

# Face Recognition System under Disguise

**Technology brief:** 'Face recognition in the wild' on surveillance camera feeds is a difficult problem to solve due to the low resolution of the images captured from the cameras. This problem becomes even more challenging to solve with the added complexity of various facial disguises, crowd occlusions and varied illuminations.

Face recognition system under disguise solves these challenges.

Face Recognition System under Disguise (FRSD) is a face recognition system which can be used to identify persons/ anti-social elements with or without disguise in the low-resolution surveillance camera feeds. The algorithm has been trained in such a way that the face recognition system is robust to several disguises like face-masks, beard, moustache, wigs, sunglasses, head-scarves, monkey-caps, hats, etc. Apart from the disguises, the system is also robust to different lightning conditions, shadows on face, crowd occlusions, etc.

The system can be deployed at restricted/ secure zones for the purpose of live video surveillance. It can also be deployed at public places to recognize anti-social elements. The algorithm can also be used by security agencies for robust face search across large repositories.

The system is designed to ensure scalability across multiple GPUs and servers.

## Uniqueness of the product:

1. Ability to recognize faces even in the presence of disguises like face mask, sunglasses, beard, mustache, wigs, cap hat, turbans, etc.
2. A scalable system, across multiple GPUs and servers that is capable of working on low resolution surveillance camera feed and is robust to different lightning conditions.

## Potential use-cases:

1. Surveillance
2. Access control
3. Intelligence gathering
4. Forensic analysis

Interested Industries are requested to apply against this EoI to following address:-

**Director**

**DRDO Young Scientist Laboratory – Artificial Intelligence**

Dr Raja Ramanna Complex,  
Raj Bhavan Circle,  
High Grounds, Bengaluru-560001  
Fax : 080 - 22342444  
Ph: 080 - 22017709/2  
Email: director[dot]dysl-ai[at]gov[dot]in

A copy of the interest may be sent to the following address without any attachment:

**Director**

**Directorate of Industry Interface & technology Management (DIITM)**

Room No. 447, DRDO Bhawan, DRDO HQrs,  
Rajaji Marg, New Delhi-110011  
Phone: 011-23013209/23015291  
Fax: 011-23793008  
Email: diitm[dot]hqr[at]gov[dot]in

All industries are requested to fill in the form given below and provide supporting documents (as applicable). Kindly provide the reference of page no. of supporting document in the relevant field of form. The list of documents to be attached is provided in Annexure – I.

**PART-1**

**General Information**

(Please enclose documents in support of information provided)

<b>S.No</b>	<b>Information</b>	<b>Detail</b>	<b>Attachment reference</b>
1.	<b>Name of the Technology requested for Technology Transfer (Technology name and concerned Lab, Category)</b>		
2.	<b>Name of the industry/ organization</b>		
3.	<b>Complete Address and other details</b>		
	<b>Registered Office</b> State Phone No Fax Email Website		
	<b>Factory</b>		

	State Phone No Fax Email Website		
4.	<b>Point of Contact</b>  Name Designation Address Mobile No Ph No Email ID		
5.	<b>NAME OF CMD/ MD /PARTNERS/ PROPRIETOR/ etc</b>  Name Designation Address Mobile No Ph No Email ID		
6.	<b>Date of Incorporation of company</b>		
7.	<b>Foreign Direct Investment in company (if any in %)</b>		
8.	<b>Shareholding pattern</b>		
9.	<b>Turn over as per Audited Balance Sheet for the preceding three years.</b>  Year ____ Year ____ Year ____		
10.	<b>Annual budget for R&amp;D during last three years (if any)</b>  Year ____ Year ____ Year ____		
11.	<b>Income Tax returns for the preceding three years period</b>		

	<b>Year _____</b> <b>Year _____</b> <b>Year _____</b>		
12.	<b>Nature of company</b> DPSU, Private Limited, Public Limited, Partnership, Proprietary, Ex- Serviceman Unit		
13.	<b>Category of industry</b> Large Scale, Medium Scale, Small Scale, Micro, Startup		
14.	<b>MSME Registration No</b>		
15.	<b>Certificates of registration as a manufacturing unit, if any.</b>		
16.	<b>If Startup, DPIIT Registration No</b>		
17.	<b>UDYOG AADHAR No</b>		
18.	<b>PAN Number</b>		
19.	<b>Details of Industrial license for defence manufacturing issued by DPIIT (if any)</b>		
20.	<b>Details of PESO license (if any)</b>		
21.	<b>GST Number</b>		
22.	<b>Nature of business</b> Manufacturing/ Sole Selling or Authorized Agent/ Assembler/ Traders/ Dealer/ Processor/ Repacker/ Others		
23.	<b>Details of current products and services</b> Products and services Supplied (please specify Govt/ Domestic market/ Export)		
24.	<b>Record of past performance</b> (e.g., Supply orders executed against of Ministry of Defence orders, Public Sectors and Paramilitary Forces, if any).		
25.	<b>Details of registration with</b> NSIC / SSI, DGS&D, other Defence Department, other Govt. Dept, membership of FICCI/ASSOCHAM/CII or other Industrial		

	Association <b>(Attach relevant copies of registration letters)</b>		
26.	<b>Have you already taken any technology from DRDO</b> (If yes, give details attaching separate sheet)  Name of the Technology, Lab, Year, License number & Status		
27.	<b>ISO/ ISI certification or any other certification</b> (If yes, give details)		
28.	<b>Relevant clearances form the authorities/ ministries</b> (if any)		
29.	<b>Capacity and capability to undertake developmental work and to accept attendant financial and commercial risks.</b>		
30.	<b>Capacity/capability to market the product through the marketing network, sales and service network, reliability to maintain confidentiality.</b>		

## PART-2

### Infrastructure and other Information

1.	<b>Total area of factory</b>  Covered (m <sup>2</sup> ),  Uncovered (m <sup>2</sup> ),  Bonded space available (m <sup>2</sup> )	
2.	<b>Ownership of factory</b>  Self-owned, partnership, rental	
3.	<b>Electric power</b>  Sanctioned  Installed  Standby (if any)	
4.	<b>Availability of adequate infrastructure</b>	

	(List of machines and their production capacities) and technical expertise	
<b>5.</b>	<b>Name of bank &amp; A/c No</b> <b>Name of bank</b> A/c type A/c no Address of the bank Phone: Email:	

**6. Details of current products:**

S.No	Type	Description	Licensed/installed capacity	Annual production for preceding 3 years

**7. Details of foreign collaboration, if any**

S.No	Product	Name and address of collaborator	Year	Remarks

**8. Details of products developed for services**

S.No	Nomenclature of stores	Order No. and date	Remarks

**9. Please give details of important facilities & infrastructure as per following format for:**

- (a) Production
- (b) Unconventional, special m/c
- (c) Testing & quality control facilities

S.No	Description of m/c	Make & model	Qty	Date of purchase	Remarks

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**10. Furnish the following details with relevant certificates and documents**

- (a) R&D facilities available :
- (b) Inspection quality control of raw material components :
- (c) Assistance from central agency for testing / calibration etc. :
- (d) laboratory and drawing office facility :

**11. Principal customers:**

S. No	Name & address	S.O No and date	Date of last supply	Products supplied	Value

**12. Future plans (if any) in respect of expansion programme/ installation of additional machines/ test facilities etc.**

**13. Name of the technology requested for transfer**

(give self-assessment of your capability to absorb the technology)

**14. Details of employee as on date on firm's pay roll**

<b>PERMANENT</b>				
Category	Post Held	Number	Qualification	Total Service
Technical	Prod. Manager			
	Q.C. Manager			
	Supervisor			
	Testing Staff (QC)			
	Skilled workers			
	Unskilled workers, etc			
Administrative	Purchase Manager			
	Accounts Officer			
	Office Superintendent			
	Clerical			
	Others, etc			

<b>TEMPORARY</b>				
Category	Post Held	Number	Qualification	Total Service

Technical	Prod. Manager Q.C. Manager Supervisor Testing Staff (QC) Skilled workers Unskilled workers, etc			
Administrative	Purchase Manager Accounts Officer Office Superintendent Clerical Others, etc			

**DECLARATION** :

I / we confirm that the information furnished in Part 1 & 2 above is correct. In the event of any information given by me / us is found incorrect / false at any time, I / we understand our EoI for ToT will be cancelled/ rejected without notice, beside any other appropriate action against me / us.

Industry seal

Authorized signatory

Name(s) in capital

Designation and seal of authorized signatory

date: Place:

**List of supporting documents to be attached with EoI:**

- a. Memorandum and Articles of Association (Should be incorporated as per Indian Companies Act, as amended time to time)
- b. Certificates of registration as a manufacturing unit, if any.
- c. Audited Balance Sheet for the preceding three years.
- d. Income Tax returns for the preceding three-year period
- e. Details of shareholding/ownership pattern especially foreign partners/ shareholders, foreign employees, directors, etc. The company must adhere to the prevailing Govt of India policies and regulations on Foreign Direct Investment (FDI)/DIPP norms as applicable.
- f. Annual budget for R&D during last three years.
- g. Numbers and details of IPR or patents, etc., held by the company.
- h. Number of technically or professionally qualified personnel employed.
- i. Record of past performance (e.g., Supply orders executed against of Ministry of Defence orders, Public Sectors and Paramilitary Forces, if any).
- j. Availability of adequate infrastructure (List of machines and their production capacities) and technical expertise.
- k. List of testing and support equipment.
- l. ISO/ ISI certification or any other certification.
- m. Relevant clearances from the authorities/ ministries (if any).
- n. Capacity and capability to undertake developmental work and to accept attendant financial and commercial risks.
- o. Capacity/capability to market the product through the marketing network, sales and service network, reliability to maintain confidentiality.
- p. Industrial license for defence manufacturing issued by DPIIT (if any).
- q. PESO and DPIIT license for explosive handling if ToT is for high energy Material, explosives, propellants, and component/ system dealing with it etc. Any other special license compliance requirement to be specified by the lab.
- r. Undertaking from company seeking ToT that none of its Directors, Independent Directors, non-executive Directors, Key management personnel is involved in any corrupt practices, unfair means/ illegal activities.