

## **TECHFEST 2024-25**

### **Qualcomm VisionX**

#### **ROUND 1 PROBLEM STATEMENTS :**

Participants are free to select and work on any one of the following problem statements: (They may use any open datasets for their development and testing phases. The final evaluation will be conducted on a test dataset chosen by the judges.)

#### **Challenge 1: Removing Reflections from Images**

→ **Objective:** Create an AI model that can automatically detect and remove reflections from photos taken through reflective surfaces (like glass windows or water). The solution should show the scene behind the reflection clearly, without adding extra blurriness or missing details.

→ **Details:**

- The reflection removal should not damage the original image or add any unwanted effects.
- The solution should work well with different kinds of reflections and under various lighting conditions.
- Show how this technology could be used in real life, such as improving security camera footage, enhancing personal photos, or helping autonomous vehicles "see" better through windows or water.

#### **Challenge 2: Object Detection**

→ **Objective:** Develop an object detection model that can accurately detect, classify, and localize multiple objects within an image or video frame.

→ **Details:**

- The model should detect objects with high precision, minimizing false positives and false negatives.
- The model should process images or video in real-time or near real-time, making it practical for real-world applications.
- The solution should handle diverse environments, including different lighting, angles, and object occlusions.
- Demonstrate how the model can be applied to real-world scenarios such as surveillance, autonomous driving, or retail automation.
- Include tracking capabilities, allowing the model to follow detected objects across multiple video frames.

## RULES AND SUBMISSION CRITERIA

### → Team Composition:

- Each team can consist of a maximum of **4 members**.
- All team members must be registered participants of **IIT Bombay Techfest 2024**.

### → Submission Process:

- The first round will be conducted through online submission.
- The second round will be offline at IIT Bombay, where the final 10 teams will showcase their automation solutions.
- In the final round, teams will have to develop and demonstrate their solutions in real time. The judging panel will assess the functionality, creativity, code quality, and relevance of each project.

### → Project Submission Guidelines for Round 1:

- All files, including the **project code** and **presentation**, and **video**, must be stored in a single folder in the GitHub repository.
- The folder details must be sent via email to the provided email address **[rishabh@techfest.org]**.
- **Email Subject:** Round 1 Submission VISIONX[TeamName]
- **GitHub Repository:** Include the **filename** of the GitHub repository in the email.
- **Team Information:** Clearly mention the **team name**, **team members**, and **contact information** in the email.
- **Public Repository:** The project code must be stored in a **public GitHub repository** accessible for the judging panel to review the code. Ensure that the **main branch** contains the most up-to-date version of the project. **No additional code should be pushed after the deadline**, or it may lead to disqualification.
- Round 1 winners will be directly qualified for the finals and are invited to present their round 1 and round 2 presentation at Techfest, IITB.

### → Project Submission Guidelines for Round 2:

- Only Round 1 winners will receive a selection mail. They need to submit it before coming to IITB by 16th December while working on their submission of Round 1.
- Submissions must be made via email and should include the following:
  - **Project Overview:** Brief improvement of the project.
  - **Team Introduction:** Names of team members and their roles.
  - The details must be sent via email to the provided email address **[rishabh@techfest.org]**.
  - **Email Subject:** Round 2 Submission VISIONX [TeamName]
  - **Project Name:** Unique name identifying the project.
  - **Instructions:** Detailed instructions on how to run the project.

→ **Video Submission:**

- Teams must create a **5-7 minute video** that demonstrates the execution of their solution.
- The video should highlight key features and functionality of the project.
- The link to the video should be included in the email submission along with the GitHub repository details.

**ADDITIONAL NOTES:**

- All submissions must adhere to ethical standards. Any form of **plagiarism** will result in immediate disqualification.
- The decision of the judging panel will be final and binding on all participants.
- These rules and submission criteria are designed to ensure a **fair and competitive environment** for all participants.

**GENERAL RULES**

1. Every participant must register online on the official Techfest website. A unique Team ID will be allocated upon registration for future reference.
2. Participants must complete registration and submit their project before the deadlines specified. Late submissions will not be accepted.
3. The decisions of the organizers and judges will be final and binding. Techfest reserves the right to verify the identity and accuracy of participant details.
4. Techfest, IIT Bombay, will not be responsible for any late, lost, or misdirected submissions.
5. All ideas submitted by teams must be original and must not be protected by existing patents, copyrights, or publications.
6. The latest and most accurate information will be available on the official Techfest website. Registered participants will be informed via email about any changes.
7. All official communication will be conducted through the Techfest email.

**Timeline**

Event	Date
Registration Deadline	20th November
Round 1 Submission	20th November
Round 1 Review	21st November
Mentoring Phase	23rd November- 12th Dec
Round 2 Submission	16th December
Final Presentation and Demonstration	17th-19th December

## JUDGING CRITERIA

The projects will be evaluated on the following parameters:

- **Code Efficiency:** How well does the code use computational resources like CPU and memory?
- **Accuracy and Precision:** Are the metrics like precision, recall, and SSIM/PSNR effectively applied and achieved?
- **Execution Speed/Inference Time:** How quickly does the code produce outputs upon receiving inputs?
- **Robustness and Generalization:** Can the code handle diverse scenarios and inputs effectively?
- **Code Quality and Organization:** Is the code well-structured, readable, and adherent to best coding practices?
- **Innovativeness:** Does the solution employ novel or creatively optimized algorithms?
- **Scalability:** Can the solution handle larger or more complex data without significant redesign?
- **Documentation:** Is the accompanying documentation clear and comprehensive, explaining setup and operation?

## CERTIFICATE POLICY

- **Certificates of Excellence** will be provided to the **Top 10 teams**.
- **E-Certificates of Participation** will be awarded to teams scoring above a critical mark (to be decided later).

## Prize Money

The **Prize money** will be awarded to the top 5 winners via **NEFT** and will be processed before **April 2025**.

The winners have to mail the following information (immediately after the announcement of the results) to [rishabh@techfest.org](mailto:rishabh@techfest.org) and [tarun@techfest.org](mailto:tarun@techfest.org)

**Subject:** **VISION-X**, team id-your position (example - "VISIONX, **VX-1234567** – **1st Position**")

**Body of the email :**

1. Account Holder's Name
2. Account Number
3. Bank Name and Branch Name
4. IFSC Code
5. Photograph of Passbook as Proof