

RMV's UTILIZATION OF FACIAL RECOGNITION SOFTWARE TO DETECT and Prevent FRAUD



Massachusetts Facial Recognition Commission
May 21, 2021
Colleen Ogilvie, Acting Registrar of Motor Vehicles

Agenda

- What is facial recognition technology?
- How is it used at the RMV?
- Process from start to finish
- Demo of a facial recognition search and results

What is Facial Recognition (FR)?

An Act Relative to Justice, Equity and Accountability in Law Enforcement in the Commonwealth defines FR as:

“Facial recognition”, an automated or semi-automated process that assists in identifying or verifying an individual or capturing information about an individual based on the physical characteristics of an individual’s face, head or body, that uses characteristics of an individual’s face, head or body to infer emotion, associations, activities or the location of an individual; provided, however, that “facial recognition” shall not include the use of search terms to sort images in a database.

Facial Recognition Software

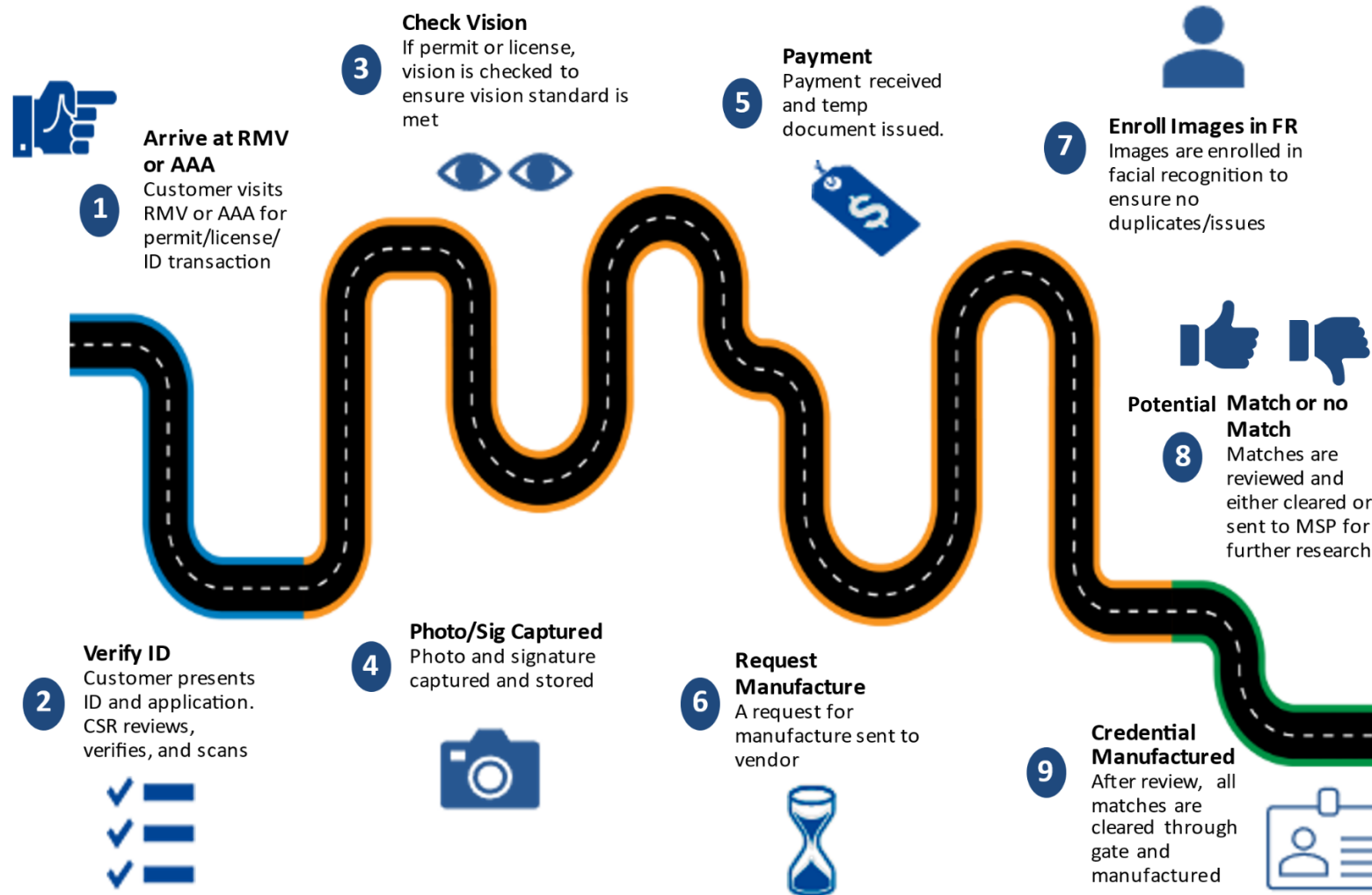
What does it do?

- Uses only the RMV's internal photo database to compare new images captured during a transaction against existing images in the RMV's database.
- Protects the true owner from identity theft and fraud.

What does it NOT do?

- RMV does not use external photos outside of the RMV's database or moving images/videos
- The software is not automatically connected to any criminal justice system.

Customer Journey for DL/ID



Facial Recognition Journey

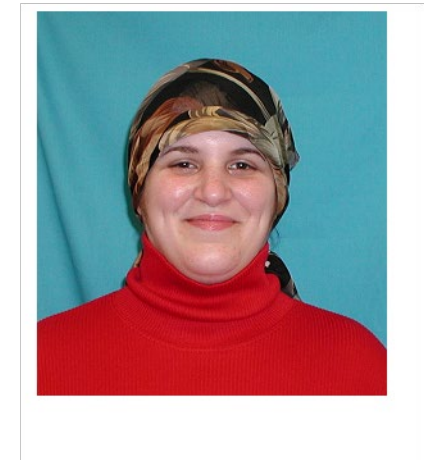
RMV's Photo Image Policy

The RMV has adopted certain International Civil Aviation Organisation (ICAO) Standards for capturing credential photos. ICAO photo guidelines are used for passport photos.

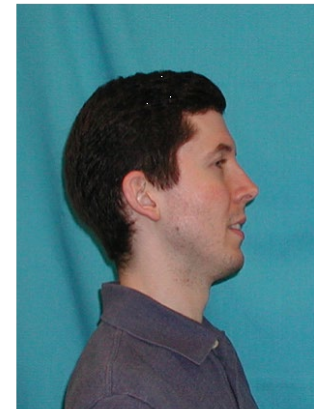
- The captured image must be a straightforward looking view of the applicant.
- All of the applicant's facial features must be visible (e.g. eyes, nose, mouth, cheeks, etc.).
- A solid or transparent facial cover (scarf, veil, face mask, etc.) is not acceptable.
- Eyeglasses, including reading or prescription glasses, are not allowed, even if the applicant normally wears them - Chapter 428 of the Acts of 2006
- A hat or other head cover is not acceptable, but if worn for medical or religious reasons, it may be allowed if it does not hide any facial features.
- Natural facial hair and hairpieces may be acceptable unless the overall effect disguises the person's true facial appearance or facial features are obscured.
- Permanent facial tattoos are acceptable but temporary tattoos are not.
- Bluetooth headsets are not acceptable.

Acceptable Photos

Acceptable for medical or religious reasons



Unacceptable Photos



RMV's Enforcement Services Unit

Members of Enforcement Services Unit include:

- RMV employees
 - The RMV utilizes FR software in its fraud detection and prevention processes to ensure integrity of its driver records and identities.
 - RMV's team includes facial recognition analysts and Hearings Officers
- Massachusetts State Police team
 - MSP team specialized in fraud detection and prevention assigned to RMV to assist in investigations.



The RMV's Facial Recognition Process

Part 1:
System
Automated
Review

Part 2:
Employee
Manual
Review



REGISTRY OF MOTOR VEHICLES

Part 1: System Automated Review include



The automated review is performed daily by using the Facial Recognition software to compare photos taken at RMV/AAA locations from the prior business day to existing photos in the RMV database.

- Approximately 6,000 images from previous day's credential transactions are reviewed /compared daily during automated process
 - RMV has approximately 6M active credentials – 6000 images compared against all credential images AND against historical images on record
- The vendor proprietary algorithm in the Facial Recognition software detects points of contour on a face to identify potential matches
- If a record meets or exceeds an established threshold of points of contour, a potential match occurs and is presented for further review
- Average of 20% (1,200 – 1,500 records) can be flagged as a potential match for manual review by RMV's Enforcement Services Unit's authorized users (RMV and MSP)

Automated Search

One to One

Software reviews new image against history of previous image(s) of SAME record

One to Many

Software reviews new image against ALL other images in RMV database

Part 2: Employee Manual Review

The manual review examines the results of the automated process and involves RMV and MSP analysis of 1,200 - 1,500 records daily out of 6,000 images from previous day's transactions.

- Majority of the 1,200 – 1,500 records are photo or data errors. Some potential data errors stem from a picture that has been mismatched with data.
- Manual exceptions will be made in cases of twins/triplets.
- Approximately 50 records need additional review and research.

One to Many Potential Match

An FR Analyst will:

- Compare new image captured against database of images
- Review the data set (name, date of birth, address) to ensure data integrity
- Review supporting ID documents and driver history to determine who, if any, is the real individual

One to One Potential Match

An FR Analyst will:

- Compare new and historical images side-by-side to determine whether or not it is same person

Potential Match Found

The 50 potential matches that need additional research and review will follow the process below.

1

RMV creates a case for potential match

2

MSP team assigned to RMV reviews case

3

MSP team provides RMV with recommendation for next steps

4

Criminal case, administrative case, or no action

Facial Recognition Demo

NOTE: Images used for demo are not RMV customers. Sample images with eyeglasses are not allowed for RMV photos.

Login Screen



Issuance 360
Back Office

Issuance 360 Back Office

Sign In

✕

Automated Results



My Tasks

Issuance Leads and Cases (1666) [Refresh](#)

Leads (1666) Cases (0) Investigations (0) Assigned to Me (0)

all (1666) 1:N (1666) 1:R (0) Combined (0)

[→ Review next: Lead](#)

Filter by S# [Filter] [Close]

✓	Case #	Type	Status	Last Name	First Name	S#	Surrogate #	Assigned To	Create Date
<input type="checkbox"/>	100055373	1:N	LEAD	AYERS	FERNANDA	324302753	9995585393055301	-	05/19/2021
<input type="checkbox"/>	100055372	1:N	LEAD	LANCASTER	MONIQUE	677844086	9983280314667884	-	05/19/2021
<input type="checkbox"/>	100055371	1:N	LEAD	PICKETT	MALIA	277098455	9978278498281019	-	05/19/2021
<input type="checkbox"/>	100055370	1:N	LEAD	WARD	TANNER	560643666	9977296111912656	-	05/19/2021
<input type="checkbox"/>	100055369	1:N	LEAD	TYSON	FERNANDO	833420143	9965383900557078	-	05/19/2021
<input type="checkbox"/>	100055368	1:N	LEAD	BREWER	HOPE	562382086	9942707348051310	-	05/19/2021
<input type="checkbox"/>	100055367	1:N	LEAD	WILEY	PHYLLIS	511095110	9951837339075794	-	05/19/2021
<input type="checkbox"/>	100055366	1:N	LEAD	DODSON	KASSANDRA	605784467	9942177507208473	-	05/19/2021
<input type="checkbox"/>	100055365	1:N	LEAD	SHAFFER	KATELYN	056645344	9928721213840551	-	05/19/2021
<input type="checkbox"/>	100055364	1:N	LEAD	ROSA	SABRINA	137469464	9928329386445231	-	05/19/2021

Results Gallery










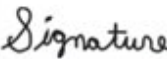

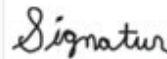
Biometric Identification

RESEARCH ✓ CLEAR ASSIGN... PRINT SAVE AS...

1:N Lead
100055329 - SUZANNE KRISTIE BARRERA

Origin
AUTOMATIC

1:N (4 candidates)

Probe	5.07	5.07	4.25	4.19	4.00
					
					
<p>SUZANNE KRISTIE BARRERA DOB: 11/17/1968 Gender: F Height: 7' 5" S#: 899846139 Issued: 04/25/2007 Expires: 04/25/2011 Surrogate #: 9690628371589382 Internal Person Id: 210940 License Type: ID_CARD Image Capture Date: 04/25/2007 Address: 4336 THIRD RD City: Boston State: MASSACHUSETTS Zip Code: 02204</p>	<p>KERRI HAILEY PRUITT DOB: 07/11/1975 Gender: F Height: 7' 9" S#: 950271541 Issued: 03/10/2018 Expires: 03/10/2022 Surrogate #: 6324187642087159 Internal Person Id: 210362 License Type: DL Image Capture Date: 03/10/2018 Address: 7409 FIFTH ST City: Talbots State: MASSACHUSETTS Zip Code: 02348</p>	<p>KERRI HAILEY PRUITT DOB: 07/11/1975 Gender: F Height: 7' 9" S#: 950271541 Surrogate #: 6324187642087159</p>	<p>ANTHONY YESTIN MCCARTHY DOB: 08/09/1923 Gender: M Height: 6' 4" S#: 081741953 Surrogate #: 6784866017532926</p>	<p>HATTIE SHERRIL MCCLURE DOB: 08/31/1938 Gender: F Height: 4' 2" S#: 294369715 Surrogate #: 8941168116111154</p>	<p>AURORA SHELBY BULLOCK DOB: 05/30/2001 Gender: F Height: 8' 10" S#: 992002391 Surrogate #: 5868666608080236</p>

Results Gallery









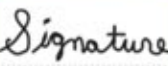
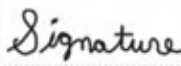
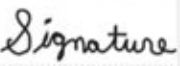
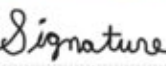
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<p>SUZANNE KRISTIE BARRERA DOB: 11/17/1968 Gender: F Height: 7' 5" S#: 899846139 Issued: 04/25/2007 Expires: 04/25/2011 Surrogate #: 9690628371589382 Internal Person Id: 210940 License Type: ID_CARD Image Capture Date: 04/25/2007 Address: 4336 THIRD RD City: Boston State: MASSACHUSETTS Zip Code: 02204</p>	<p>ANTHONY YESTIN MCCARTHY DOB: 08/09/1923 Gender: M Height: 6' 4" S#: 081741953 Issued: 08/07/2014 Expires: 08/07/2018 Surrogate #: 6764866017532926 Internal Person Id: 210437 License Type: DL Image Capture Date: 08/07/2014 Address: 2025 MAIN DR City: Tisbury State: MASSACHUSETTS Zip Code: 02573</p>	<p>KERRI HAILEY PRUITT DOB: 07/11/1975 Gender: F Height: 7' 8" S#: 950271541 Surrogate #: 6324187642087159</p>	<p>ANTHONY YESTIN MCCARTHY DOB: 08/09/1923 Gender: M Height: 6' 4" S#: 081741953 Surrogate #: 6764866017532926</p>	<p>HATTIE SHERRIL MCCLURE DOB: 06/31/1938 Gender: F Height: 4' 2" S#: 294369715 Surrogate #: 8941166116111154</p>	<p>AURORA SHELBY BULLOCK DOB: 05/30/2001 Gender: F Height: 5' 10" S#: 992002391 Surrogate #: 586866608080236</p>

Results Gallery


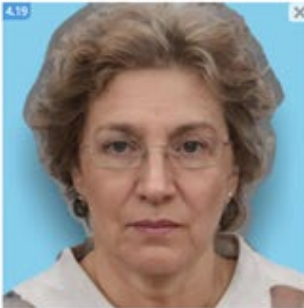










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Results Gallery


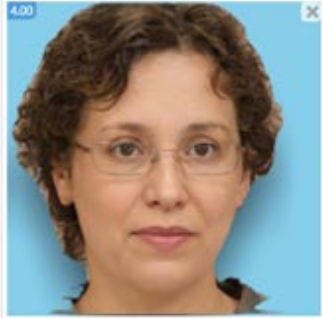


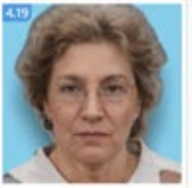

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 <i>Signature</i> SUZANNE KRISTIE BARRERA DOB: 11/17/1968 Gender: F Height: 7' 5" S#: 899846139 Issued: 04/25/2007 Expires: 04/25/2011 Surrogate #: 9690628371589382 Internal Person Id: 210940 License Type: ID_CARD Image Capture Date: 04/25/2007 Address: 4336 THIRD RD City: Boston State: MASSACHUSETTS Zip Code: 02204	 <i>Signature</i> AURORA SHELBY BULLOCK DOB: 05/30/2001 Gender: F Height: 8' 10" S#: 992002391 Issued: 10/30/2008 Expires: 10/30/2012 Surrogate #: 5868666608080236 Internal Person Id: 210271 License Type: ID_CARD Image Capture Date: 10/30/2008 Address: 5496 PARK RD City: Framingham State: MASSACHUSETTS Zip Code: 01703	 <i>Signature</i> KERRI HALEY PRUITT DOB: 07/11/1975 Gender: F Height: 7' 9" S#: 950271541 Surrogate #: 6324187642087159	 <i>Signature</i> ANTHONY YESTIN MCCARTHY DOB: 08/09/1923 Gender: M Height: 6' 4" S#: 081741953 Surrogate #: 6764866017532926	 <i>Signature</i> HATTIE SHERRIL MCCLURE DOB: 08/31/1938 Gender: F Height: 4' 2" S#: 294369715 Surrogate #: 8941166116111154	 <i>Signature</i> AURORA SHELBY BULLOCK DOB: 05/30/2001 Gender: F Height: 8' 10" S#: 992002391 Surrogate #: 5868666608080236
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Side by Side Comparison

t:N Search results

Swap Hide Gallery 2/25

Probe



R Mono Inv Contr Bright Gamma

Zoom: Zoom Out Zoom In

Rotate: ↺ ↻

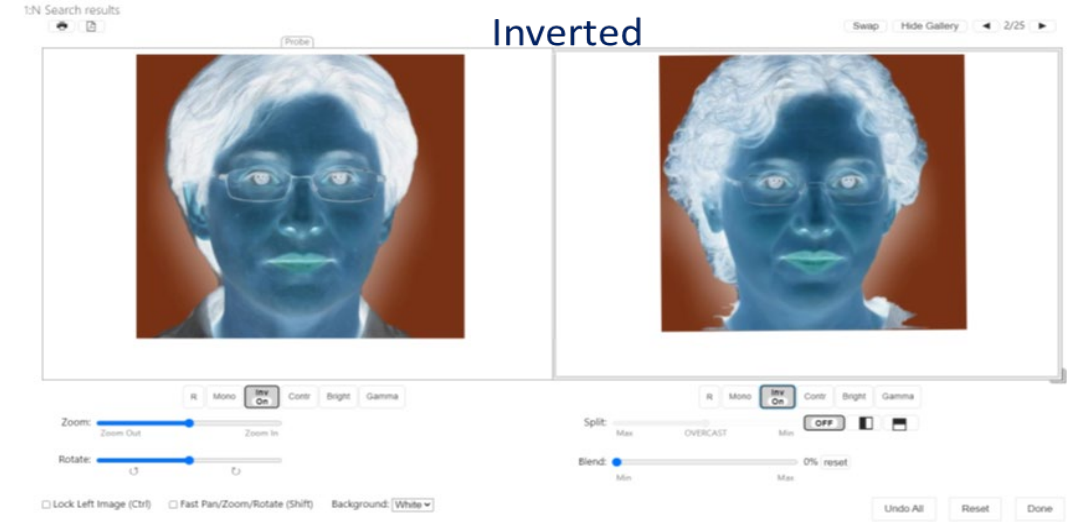
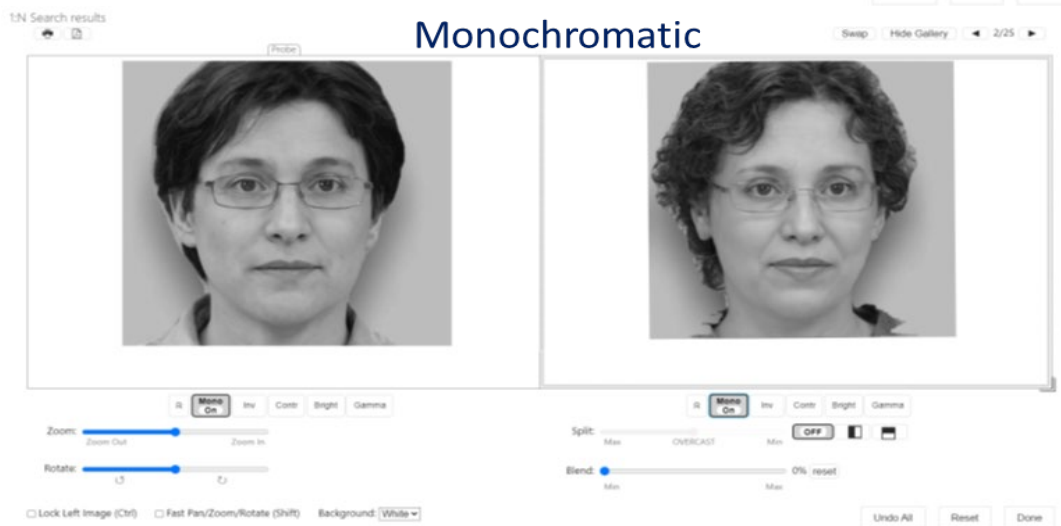
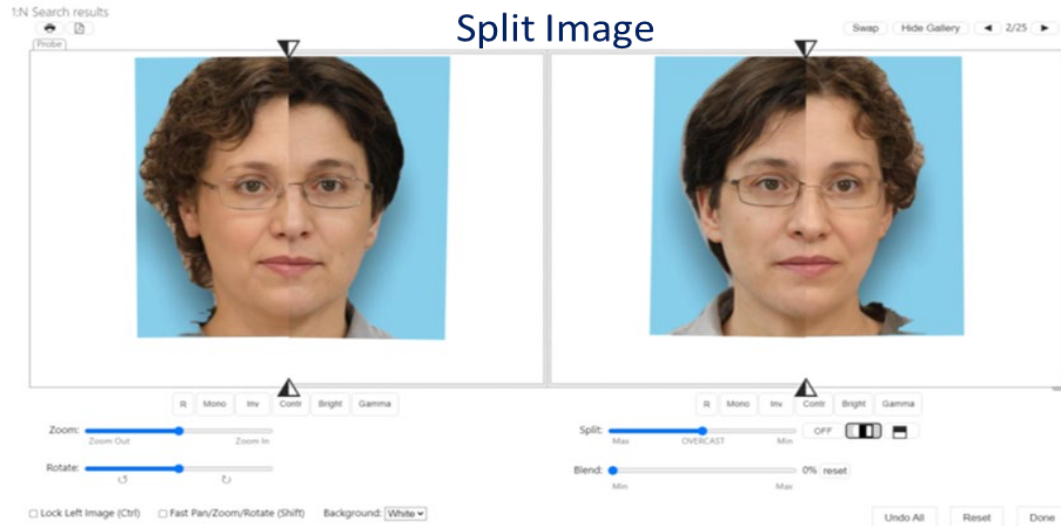
Split: Max OVERCAST Min OFF

Blend: Min 0% reset Max

Lock Left Image (Ctrl) Fast Pan/Zoom/Rotate (Shift) Background: White

Undo All Reset Done

Various Tools for Comparison



Potential Match Discovered

t:N Search results

Swap Hide Gallery 2/25

Probe



R Mono Inv Contr Bright Gamma

Zoom: Zoom Out Zoom In

Rotate: ↺ ↻

Split: Max OVERCAST Min OFF

Blend: Min 0% reset Max

Lock Left Image (Ctrl) Fast Pan/Zoom/Rotate (Shift) Background: White

Undo All Reset Done





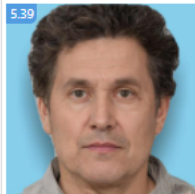
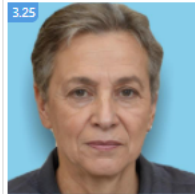
Results Gallery

Biometric Identification

SEARCH 1:N SEARCH 1:R FILTERS EXPORT COMPARE CLEAR

Image Search

Probe

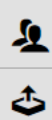
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LAWRENCE JAYLIN MCKNIGHT DOB: 07/14/1993 Gender: M Height: 7' 6" S#: 045719311 Issued: 02/07/2000 Expires: 02/07/2004 Surrogate #: 5658107999785649 Internal Person Id: 210239 License Type: DL Image Capture Date: 02/07/2000 Address: 4482 MAPLE RD , STE 5 City: Everett State: MASSACHUSETTS Zip Code: 02149	ZACHARY EDWIN AYERS DOB: 05/10/1957 Gender: M Height: 5' 0" S#: 158719503 Issued: 04/24/2013 Expires: 04/24/2017 Surrogate #: 8850662305642743 Internal Person Id: 210798 License Type: DL Image Capture Date: 04/24/2013 Address: 8742 PINE AVE City: Buzzards Bay State: MASSACHUSETTS Zip Code: 02532	ZACHARY EDWIN AYERS DOB: 05/10/1957 Gender: M Height: 5' 0" S#: 158719503 Surrogate #: 8850662305642743	ROSS YESTIN JOYNER DOB: 07/05/1959 Gender: M Height: 7' 9" S#: 751002875 Surrogate #: 12579507255558542	GAGE RAUL DOYLE DOB: 06/19/1950 Gender: M Height: 6' 10" S#: 491302931 Surrogate #: 3734707211250325	BONNIE SUSIE LEON DOB: 02/06/1931 Gender: F Height: 7' 11" S#: 296721014 Surrogate #: 3209170426847690

Results Gallery

Biometric Identification

SEARCH 1:N SEARCH 1:R FILTERS EXPORT COMPARE CLEAR

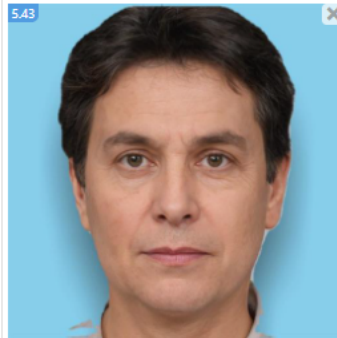
Image Search



Signature

LAWRENCE JAYLIN MCKNIGHT

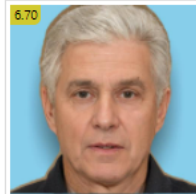
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Gender: M
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Expires: 02/07/2004
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Internal Person Id: 210239
License Type: DL
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Address: 4482 MAPLE RD , STE 5
City: Everett
State: MASSACHUSETTS
Zip Code: 02149



Signature

ROSS YESTIN JOYNER

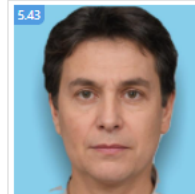
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Surrogate #: 1257950725558542
Internal Person Id: 209286
License Type: DL
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Address: 6739 HILL ST , BLDG H
City: Brightwood
State: MASSACHUSETTS
Zip Code: 01107



Signature

ZACHARY EDWIN AYERS

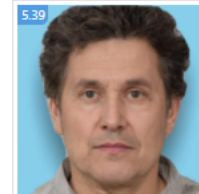
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Gender: M
Height: 5' 0"
S#: 158719503
Surrogate #: 8850662305642743



Signature

ROSS YESTIN JOYNER

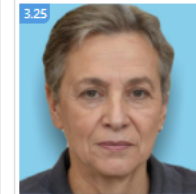
DOB: 07/05/1959
Gender: M
Height: 7' 9"
S#: 751002875
Surrogate #: 1257950725558542



Signature

GAGE RAUL DOYLE

DOB: 06/19/1950
Gender: M
Height: 6' 10"
S#: 491302931
Surrogate #: 3734707211250325



Signature

BONNIE SUSIE LEON

DOB: 02/06/1931
Gender: F
Height: 7' 11"
S#: 296721014
Surrogate #: 3209170426847690






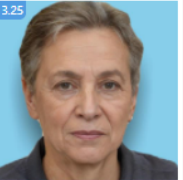
Results Gallery

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Probe


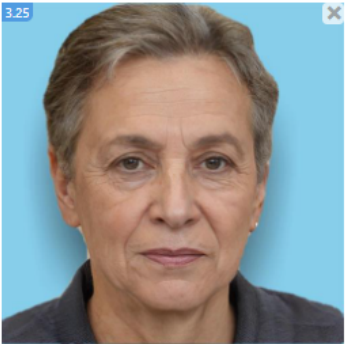


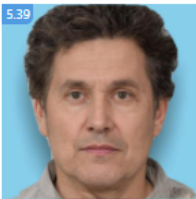
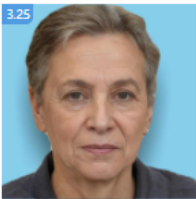
 <i>Signature</i>	 <i>Signature</i>	 <i>Signature</i>	 <i>Signature</i>	 <i>Signature</i>	 <i>Signature</i>
<p>LAWRENCE JAYLIN MCKNIGHT</p> <p>DOB: 07/14/1993 Gender: M Height: 7' 6" S#: 045719311 Issued: 02/07/2000 Expires: 02/07/2004 Surrogate #: 5658107999785649 Internal Person Id: 210239 License Type: DL Image Capture Date: 02/07/2000 Address: 4482 MAPLE RD . STE 5 City: Everett State: MASSACHUSETTS Zip Code: 02149</p>	<p>GAGE RAUL DOYLE</p> <p>DOB: 06/19/1950 Gender: M Height: 6' 10" S#: 491302931 Issued: 11/26/2017 Expires: 11/26/2021 Surrogate #: 3734707211250325 Internal Person Id: 209875 License Type: DL Image Capture Date: 11/26/2017 Address: 5537 FIFTH LN City: North Andover State: MASSACHUSETTS Zip Code: 01845</p>	<p>ZACHARY EDWIN AYERS</p> <p>DOB: 05/10/1957 Gender: M Height: 5' 0" S#: 158719503 Surrogate #: 8850662305642743</p>	<p>ROSS YESTIN JOYNER</p> <p>DOB: 07/05/1959 Gender: M Height: 7' 9" S#: 751002875 Surrogate #: 1257950725558542</p>	<p>GAGE RAUL DOYLE</p> <p>DOB: 06/19/1950 Gender: M Height: 6' 10" S#: 491302931 Surrogate #: 3734707211250325</p>	<p>BONNIE SUSIE LEON</p> <p>DOB: 02/06/1931 Gender: F Height: 7' 11" S#: 296721014 Surrogate #: 3209170426847690</p>

Results Gallery

Biometric Identification

SEARCH 1:N SEARCH 1:R FILTERS EXPORT COMPARE CLEAR

Image Search

 <i>Signature</i>	 <i>Signature</i>	 <i>Signature</i>	 <i>Signature</i>	 <i>Signature</i>	 <i>Signature</i>
<p>LAWRENCE JAYLIN MCKNIGHT</p> <p>DOB: 07/14/1993 Gender: M Height: 7' 6" S#: 045719311 Issued: 02/07/2000 Expires: 02/07/2004 Surrogate #: 5658107999785649 Internal Person Id: 210239 License Type: DL Image Capture Date: 02/07/2000 Address: 4482 MAPLE RD , STE 5 City: Everett State: MASSACHUSETTS Zip Code: 02149</p>	<p>BONNIE SUSIE LEON</p> <p>DOB: 02/06/1931 Gender: F Height: 7' 11" S#: 296721014 Issued: 11/12/2017 Expires: 11/12/2021 Surrogate #: 3209170426847690 Internal Person Id: 209773 License Type: DL Image Capture Date: 11/12/2017 Address: 8359 PARK LN City: Gilbertville State: MASSACHUSETTS Zip Code: 01031</p>	<p>ZACHARY EDWIN AYERS</p> <p>DOB: 05/10/1957 Gender: M Height: 5' 0" S#: 158719503 Surrogate #: 8850662305642743</p>	<p>ROSS YESTIN JOYNER</p> <p>DOB: 07/05/1959 Gender: M Height: 7' 9" S#: 751002875 Surrogate #: 1257950725558542</p>	<p>GAGE RAUL DOYLE</p> <p>DOB: 06/19/1950 Gender: M Height: 6' 10" S#: 491302931 Surrogate #: 3734707211250325</p>	<p>BONNIE SUSIE LEON</p> <p>DOB: 02/06/1931 Gender: F Height: 7' 11" S#: 296721014 Surrogate #: 3209170426847690</p>

Side by Side Comparison



1:N Search results



Swap Hide Gallery 1/25

Probe



R Mono Inv Contr Bright Gamma

R Mono Inv Contr Bright Gamma

Zoom: Zoom Out Zoom In

Split: Max OVERCAST Min OFF

Rotate: Rotate

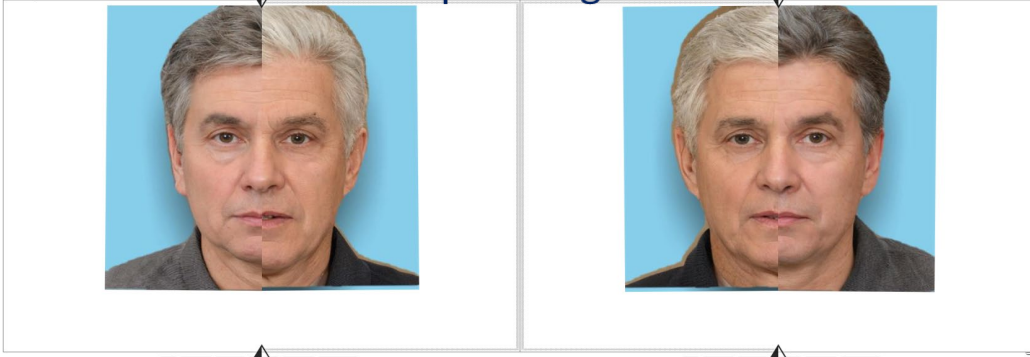
Blend: 0% reset

Lock Left Image (Ctrl) Fast Pan/Zoom/Rotate (Shift) Background: White

Undo All Reset Done

Various Tools for Comparison

Split Image



1:N Search results

Swap Hide Gallery 1/25

Zoom: Zoom Out Zoom In

Rotate: ⌘ ⌘

Lock Left Image (Ctrl) Fast Pan/Zoom/Rotate (Shift) Background: [White]

Undo All Reset Done

Blend



1:N Search results

Swap Hide Gallery 1/25

Zoom: Zoom Out Zoom In

Rotate: ⌘ ⌘

Lock Left Image (Ctrl) Fast Pan/Zoom/Rotate (Shift) Background: [White]

Blend: 50% reset

Undo All Reset Done

Monochromatic



1:N Search results

Swap Hide Gallery 1/25


Zoom: Zoom Out Zoom In

Rotate: ⌘ ⌘

Lock Left Image (Ctrl) Fast Pan/Zoom/Rotate (Shift) Background: [White]

Undo All Reset Done

Inverted



1:N Search results

Swap Hide Gallery 1/25

Zoom: Zoom Out Zoom In

Rotate: ⌘ ⌘

Lock Left Image (Ctrl) Fast Pan/Zoom/Rotate (Shift) Background: [White]

Blend: 0% reset

Undo All Reset Done

Potential Match Discovered

Probe



Thank you!

The Facial Recognition software has assisted with some of the RMV's goals of:

- maintaining data integrity
- overarching goal of one driver, one record
- preventing identity fraud
- reducing fraudulent activities