.

Challenge

The goal is to develop an AI-powered multilingual platform that ensures accurate and precise translations of road safety-related government orders, policies, guidelines, and awareness content. The platform must account for regional dialects, cultural context, and technical terms related to road safety, ensuring that the essence of each message is preserved across multiple languages.

Problem Statement 2

Overview

Extended Reality (XR) applications such as virtual reality (VR) and augmented reality (AR), creating immersive and interactive environments requires accurate 3D representations of real-world objects.

Challenge

The challenge of this hackathon is to create a solution that allows for real-time geometry extraction of objects from selected video sources and accurate reconstruction of these objects in a virtual XR environment. To produce 3D models in real time, the system must automatically analyse the video input, identify key objects, and extract their geometric and spatial attributes.

Problem Statement 3

Overview

Creating realistic, instructive, and engaging animations depicting road safety occurrences is critical for increasing awareness and reducing accidents.

Challenge

The goal of this hackathon is to create an AI-powered program that generates realistic character animations based on user-provided prompts defining road safety scenarios.

For example, a prompt such as, "On 4-lane divided national highways in Chennai's Northern Districts, a two-wheeler and a four-wheeler head-on collision occurs. The two-wheeler is traveling at 80 km/h, while the four-wheeler is traveling at 120 km/h, resulting in a fatal injury to the rider." The tool must transform this input into a 3D animation, simulating the events described.

Problem Statement 4

Overview

Creating accurate and up-to-date basemaps is essential for various applications, such as urban planning, disaster management, and infrastructure development.

Challenge

The goal of this problem statement is to develop an automated system capable of achieving 95% accuracy in the extraction of various geographical and man-made features from satellite images and generating high-quality basemaps. The system should be versatile enough to handle different terrains, resolutions, and conditions (e.g., cloud cover, varying light levels)

Problem Statement 5

Overview

There has been an increasing demand for tailored education and training in all domains. Traditional methods often lack personalization and do not adapt based on individual learning capabilities and needs. Leveraging AI to create an interactive, adaptive learning experience can accelerate the learning curve and provide more targeted assistance to learners.

Challenge

Objectives:
1. AI-powered Content Curation: Develop a chatbot that can automatically curate and present relevant training materials to learners based on their progress and interactions.
2. Adaptive Questioning & Evaluation: Implement an AI-based questioning system that adapts its difficulty and focus based on the learner's real-time performance in assessments and training sessions.
3. Personalized Feedback: Provide learners with insights into their strengths and weaknesses for each module, and curate additional content for improvement in weak areas.
4. Performance Prediction: Build an AI model that predicts the learner's final performance based on their interactions, test scores, and progression through the course material.

ELIGIBILITY CRITERIA

- All students, engineers, and problem solvers enthusiastic about ethics in technology are eligible to participate. **No professional qualifications are necessary.**
- **The minimum age** for participants is **15.**

TEAM COMPOSITION

- Individual participants will also be allowed in the competition.
- Team registrations are allowed with a maximum size of 3 participants.

AWARDS

The winners will be awarded the following cash prizes and a participation certificate to all participants that make a submission.
1st prize - INR 55,000
2nd prize - INR 35,000
3rd prize - INR 20,000

The winning entries will be featured on the Shaastra social media handles and will get an exclusive opportunity to present their solutions during the Future Cities Summit at Shaastra 2025!

COMPETITION TIMELINE

Stage 1

- Registrations and submissions open on 15 Oct 2024
- Submissions close on **15 Nov 2024, 11:59 PM**

Stage 2

- Details will be communicated to all the shortlisted participants

REGISTRATION

Click the following link to register:

https://unstop.com/p/vazhitheer-road-safety-hackathon-future-cities-summit-shaastra-shaastra-2025-iit-madras-1170965

COMPETITION GUIDELINES

(1) Stage 1 Submission Round:

- Participants/Teams will submit their solutions through code in any programming language of their choice.
- They are also required to submit a presentation consisting of 3 slides excluding "Welcome" and "Thank you" explaining their solution.
- Registrations and Submissions are only accepted **through Unstop.**
- Participants and teams alike can make **only one submission.**
- A team can make only one submission out of the 5 problem statements above.

(2) Stage 2 Presentation Round:

- Shortlisted teams will present their solution to a live jury during Shaastra 2025 at the IITM campus. The exact date and schedule of the presentation will be intimated to the qualifying teams.

DATA PROTECTION

- The participants hereby grant Shaastra, IIT Madras and CoERS, a nonexclusive right to use the submitted material free of any charge for non-commercial purposes on our respective web pages, social media platforms, and printed publications.
- Participants must be able to provide proof of their identity, age, and place of residence in such a way that Shaastra, IIT Madras can check and disqualify entries for any breach of rules.
- Shaastra, IIT Madras reserves the right to modify the competition schedule if deemed necessary.
- The participant will be disqualified for the breach of any of the competition rules. In such a case, the organisers' decision will be final and binding on all participants.

COPYRIGHT

- The submission must be an original work authored by the participant.
- By participating in this contest, the participant declares and warrants that:
    - The material is their own.
    - No one else apart from the participant has the copyright or any intellectual property right on the submitted work.
    - The submitted work does not infringe on the copyright or intellectual property rights of someone else.
- The participant remains the owner of the copyright of the submitted work(s).
- The illustrations will be credited appropriately each time it is reproduced or communicated to the public by Shaastra, IIT Madras and CoERS.

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