IndiaAI Face Authentication Challenge

1. **Introduction:**

IndiaAI, an Independent Business Division (IBD) under the Digital India Corporation (DIC) of the Ministry of Electronics and IT (MeitY), is the implementation agency of the IndiaAI Mission, which aims to democratise AI's benefits across all strata of society, bolster India's global leadership in AI, foster technological self-reliance, and ensure ethical and responsible use of AI.

As part of this Mission, the IndiaAI Application Development Initiative (IADI) promotes the development, deployment, and adoption of AI applications in critical sectors that have the potential to catalyse large-scale socio-economic transformation.

Towards this, IndiaAI is collaborating with various public institutions responsible for conducting large-scale examinations, to develop AI based solutions for ensuring just, fair and impartial merit-based selection and recommendation of candidates for public services.

The Challenge aims to strengthen the integrity of the examination processes by utilizing a secure, scalable, and accurate AI-enabled Image Based Verification & De-duplication Application. High application volumes and multiple single-candidate registrations exacerbate duplication risks in candidate verification. This has led to an urgent need for a reliable end-to-end AI solution to facilitate fair access to opportunities, for shaping a more transparent and merit-based framework critical for the applicants' future and institutional integrity.

This Challenge provides a platform to create practical, scalable solutions with cross-sectoral and nationwide applicability, enabling seamless deployment and utilisation by various Line Ministries, government departments, and State organisations.

2. **Guide to the Challenge Participation**

I. **Stage 1:**

a) **Participation requirement:**

Teams may participate as per the eligibility criteria detailed below (*Ref. Section 6*).

b) **Event Process and Schedule:**

o All participants are required to utilize the IndiaAI portal to access the application form.

o A team leader will have to individually apply for the Challenge on the IndiaAI portal by clicking the submit link.

o After the initial sign-up, the Team Leader should list all the Team Members under the Management Team and complete all organisation details.

o Team Leaders may be required to share the source code required to build, train, and test the submitted AI solution in a private repository. The Team Lead shall paste the link for their GitHub source code in the application form.

o Additionally, the Team Leader will have to answer all additional questions, including uploading documents, and click 'Submit'.

o Interested applicants can apply within the specified time period from the launch.

c) **Problem Statement: AI-enabled Image Based Verification & Application De-duplication**

Objective: To design and deploy a secure, scalable, and highly accurate AI-driven application that performs photo verification and de-duplication by cross-referencing new applications against the historical database using one-to-many matching techniques.

Expected Output:

Automated Duplicate Application Detection: Utilize advanced facial verification algorithms to accurately identify multiple applications submitted by the same individual across different verification modes. This aspect of the solution moves beyond the limitations of traditional, logic-based de-duplication methods that rely solely on demographic data, ensuring application integrity.

One-to-many Automated Identity Verification: Implement a secure, automated system for identity verification. This aspect of the solution performs mandatory de-duplication and guarantees the issuance of a single, unique ID for every authorized applicant.

II. **Stage 2:**

a) **Participation requirement:**

o Up to top 10 solutions will receive access to a sample photograph dataset of around 5,000 images.

o *Please note, IndiaAI reserves the right to modify the number of qualifying solutions to ensure competition and operational efficiency.*

b) Process:

o This round is intended to allow shortlisted teams to demonstrate the accuracy, scalability, and security of their proprietary batch de-duplication face mapping functionalities.

o The dataset is curated to cover a representative sample for performance benchmarking. It will allow for direct evaluation of error rates, and overall reliability for progress review and jury assessment. Access to and use of this sample data requires shortlisted applicants to sign a Non-Disclosure Agreement (NDA) in compliance with the current laws of India.

o Participants will deliver a working AI solution that demonstrates the highest possible accuracy and efficiency during the one-week processing period. The submission must also include a comprehensive technical report detailing the solution's approach, refinement methodologies, results validation process, outcome monitoring strategy, and final results.

3. <u>Expected Deliverables from Participants</u>

o **Documentation**

▪ Team Leaders may be required to share the source code required to build, train, and test the submitted AI solution in a private repository. The Team Lead shall paste the link for their GitHub source code in the application form.

▪ Explanation of the key methodology and steps taken in model development.

▪ Steps to grant access to your GitHub repository:

• Go to the main page of your GitHub repository.

• Click on the 'Settings' tab in the menu bar.

• In the left sidebar, select 'Collaborators'.

- Under the 'Manage Access' section, click on 'Add people'.

- In the text field, search for 'indiaaihackathon25' and add it as a collaborator.

  - o **Project Proposal (Application Form)**

    - ▪ Description of the Solution, approach to addressing problem statements, and core AI Technologies used.

    - ▪ Uniqueness and novelty of the solution along with replicability and scalability across public and private sectors.

    - ▪ AI model details including information about proprietary architecture and model design, third party integration, data utilised for training and validation, performance indicators measures and outcomes along with budget plan.

4. **Evaluation Process**

The evaluation process of the Challenge would be overseen by a distinguished panel of jury members comprising experts from the fields of machine learning, data science and sectoral experts. The jury would rigorously assess each submission based on predefined criteria to ensure a fair and comprehensive evaluation. The evaluation will ensure equitable weightage is given to both the Technical and General parameters.

Stage 1

- **Initial Screening**: Submissions would undergo an initial screening to ensure compliance with submission guidelines and solution functionality.
- **Technical Evaluation**: The jury would conduct a detailed technical evaluation of the models.

Stage 2

- Based on the initial evaluation, up to 10 teams may be shortlisted and will receive INR 5 Lakhs to refine and test their solutions on sample data of 5000 images.

- *Please note, IndiaAI and the jury reserve the right to modify the number of qualifying solutions to ensure competition and operational efficiency.*

Stage 3

- Following the assessment of the results submitted by the 10 shortlisted teams, up to top 2 teams may secure a chance to get a two-year contract and also be given up to INR 1 crore to deploy their solutions for use by the Government of India and its associated entities to ensure robust cross-verification of results.

- A batch of recent images may be shared by partnering institutions. Solution providers are required to share vetted results on mutually aligned model performance benchmarks for accuracy via APIs and assume responsibility for providing the necessary pilot infrastructure (compute, etc.). Final integration of the solution will be determined as per the requirements laid down by IndiaAI and the partnering institutions.

5. **Awards/Outcomes:**

- **Opportunity to Build for the Nation**: Contribute to developing innovative solutions that address critical challenges faced by the country, making a direct impact on society.

- **National Recognition**: Gain visibility and recognition from government officials, industry leaders, and peers for your contributions and innovative ideas.

- **Networking Opportunities**: Connect with like-minded innovators, potential collaborators, and key stakeholders in the tech and innovation ecosystem.

- **Exposure to Real-world Challenges**: Work on pressing issues faced by the nation, providing practical experience and a deep understanding of real- world problems.

- **Support for Implementation**: Wining solution will get potential support in scaling and implementing the solution at a national level, bringing your ideas to life.

6. **Eligibility:**

- **Indian Company:** The team may be an Indian company registered under the Companies Act. An Indian company must have 51% or more shareholding by Indian citizens or persons of Indian origin.
- **Start-up:** The team can qualify as a start-up according to the latest notification by the Department of Industrial Policy and Promotion (DIPP), which can be accessed at Startup India.

The participating entities must provide proofs of a proprietary model submitting verifiable documentation (e.g., technical specifications, necessary certifications, IP and patents). Additionally, entities must demonstrate development and deployment experience of relevant solution with previous engagements in the private and public sector.

7. **Evaluation Parameters:**

I. General:

	Parameter	Description
1	**Approach Towards Problem Solving**	Product Idea, Degree of Innovation, Simplicity of Final Solution, Uniqueness of Idea, Novelty of Approach
2	**Solution Technical Feasibility**	Product features, Scalability, Interoperability, enhancement & expansion, Underlying technology components & stack and futuristic orientation
3	**Product Roadmap**	Potential Cost to Build Product, Regulatory compliance, System Integration plan
4	**Team Ability**	Prior Experience, Team Leader's Effectiveness (i.e. Understanding of subject matter, Ability to guide, Ability to present idea), Growth Potential of Organization
5	**Adherence to Responsible AI Principles**	Safety and Reliability, Equality, Inclusivity and Non-discrimination, Privacy and Security, Transparency, Accountability, Protection and, Reinforcement of positive human values
6	**Adherence to Data Policies and Cyber Security Guidelines**	Adherence to applicable Government of India policies, guidelines, regulations on Data Governance and Cyber Security

II. **Technical**

	Parameter	Description
1.	**Data preparation**	• Participants have checked if there is any skewness in the data and tried to mitigate it. • Performed stratified train-test split successfully to create train & test datasets.
2.	**Model Building**	• Participants have performed the required cross-validation and have built different models on raw-data. • After evaluation on the raw dataset, Model hyperparameters are tuned using correct principles and the approach is explained clearly. • A reasonable number and variety of different models are attempted, and the best one is chosen based on key performance metrics.
3.	**Model Evaluation**	• Model evaluation through a combination of appropriate model evaluation metrics and human validation of the resulting outputs. • Model evaluation results are on par with the best possible models on this data set.
4.	**Code readability and conciseness**	• The code is well commented, and analysis is explained in the report format with findings from the dataset. • Efficient, concise code is written.

| 5. | **Technical Robustness** | • Accuracy: The overall proportion of correctly classified instances (true positives and true negatives), measured across the total instances, covering various demographic attributes and quality levels of received photographs.
• Precision: The proportion of true positive instances out of the instances predicted as positive.
• Recall (Sensitivity or True Positive Rate): The proportion of true positive instances out of the actual positive instances.
• F1 Score: The harmonic mean of precision and recall, providing a single metric that balances both concerns.
• AUC-ROC (Area Under the Receiver Operating Characteristic Curve): Measures how well the model distinguishes between classes.
• Confusion Matrix: A table providing a detailed breakdown of true positives (TP), true negatives (TN), false positives (FP), and false negatives (FN).
• Other Metrics (Optional): Log Loss and Balanced Accuracy of the model.
• Additional Criteria: Any other metrics as decided by jury members. |
| 6. | **Deployment Potential** | • Cloud-based solution hosting
• Ease of integration (API based integration encouraged) |

8. **Timeline:**

S.No.	Activity	Timeline
1	Launch Date	7th October 2025
2	Last Date for Online Submission	25th October 2025
3	Announcement of Results of First Round	TBC
4	Round 2	TBC

| 5 | Pilot Program and Announcement of Winner | TBC |

9. Intellectual Property Rights

All Intellectual Property Rights (IPR) will belong to the **solution owner** participating in the Challenge**.** IndiaAI and partnering institutions shall have a non-exclusive, royalty-free, perpetual license to use the awarded AI solution including all Intellectual Property Rights arising out of its use, and the solution owner shall be deemed to have given a No Objection Certificate (NOC) for the same and shall also remain bound by the terms of a Non-Disclosure Agreement (NDA) with respect to such work.

10. General Terms:

a. All participants must meet the outlined eligibility criteria.

b. The participants will ensure code is free from viruses, malware. The participants will not use this contest to do anything unlawful, misleading, malicious, or discriminatory.

c. The solution must not violate/breach/copy any copyrighted or patented, concepts in the AI market.

d. The solutions must not violate any data protection and governance regulations and policies.

e. The solution must be in adherence with related cybersecurity standards and guidelines of the Government of India.

f. Winners will retain the rights to the solution/product developed. However, they should adhere to the terms and conditions defined for the innovation challenge related to AI solutions.

g. The winning entities shall support the deployment of the product for at least (2) years from the go-live period.

h. The winning entity may receive a fixed amount to support the solution's deployment.

i. Any new enhancements, features, or innovations during the O&M phase should be released on the chosen Cloud Environment.

j. The developed solution/product will be deployed in the chosen Cloud Environment and used for Union/State/UT government entities.

k. Solutions must adhere to ethical principles and guidelines for the development, deployment and use of AI technologies, including fairness, transparency, accountability, and non-discrimination.
l. The winning entities are free to market the product to any entity outside the Union/State/UT Government Organisations of India.

11. **Plagiarism and Ethics**

a. Participants are expected to uphold the highest standards of ethics and integrity throughout the Challenge.
b. All work submitted must be original and developed by the participant or their team.
c. Plagiarism, or the use of someone else's work without proper attribution, is strictly prohibited and would result in immediate disqualification.
d. Participants must ensure that their solutions are proprietary and not copied from existing projects or code repositories.
e. Moreover, the use of any external resources or pre-trained models should be clearly cited, and proper permissions should be obtained where necessary. Adherence to these ethical guidelines ensures a fair and competitive environment for all participants.
f. By registering for this Challenge, participants are giving an undertaking to adhere to all plagiarism and ethical guidelines set forth by the IndiaAI.

Annexure 1:
<u>Challenge Application Form: IndiaAI Face Authentication Challenge</u>

Section 1: Team Information

1. Team Name*:

2. Team Leader Information*:

    - Full Name:

    - Email Address:

    - Phone Number:

    - LinkedIn Profile:

3. Organisation*:

    - Name of Organisation:

    - Registration Number:

    - Type (Startup/Company):

    - Date of Incorporation:

    - Address:

    - Website:

4. Team Members: List each member details including

    - Full Name

    - Role

    - Email

    - LinkedIn Profile

5. Prior Experience in relevant project implementation and research work*:

    Describe relevant AI solutions designed and developed, technologies used, and outcomes, publications, etc. (max 200 words).

6. Experience Collaborating with Government and/or Private Entities*:

    Specify partners, nature of engagement for similar projects, and key results (max 200 words).

Section 2: Project Proposal

1. Description of the AI Solution*:
   Provide a comprehensive overview of the system, including:

   o Functionality

   o Features

   o Training and validation data used

   o Solution replicability across multiple sectors for relevant use cases
     (Max 300 words)

2. Approach to Addressing the Problem Statement*:

   o Explain how your solution utilises AI to address the proposed problem statement and augments existing verification mechanisms. *(Max 300 words)*

3. Core AI Technologies Used*:

   o List and describe technologies, such as:

     ▪ Facial recognition

     ▪ Image deduplication

     ▪ Time-series analysis

     ▪ Anomaly detection

     ▪ Custom in-house ML/CV algorithms

4. Innovation and Differentiation*:

   o What makes this solution novel and uniquely suited to the problem statement?

   o Highlight how this improves upon third-party or open-source models. Provide the benchmarking done for your solution.
     (Max 300 words)

5. Proprietary Model*:

   o Is the AI model developed in-house (not based on third-party pre-trained models)?

     ▪ ☐ Yes   ☐ No

   o If Yes, provide:

     ▪ Proprietary Solution Architecture and Model Design.

- Model training pipeline, including data preparation, model selection, hyper-parameter tuning, and iteration strategy.

- Data utilised for training and validation, along with explicit confirmation and evidence of adherence to all relevant Indian laws and compliance standards.

- Performance indicators measured (e.g., accuracy, False Positive/Negative Rates), the methodologies used for measurement, and the outcomes.

6. GitHub Link:

Section 3: Supporting Documents (Upload)

1. Certificate of Incorporation / Legal Registration*

2. Technical Documentation / IPs / Patents

3. Ethics / Regulatory Clearance (if secured)

4. Solution demo video (2-3 minutes)*

5. Any additional documentation to strengthen the proposal such as model accuracy proof etc.

Section 4: Declaration

1. Declaration by Team Leader:

- I/We declare that all the information provided in this application is true and complete to the best of our knowledge.

Date: _____