



Resc-U
AI FOR GOOD

THE PROBLEM

8M+

Children are
reported missing
every year

27M+

People go missing as
victims of human
trafficking annually

WHAT IS RESC-U



Resc-U is an AI-enabled app which helps people find their lost family member using Facial Recognition and Natural Language Processing Technology

Resc-U

Entry Form to register a lost or found person

Add Entry

Found or Lost

Missing person's name
Type name

Age of person
Type age

Gender of person
Select gender

Features of person
Type features...

Found/Lost on
Select date

Found/Lost near
Select location

Upload person's image

Add Keywords related to the person:
ABC PQR XYZ EFG +

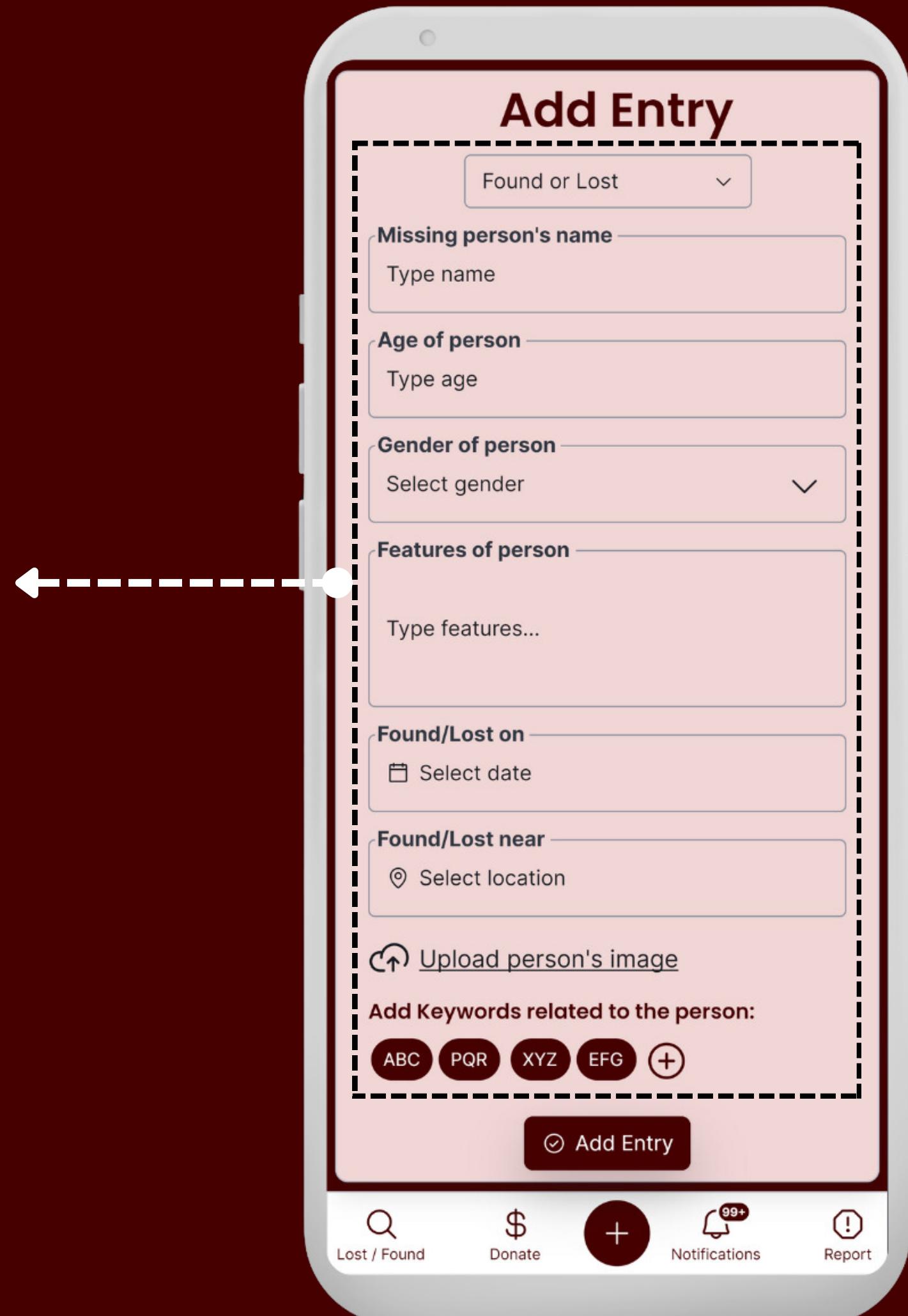
Add Entry

Lost / Found \$ + 99+ Report

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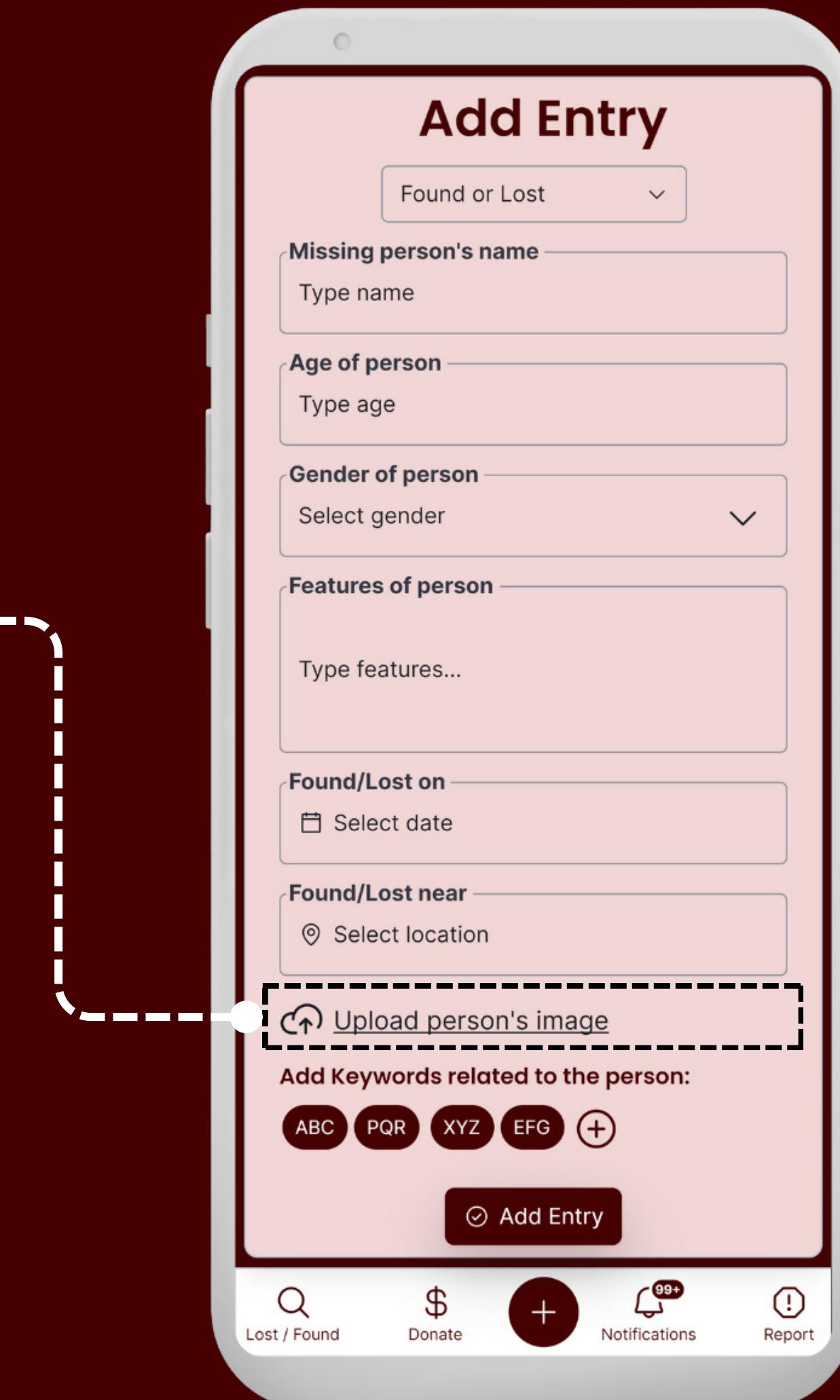
Enter name, age, gender,
location, facial features & other
keywords to help our NLP
Model in accurate matching
with other entries in database



Resc-U

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Upload person's image to help
our Facial Recognition Model ←
match your entry with other
entries in database



Resc-U

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Find results and matches in lost & found tabs, along with match accuracy percentage and details about the person

The image displays two side-by-side mobile phone screens, each showing the "Found" tab of the Resc-U app. The top navigation bar has "Lost" and "Found" tabs, with "Found" being the active tab. A dropdown menu says "Select the person you've added" with "Person ABC" selected. Below this, a message says "These are the results matching your entry:". There are two search results shown in cards:

- Person Efg**:
Name: Person Efg
Age: 43
Gender: Female
Features: Handicapped
Found on: 17/07/2020
Found near: XYZ, India
Match: 77% with Person XYZ
Status: FOUND
Buttons: Contact, View Details
- Person Uvw**:
Name: Person Uvw
Age: 12
Gender: Male
Features: Dark complexion
Found on: 05/11/2017
Found near: ABC, India
Match: 72% with Person XYZ
Status: FOUND
Buttons: Contact, View Details

At the bottom of the screen, there is a loading indicator with the text "Loading..." and a circular progress bar. The bottom navigation bar includes icons for "Lost / Found" (highlighted), "Donate", a central "+" button, "Notifications" (with 99+ notifications), and "Report".

The second phone screen shows the "Lost" tab instead of "Found". It has "Lost" selected in the top bar. A dropdown menu says "Select the person you've added" with "Person XYZ" selected. Below this, a message says "These are the results matching your entry:". There are two search results shown in cards:

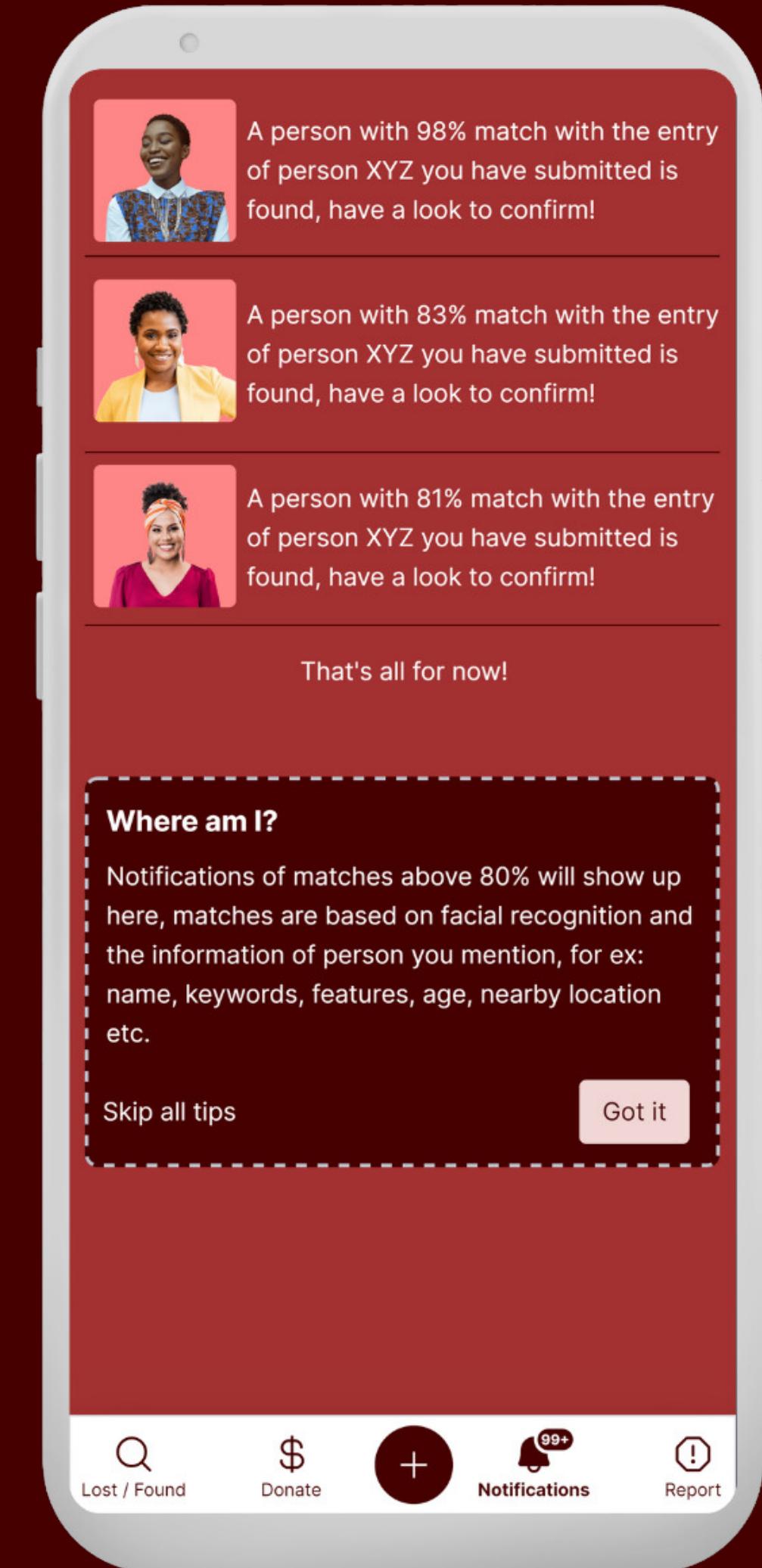
- Person Abc**:
Name: Person Abc
Age: 16
Gender: Female
Features: Mole on chin
Missing from: 12/12/2012
Last seen: XYZ, India
Match: 98% with Person XYZ
Status: LOST
Buttons: Contact, View Details
- Person Pqr**:
Name: Person Pqr
Age: 24
Gender: Male
Features: Fair complexion
Missing from: 22/03/2019
Last seen: ABC, India
Match: 83% with Person XYZ
Status: LOST
Buttons: Contact, View Details

At the bottom of the screen, there is a loading indicator with the text "Loading..." and a circular progress bar. The bottom navigation bar includes icons for "Lost / Found" (highlighted), "Donate", a central "+" button, "Notifications" (with 99+ notifications), and "Report".

Resc-U

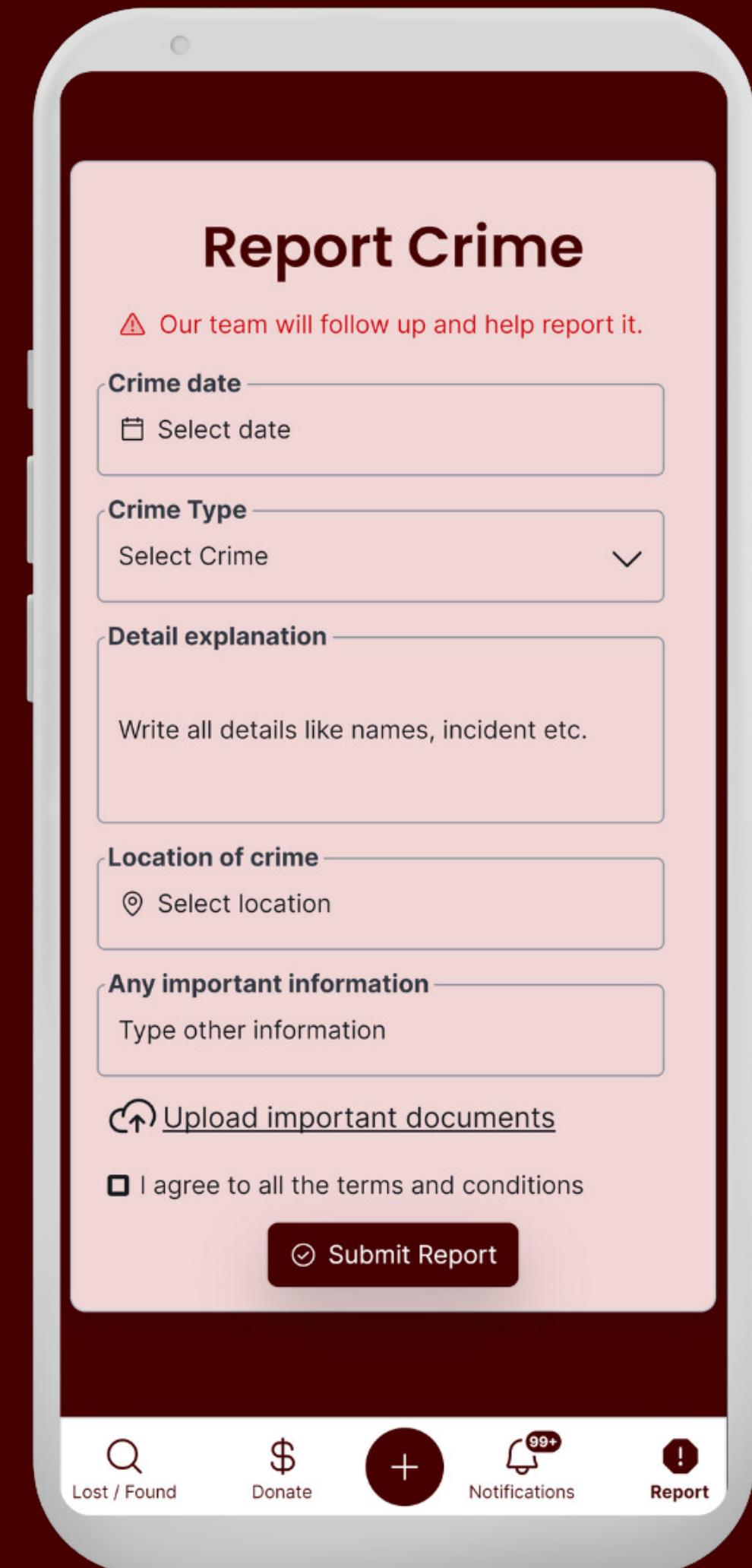
AI FOR GOOD

If we found a match with an accuracy above 80%, we'll notify you to check if the person is whom you are looking for



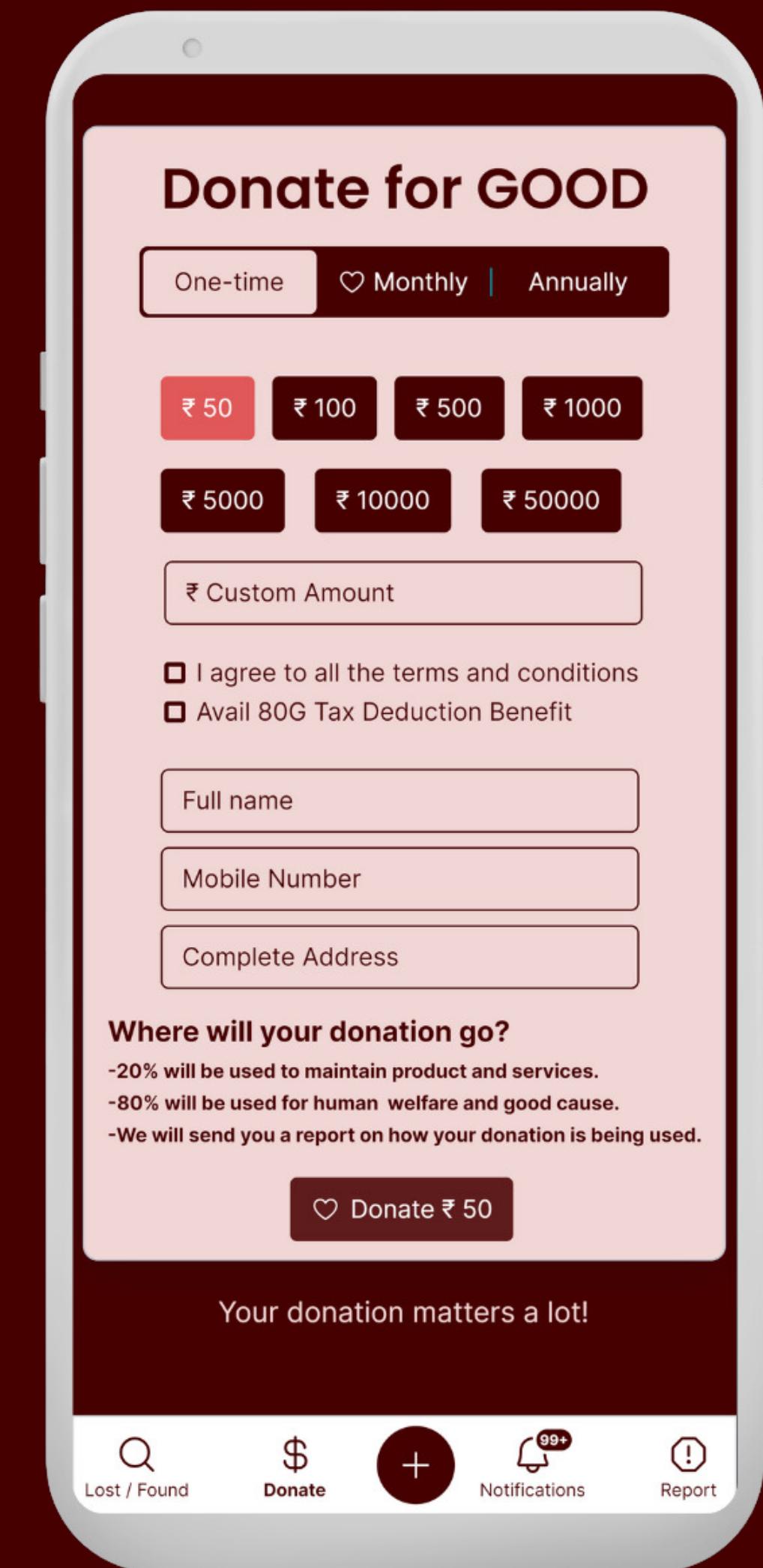


You can also report a crime if you witness one. Our team will follow-up and help with further actions





You can also donate and avail 80G Tax benefits. Your donation will be used to maintain our product & services as well as child education & rescue



AI MODEL AND TECH

Match Percentage Calculation

(Please pause and have a look at the math behind match percentage(%) calculation)

1. Facial Similarity • Image • Weight: 65%

- PyTorch MTCNN • InceptionResnetV1 • VGGFace2

2. Facial Features • Text • Weight: 9%

- FuzzyWuzzy • Levenshtein Distance

3. Gender • Integer (0,1,2) • Weight: 2%

- Same: 100% | Different: 0%

4. Location • Text • Weight: 6%

- FuzzyWuzzy • Levenshtein Distance

5. Name • Text • Weight: 7%

- FuzzyWuzzy • Levenshtein Distance

6. Age • Integer • Weight: 2%

- Difference > 7y (10%) | Difference <= 7y (70%) | Difference <= 5y (90%) | Difference <= 3y (100%)

7. Date • Integer • Weight: 3%

- Difference > 90d (10%) | Difference < 90d (60%) | Difference < 60d (70%) | Difference < 30d (80%) | Difference < 20d (90%) | Difference < 10d (100%)

8. Keywords • Text • Weight: 6%

- FuzzyWuzzy • Levenshtein Distance

AI MODEL AND TECH

Facial Recognition Model

- Powered by PyTorch MTCNN · InceptionResnetV1 · VGGFace2 Convolutional Neural Network Model (94% accuracy & 3.31M image dataset) (Cosine Similarity)
- Identifies facial landmarks and is capable to match childhood images with grown-up images of an individual.



Natural Language Processing Model

- Uses Levenshtein Distance to find similarity between texts, and specialized algorithm made by us for parameters like age and date difference.
- Different inputs are given different weights, like facial features, name & location are weighted high while age and gender are weighted low.

Determining Match %

```
gender_ratio = 100 if Gender_Lost == Gender_Found else 0 * 6/100
age_ratio = 100 if difference_age <= 3 else 90 if difference_age <= 5 else 70 if difference_age <= 7 else 10 * 2/100
date_ratio = 100 if difference_date < 10 else 90 if difference_date < 20 else 80 if difference_date < 30 else 70 if difference_date < 60 else 60 if difference_date < 9
name_ratio = fuzz.ratio(Name_Lost, Name_Found) * 7/100
location_ratio = fuzz.ratio(Location_Lost, Location_Found) * 6/100
features_ratio = fuzz.ratio(Features_Lost, Features_Found) * 9/100
keywords_ratio = fuzz.ratio(Keywords_Lost, Keywords_Found) * 6/100
```

Averaging Weights

Calculating Match %

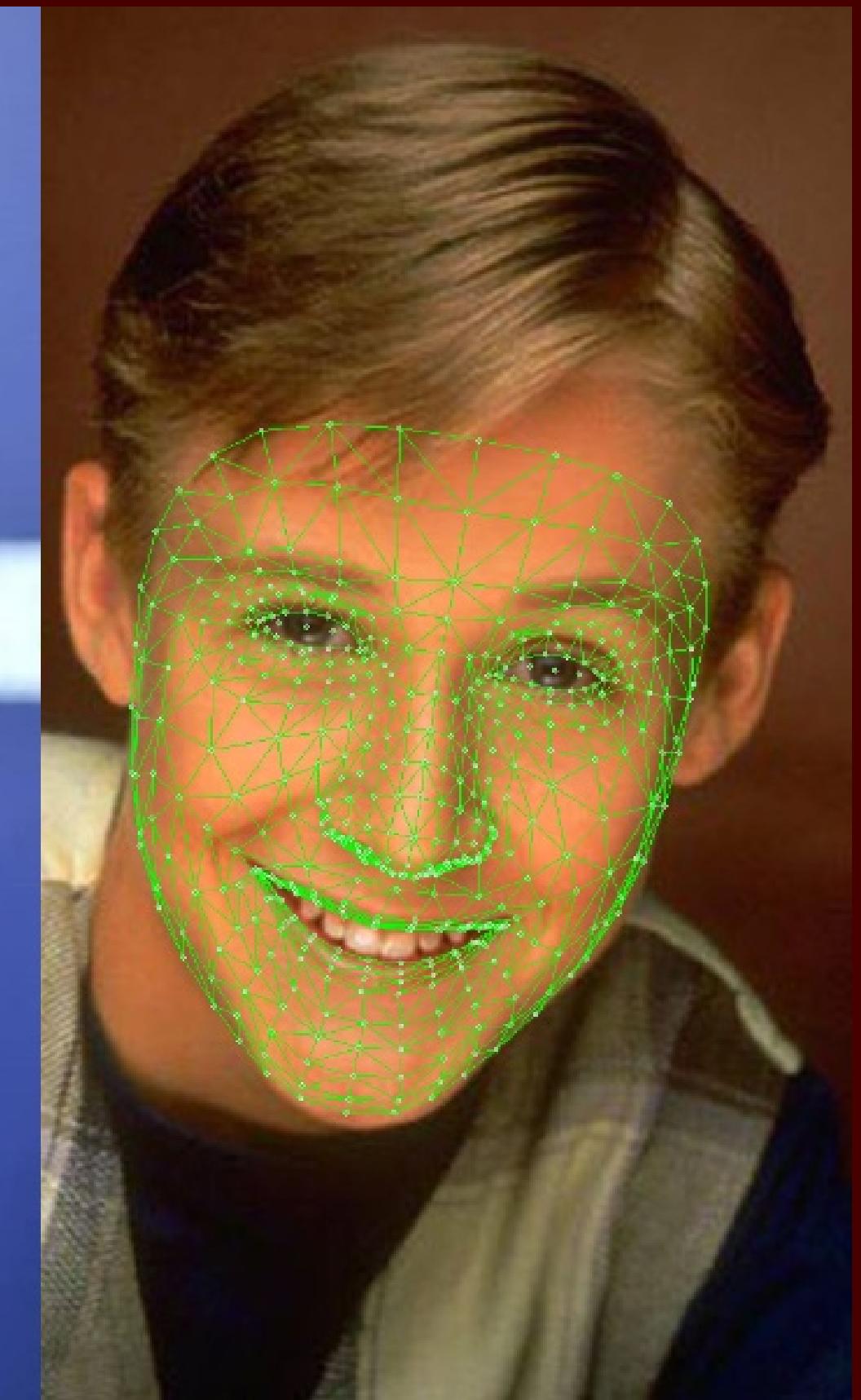
AI Engine Demo

Person Lost Form		Person Found Form	
Name:		Name:	
Age:		Age:	
Gender:		Gender:	
Male	▼	Male	▼
Facial Features:		Facial Features:	
Last Seen Location:		Last Seen Location:	
Date:		Date:	
dd - mm - yyyy	<input type="button" value="Choose File"/>	dd - mm - yyyy	<input type="button" value="Choose File"/>
Keywords (comma separated):		Keywords (comma separated):	
<input type="button" value="Choose File"/>	No file chosen	<input type="button" value="Choose File"/>	No file chosen
Choose File		Choose File	

Match



79% Match
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TOOLS & TECH USED

- Levenshtein Distance for Natural Language Processing
- PyTorch MTCNN • InceptionResnetV1 • VGGFace2 Facial Recognition (Cosine Similarity)
- Languages used: Python, Javascript, HTML & CSS

Definition [edit]

Mathematically, the Levenshtein distance between two strings a, b is given by $\text{lev}_{a,b}(|a|, |b|)$ where

$$\text{lev}_{a,b}(i,j) = \begin{cases} \max(i,j) & \text{if } \min(i,j) = 0, \\ \min \left\{ \begin{array}{l} \text{lev}_{a,b}(i-1,j) + 1 \\ \text{lev}_{a,b}(i,j-1) + 1 \\ \text{lev}_{a,b}(i-1,j-1) + 1_{(a_i \neq b_j)} \end{array} \right\} & \text{otherwise.} \end{cases}$$

where $1_{(a_i \neq b_j)}$ is the indicator function equal to 0 when $a_i = b_j$ and equal to 1 otherwise.



OUR IMPACT

- Resc-U is for a good cause. The AI-based app will help identify a child, even if his/her image was clicked in childhood and now he/she is grown up using facial landmarks technology.
- It can help authorities in reducing trafficking by reuniting a child with his/her family, as most of them struggle to recall specific details about their hometown or family members.
- It can also be used by a person who has found a lost child or adult. This will make the reuniting process quick avoiding any chance of kidnapping or other unfortunate incidents.
- Resc-U can also be used for elderly and mentally unsound people who are lost somehow.
- The app can help thousands of people meet their families back and can even prevent horrendous crimes.



THANK YOU