

Face Paradox and Cryptanalysis of Several Face Recognition Protocols

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Languages
Time, Inc.

Facial-recognition tech has people pegged

July 17, 2001 Posted: 1:01 p.m. EDT (1701 GMT)

By Emelie Rutherford

From...
darwin
AN IDG.net
SITE



(IDG) -- Forget ID badges, passwords and access cards. Pretty soon, to get in and out of your office you might start using something you can't forget or misplace: your face.

Once the stuff of science fiction, facial recognition technology has started to appear in real-life buildings and public places. Setups consist of cameras that capture images of people who pose or simply walk by, and software that matches those pictures with those

stored in a database.

Institutions of all kinds -- such as those that want to protect buildings or internal networks and banks in need of greater security for ATMs -- have recently begun to use facial recognition to verify users. Physical access control will be the main source of revenue for biometrics companies over the next five years, according to Marlene Bourne, a senior analyst for emerging semiconductor applications at Scottsdale, Ariz.-based Cahners In-Stat Group. Currently, though, it is being used most in casinos (more than 100 across the country have facial recognition in operation) and neighborhoods (the city of Tampa uses it in outdoor cameras to spot missing children and lawbreakers).

Facial recognition is a technology that has

Done

FACE RECOGNITION HOMEPAGE

FACE RECOGNITION HOMEPAGE



ALGORITHMS



Image-Based Face Recognition Algorithms

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Video-Based Face Recognition Algorithms

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Image-Based Face Recognition Algorithms

PCA | ICA | LDA | EP | EBGM | Kernel Methods | Trace Transform
AAM | 3-D Morphable Model | 3-D Face Recognition
Bayesian Framework | SVM | HMM | Boosting & Ensemble
Algorithms Comparisons

PCA

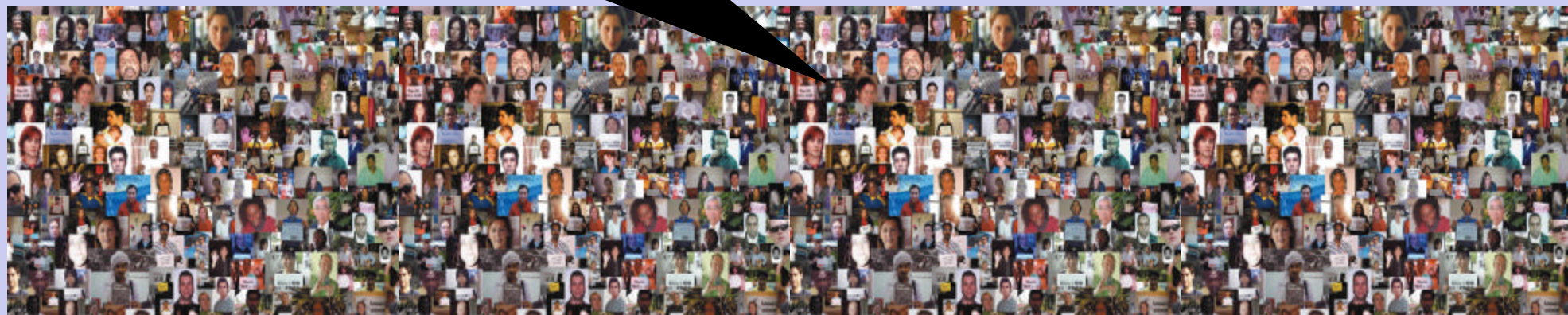
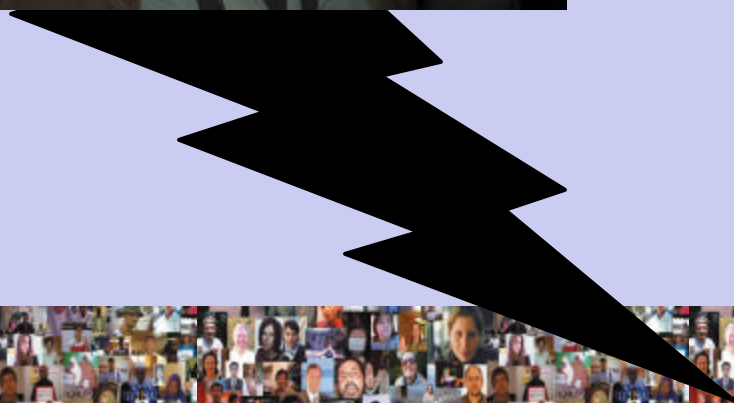
Derived from Karhunen-Loeve's transformation. Given an s -dimensional vector representation of each face in a training set of images, Principal Component Analysis (PCA) tends to find a t -dimensional subspace whose basis vectors correspond to the maximum variance direction in the original image space. This new subspace is normally lower dimensional ($t < s$). If the image elements are considered as random variables, the PCA basis vectors are defined as eigenvectors of the scatter matrix.

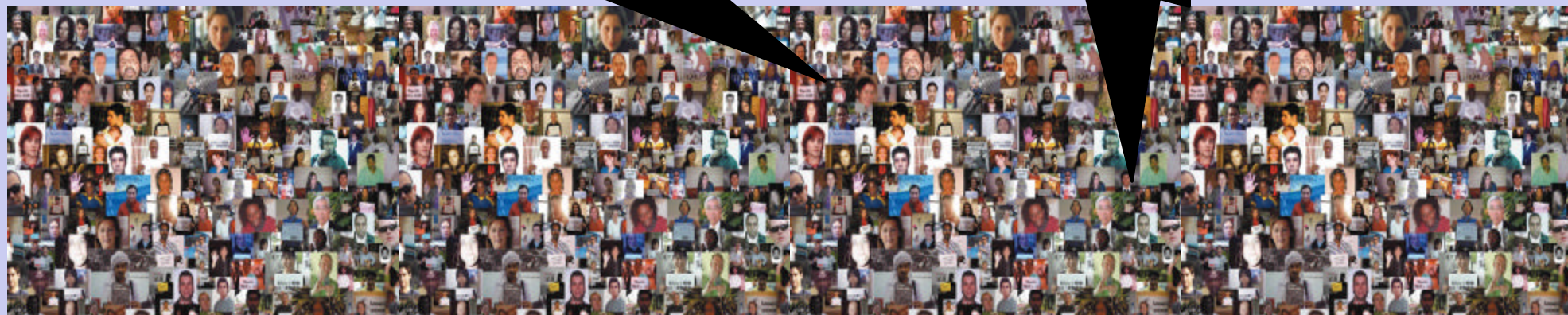
Read more:

Why it may not work

- Face recognition protocols do not into account the **Face paradox problem**:
 - An analogy of a well-known Birthday paradox
 - Is much less understood and studied
 - No concrete bounds are known
- The initial experiments are promising





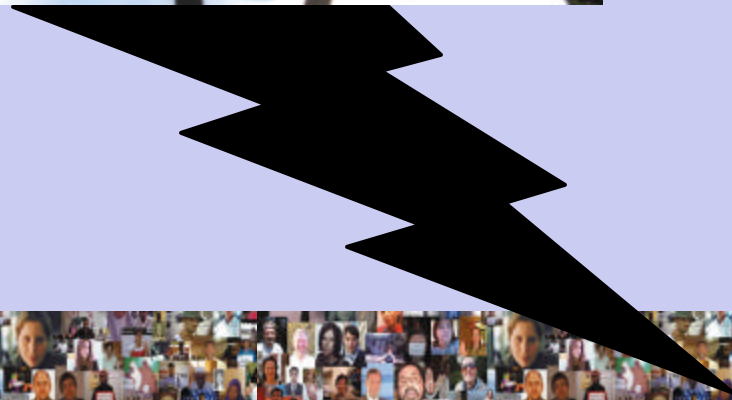








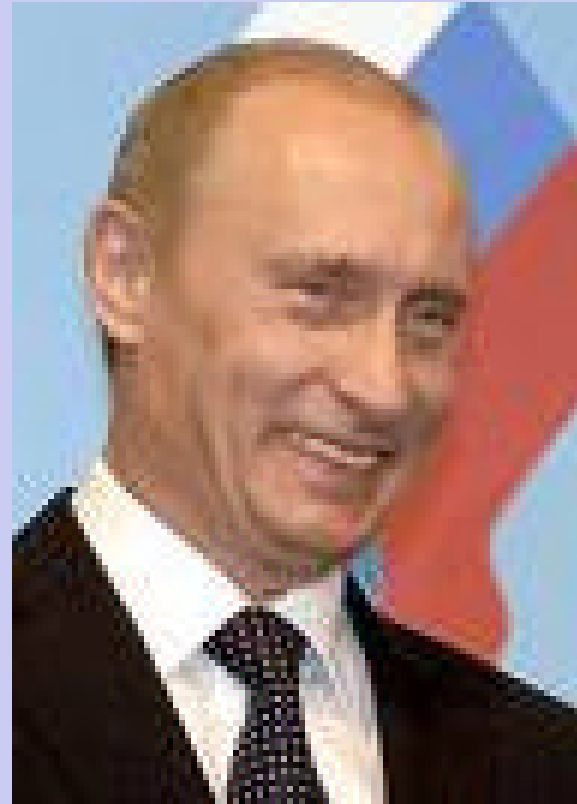












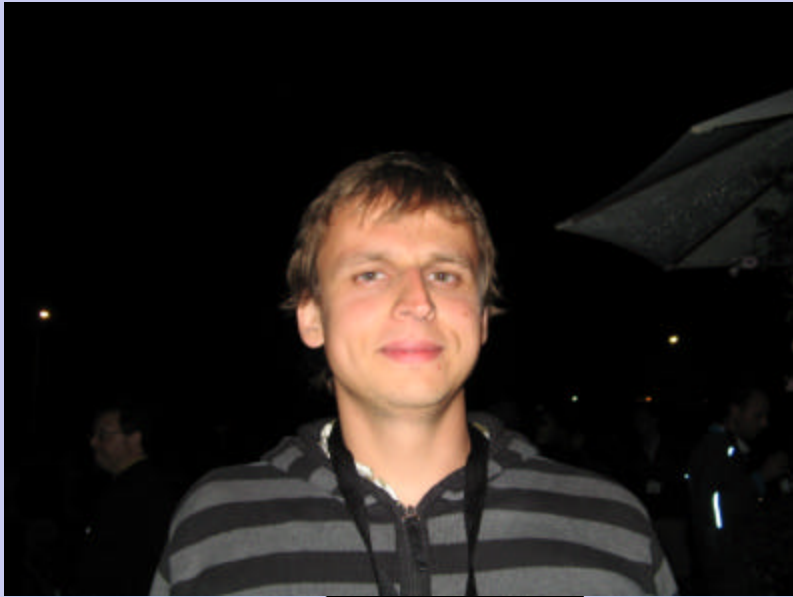












I am looking for collaborators.
Please send your data to sasha@gatech.edu

Thank you!