

# IMAGE CONVERSION

- Requirements to attain the face matching performance proposed.
- Face frontal view, with pose variation up to 15 degrees on x axis (face pitch), y axis (face yaw), and z axis (face tilt).
- Both eyes must be visible with a minimum of 64 degrees between eye centers.
- Face size ratio within photo minimum  $1/8^{\text{th}}$  the width of the image and maximum  $1/2$  the width of the image.

# **IMAGE CONVERSION,** CONTINUED

- Black and white or color image.
- Image can be landscape or portrait format.
- Image source from any digital camera (including IP video camera, webcam, or digital point and shoot camera) minimum image size: 1 megapixel (480X640)
- No dark sunglasses that obscure view of eyes or eyes.
- Subject may have facial hair or be balding (clear).



**THANK YOU  
FOR JOINING US**

**Walsh, James F (SDA)**

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**From:** Walsh, James F (SDA)  
**Sent:** Thursday, May 13, 2010 3:44 PM  
**To:** 'Richard Search'  
**Subject:** RE: Facial Recognition Presentation from May 12th Sheriff's Meeting.

Received. TY.

James F. Walsh, Executive Director  
Massachusetts Sheriffs' Association

[REDACTED]  
(617) [REDACTED] direct

[REDACTED] fax  
[REDACTED]

My new email address:

[REDACTED]@us

---

**From:** Richard Search [mailto:[REDACTED]]  
**Sent:** Thursday, May 13, 2010 1:49 PM  
**To:** Walsh, James F (SDA)  
**Cc:** George Connolly; Paul Schuepp  
**Subject:** Facial Recognition Presentation from May 12th Sheriff's Meeting.  
**Importance:** High

.im,

Attached is the presentation that we handed out at yesterdays meeting.

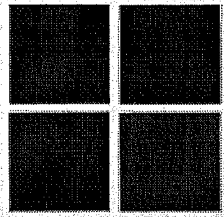
Thanks for hosting the meeting.

Regards,

**Richard G. Search**  
Director, Program Management

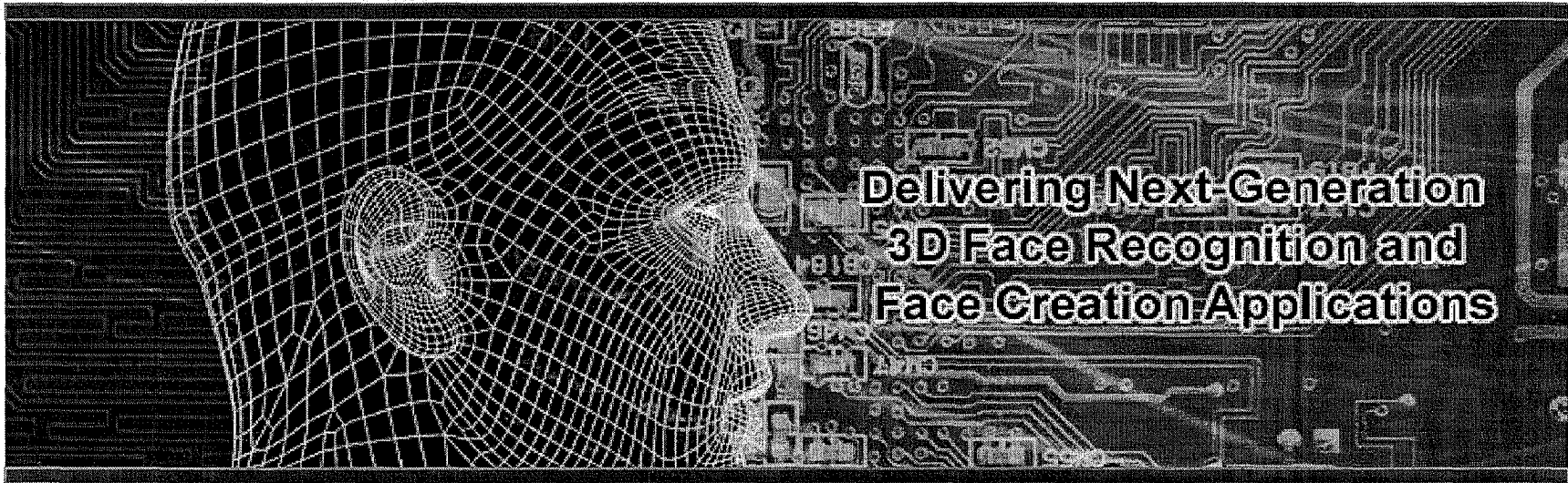
**Animetrics, Inc.**  
53 Technology Lane  
Conway, NH 03810

(o) [REDACTED] - ext. 2031 - NH.  
(o) [REDACTED] - MA.  
(m) [REDACTED]  
(f) [REDACTED]



# BI<sup>2</sup> TECHNOLOGIES

*Biometric Intelligence & Identification Technologies*

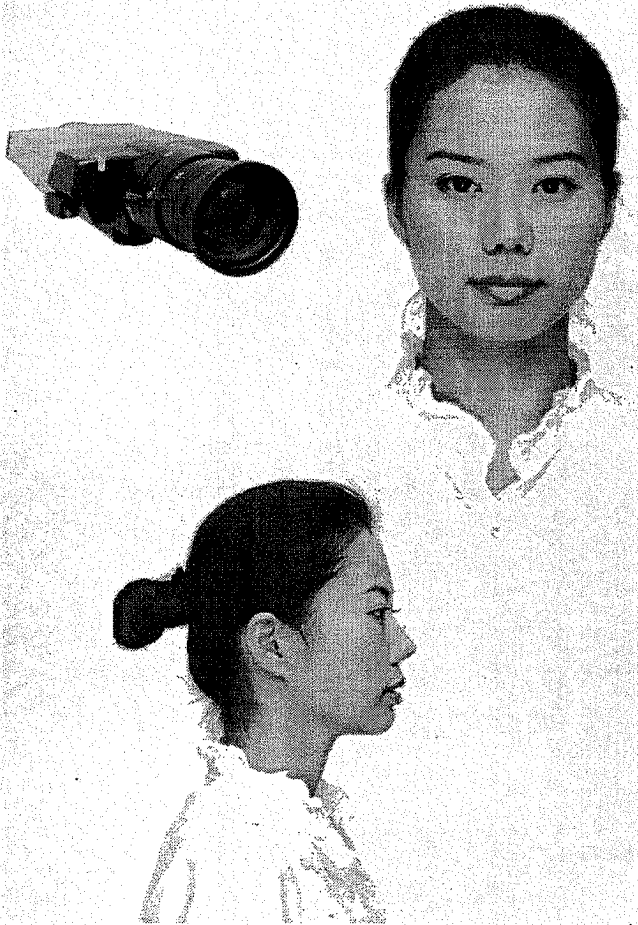


**Automated Facial Recognition**  
*Provided by*

**ANIMETRICS**

May 12, 2010

# Animetrics Face Biometric 2D to 3D Technology



ANIMETRICS®  
PATENTED  
2D-3D FACEENGINE™  
ALGORITHMS

$$\frac{d\phi_t}{dt} = v_t \phi_t$$

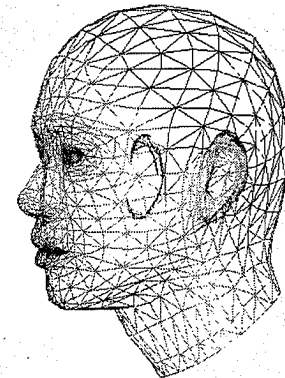
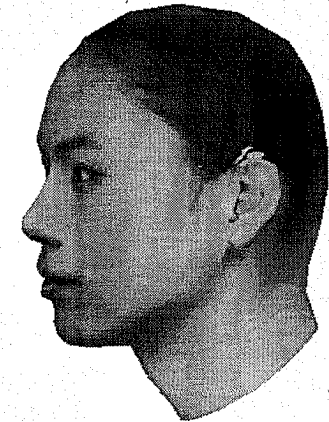
$$I = \{I : I = I_{temp} \phi\}$$

$$I(x) = L(x)T(x), x \in FACE$$

$$\inf_{\phi} \int_0^1 \|v_t\|_V^2 dt \text{ such that } d(I_{temp} \phi_1^{-1}, I^D) = 0$$

$$P : (x, y, z) \rightarrow p(x, y, z) = \begin{pmatrix} \alpha_1 x & \alpha_2 y \\ z & z \end{pmatrix}$$

$$\inf_{\phi=v(\phi)} \int_0^1 \|v_t\|_V^2 dt + \beta d^2(I_{temp} \phi_1^{-1}, I^D)$$





# Face Recognition for any Facial Pose



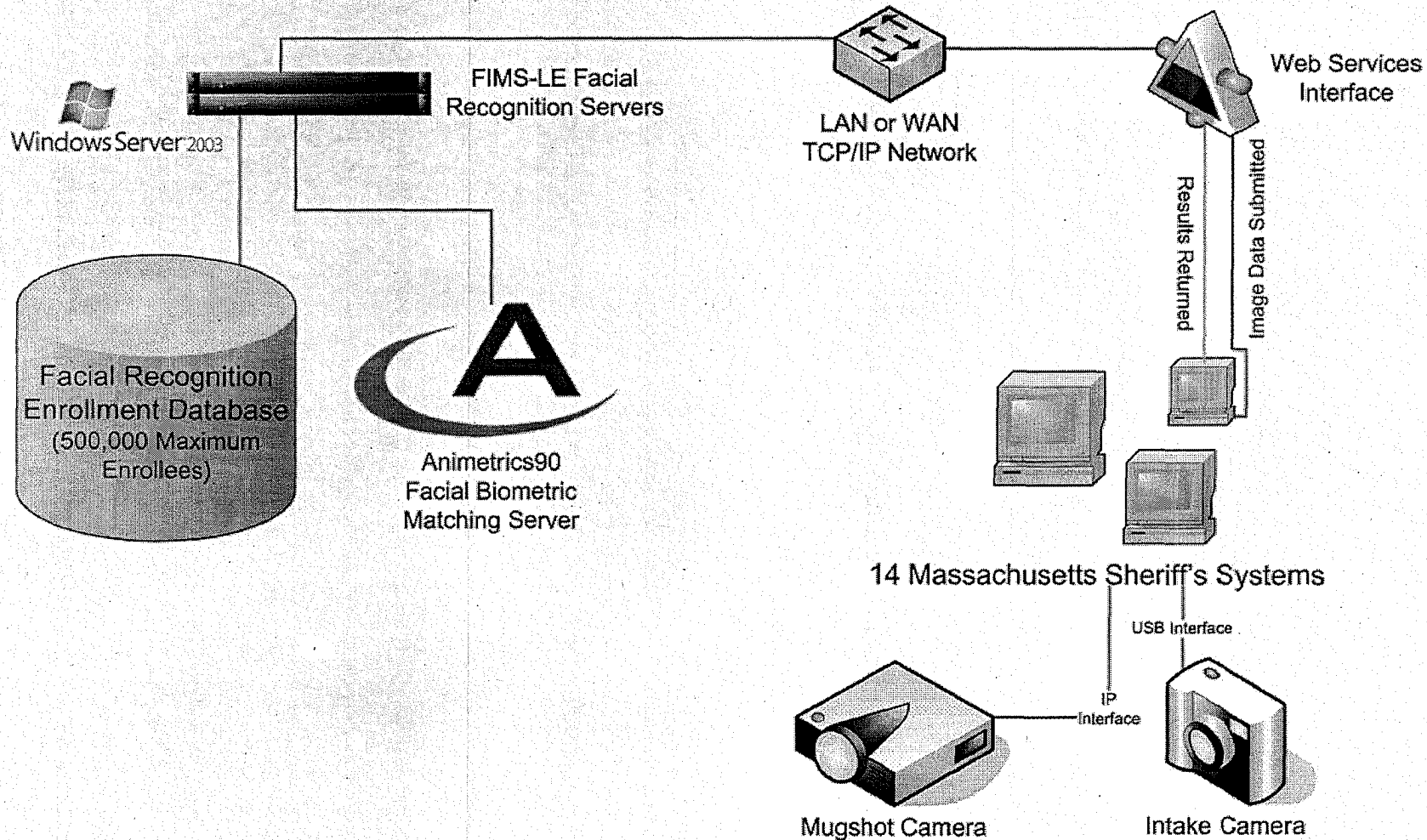
## **ANIMETRICS90**

**NON FRONTAL 45 DEGREES TO FRONTAL**

## **ANIMETRICS180**

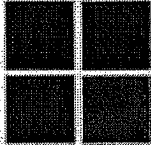
**FACE PROFILES**

# Massachusetts Sheriff's FR System Configuration





# Logon to BI2 Facial Recognition System




## BI<sup>2</sup> TECHNOLOGIES

*Biometric Intelligence & Identification Technologies*

Login Required:

Username:

Password:



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Patents 7,643,685 7,643,683 7,643,671

# Face Identity Management System (FIMS) Applications and Controls

**BI<sup>2</sup> TECHNOLOGIES** FACE IDENTITY MANAGEMENT SYSTEM

Photos Galleries Enroll Watch Access

**Navigation Bar** →

**Links:**

- Home
- Upload from Disk
- Upload from IPCam
- Upload from USBCam
- ID Archive
- Online Documentation

**Manage:**

- Manage System
- Manage Cameras
- Manage Galleries
- Manage Folders
- My Account
- Logout

**Account Dashboard:**

ID System On... [Español](#)

GALLERY SYNCHRONIZATION CHECK = SUCCESS ([View Gallery Status](#))

Image submitted on 05/11/10 at 09:45am

Homepage

MASSACHUSETTS SHERIFFS

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# Enroll

BP<sup>2</sup> TECHNOLOGIES

FACE IDENTITY MANAGEMENT SYSTEM

Photos | Galleries | **Enroll** | Watch | Access

Enrollment | Restart Anytime | Select Video: USB Camera

Last Name: Doucette | First Name: Sean | Middle Name: | DOB: 14/1967 | SSN#: 90-0987 | Booking#: B88 | FBI#: FBI78 | SID#: SID87 | U.S. Citizen:  Yes  No

Phone: 03-986-4288 | Address: Tin Mine Rd | City: Jackson | State: NH | Zip: 03846 | County: Carroll | ICE 287: H87 | Country of Birth: USA

Gender: Male | Height: 5.7 | Weight: 150 | Hair: Brown | Eye: Blue | race: Caucasian | Skin: White | DL State: NH | DL Num: U7ey

Avatar →

Click to Capture  
Mimic Avatar Face

- Vary Pose during enrollment
- Capture "front" view
- Mimic position of the "Avatar"

(1 item remaining) Waiting for http://localhost/enroll/?page=Enroll... | Local intranet | 100%



# Enroll

**BI<sup>2</sup> TECHNOLOGIES** **FACE IDENTITY MANAGEMENT SYSTEM**

Photos Galleries **Enroll** Watch Access

Enrollment  Select Video:

Last Name:  First Name:  Middle Name:  DOB:  SSN#:  Booking#:  FBI#:  SID#:  U.S. Citizen:  Yes  No

Phone:  Address:  City:  State:  Zip:  County:  ICE 287:  Country of Birth:

Gender:  Height:  Weight:  Hair:  Eye:  race:  skin:  DL State:  DL Num:

**Avatar**

*- Capture "Right 45 degree" view*  
*- Mimic position of the "Avatar"*

(1 item remaining) Waiting for: http://localhost/enroll/?page=Enroll... Local intranet 100%

# Enroll

Animetrics V2HD - Windows Internet Explorer

http://localhost/enroll/?page=Enroll

ascii'

localhost / localhost / webid / ... Ascii Table - ASCII character ...

Page Safety Tools

## BI<sup>2</sup> TECHNOLOGIES

### FACE IDENTITY MANAGEMENT SYSTEM


Photos Galleries **Enroll** Watch Access

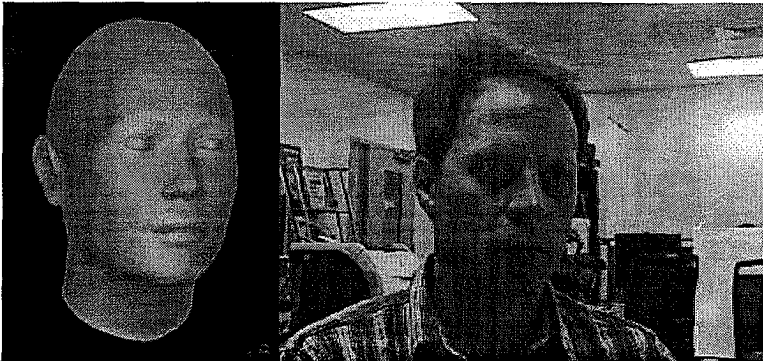
Enrollment  Select Video:

Last Name:  First Name:  Middle Name:  DOB:  SSN#:  Booking#:  FBI#:  SID#:  U.S. Citizen:  Yes  No

Phone:  Address:  City:  State:  Zip:  County:  ICE 287:  Country of Birth:

Gender:  Height:  Weight:  Hair:  Eye:  race:  Skin:  DL State:  DL Num:

**Avatar** 



Mimic Avatar Face

*- Capture "Left 45 degree" view*  
*- Mimic position of the "Avatar"*

(1 item remaining) Waiting for http://localhost/enroll/?page=Enroll...

Local intranet 100%

# Watch Automatic Mode



## FACE IDENTITY MANAGEMENT SYSTEM

### Links:

- Home
- Upload from Disk
- Upload from IPCam
- Upload from USB Cam
- ID Archive
- Online Documentation

### Manage:

- Manage System
- Manage Cameras
- Manage Galleries
- Manage Folders
- My Account
- Logout

Photos

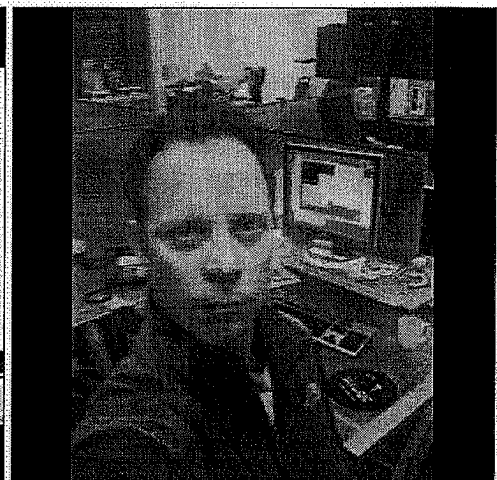
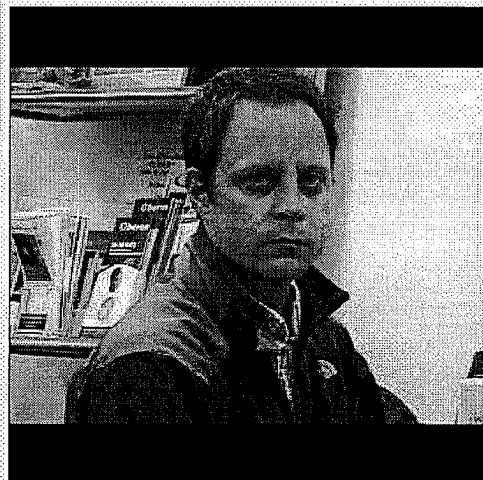
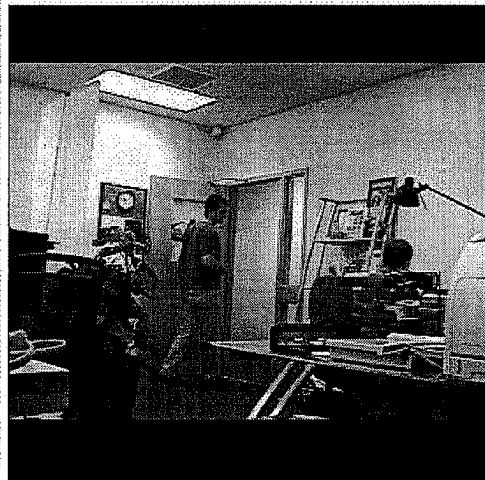
Galleries

Enroll

Watch

Access

Watch Pipeline: Automatic



Capture Frame

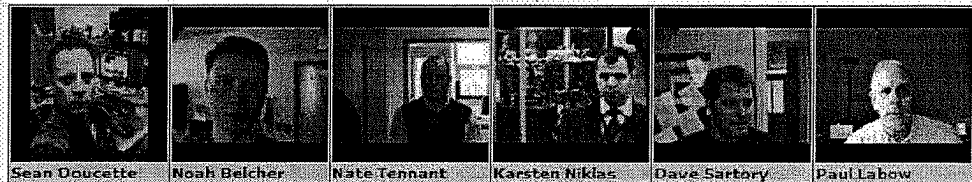
Camera: USB Camera

Gallery: AnimetricsGallery:(biometrics)

Pose Threshold: X 20 Y 20

Score Threshold: 0

Type: Automatic



*Top Ranked Matches Shown*