

Still Face Challenge Problem Multiple Biometric Grand Challenge Preliminary Results of Version 2

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National Institute of
Standards and Technology

NIST

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Still Face Background

- FRVT 2006
 - Verification rate = .99 at FAR = 0.001
 - Frontal
 - Controlled illumination
 - High resolution (400 pixels between the eyes)
 - Large scale laboratory collection
 - 6 MP camera

MBGC Still Face Goals

- Many applications of still face involve:
 - Unconstrained illumination
 - Non-frontal
- ICAO Passport Standard
 - Low resolution (90-120 pixels between the eyes)
 - Compressed imagery (8KB to 20KB)

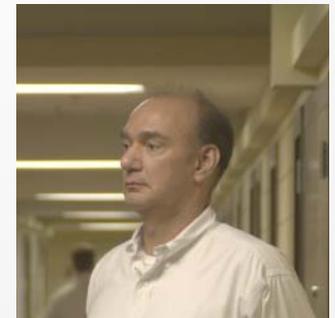
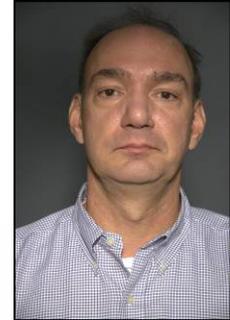
MBGC Still Face Goals

- Many applications of still face involve:
 - Unconstrained illumination
 - Low resolution
 - Compressed imagery
 - Non-frontal

MBGC Still Face challenge problem addresses these constraints.

Still Face

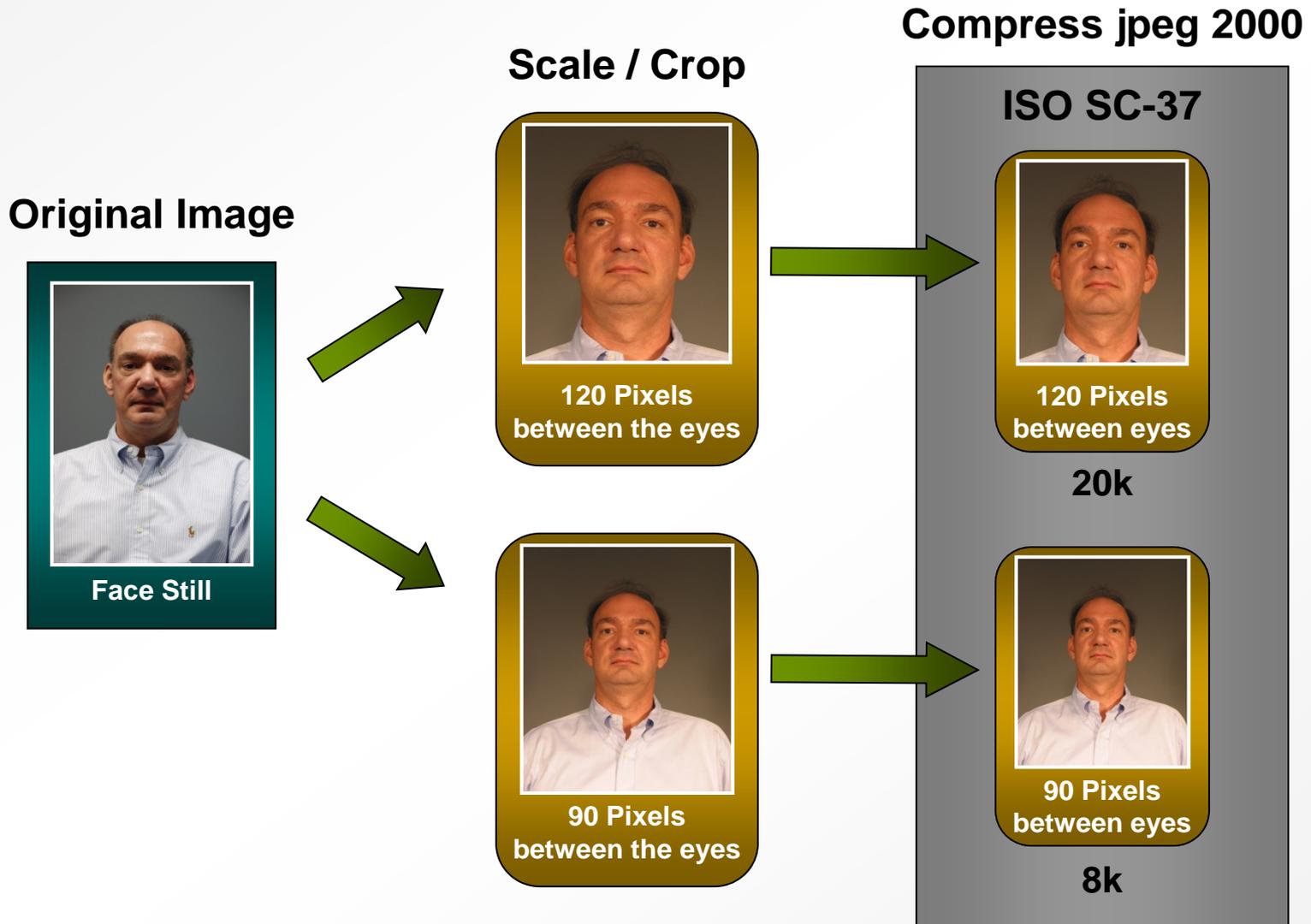
- Two target sets – AY03-04 (FRGC)
 - Controlled illumination frontal
 - Uncontrolled illumination frontal
- One query set – AY04-05
 - Uncontrolled illumination frontal
 - Uncontrolled illumination non-frontal



Effects of Lower Resolution and Compression on FR

- Determine effect of
 - Lower resolution
 - Compression
- Process original images to meet data requirements
 - Scale and crop
 - 120 and 90 pixels between the eyes
 - Compress images
 - 20KB and 8KB

Still Face Processing



Results from Still Face Challenge Problem...

Participants 2009

- Dalian University of Technology
- L-1 Identity Solutions AG
- Pittsburgh Pattern Recognition
- NEC Corporation

Legend

Dalian UT

L1

PittPatt

NEC

Controlled

vs.

Uncontrolled

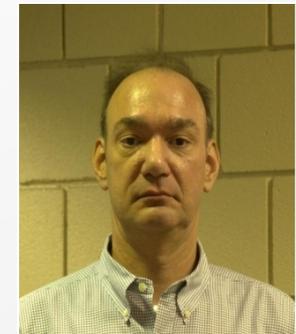
Number of Images

16,028



Number of Images

10,687



No Compression

Compression

120 pixels

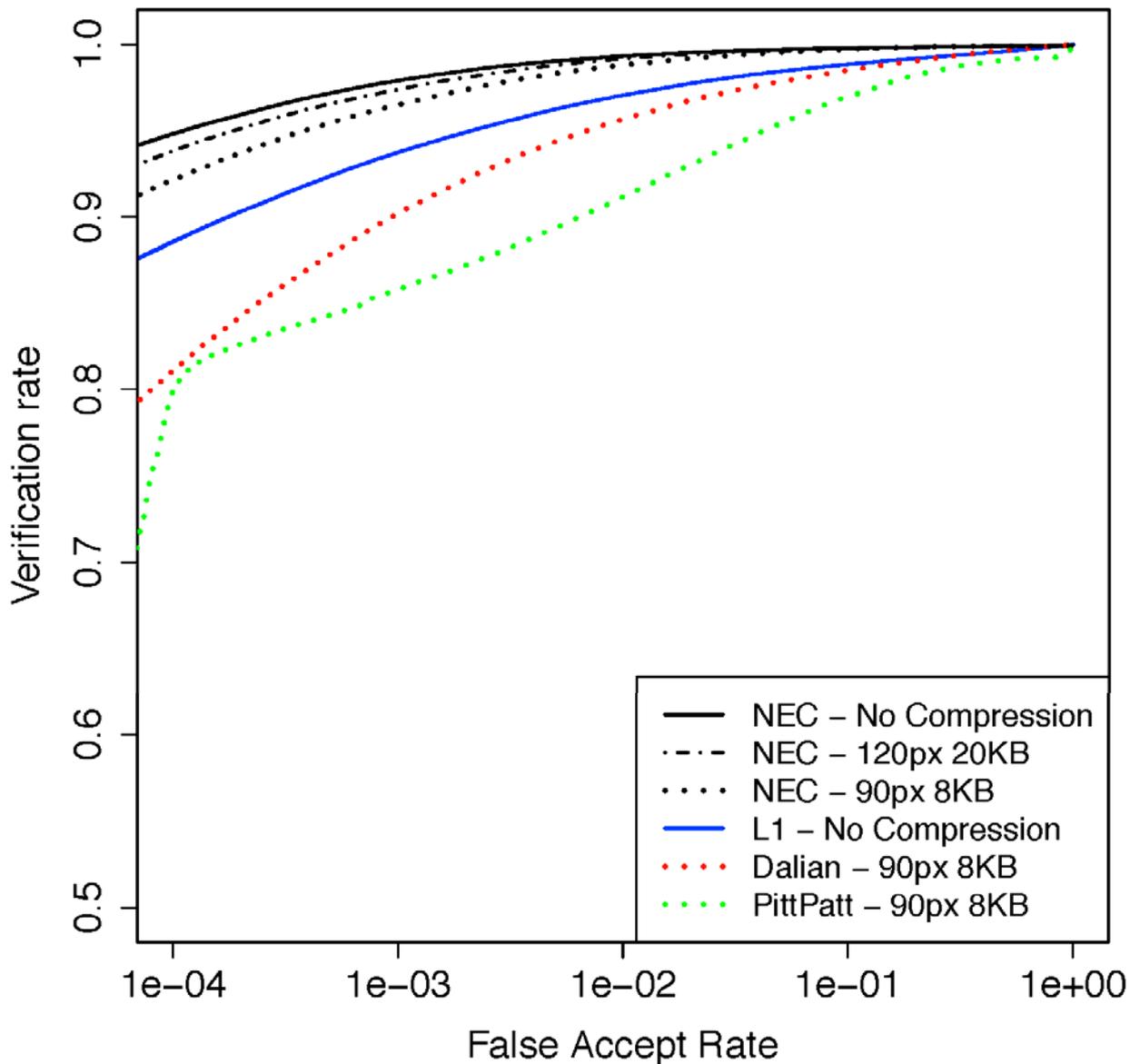
20 KB

Compression

90 pixels

8 KB

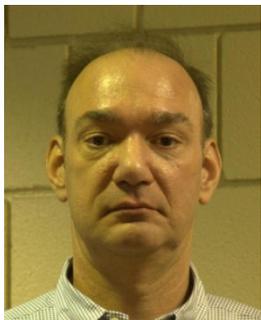
Controlled vs. Uncontrolled Frontal



Uncontrolled

vs. Uncontrolled

Number of Images
8,014



No Compression

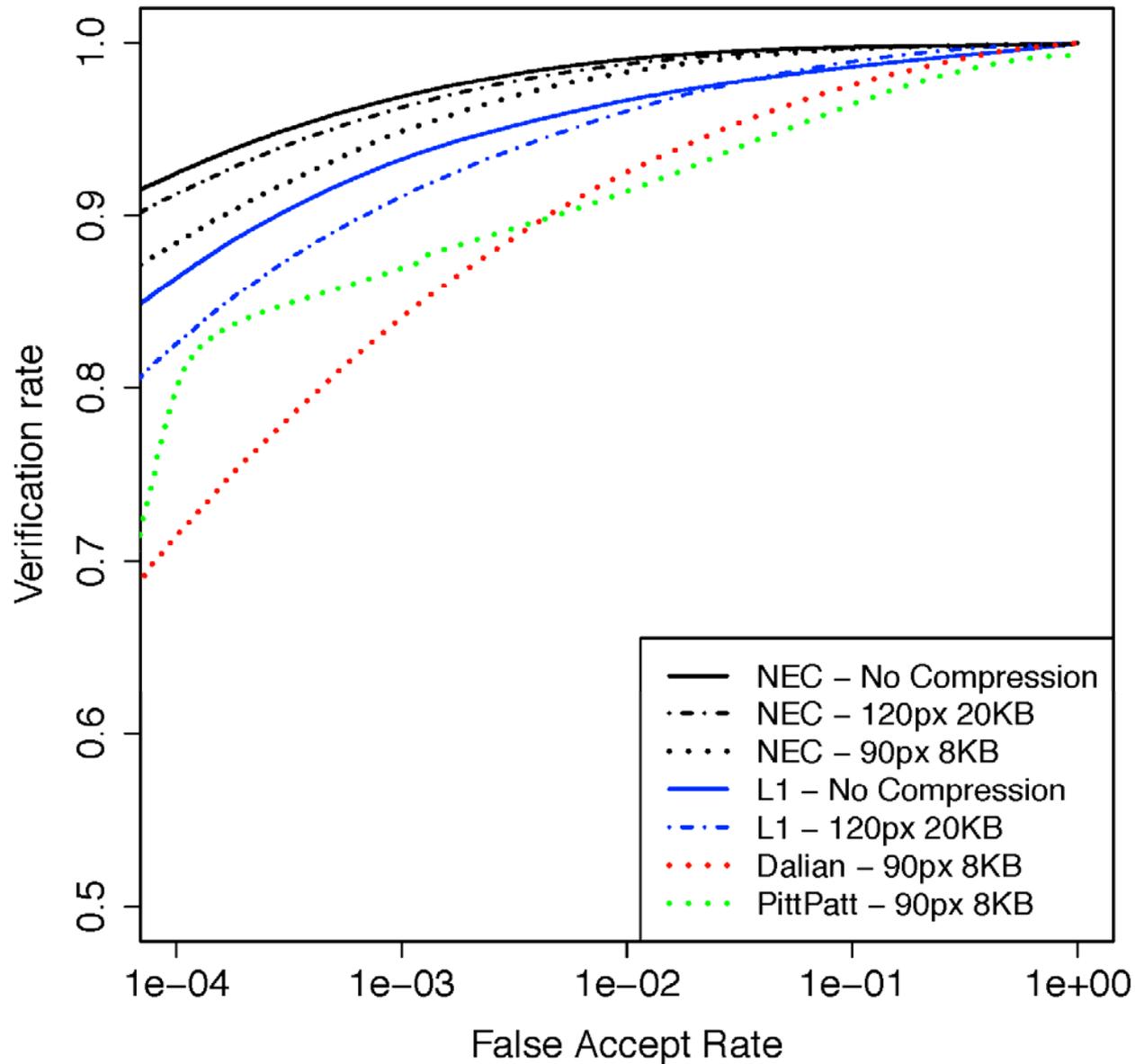
Compression
120 pixels
20 KB

Compression
90 pixels
8 KB

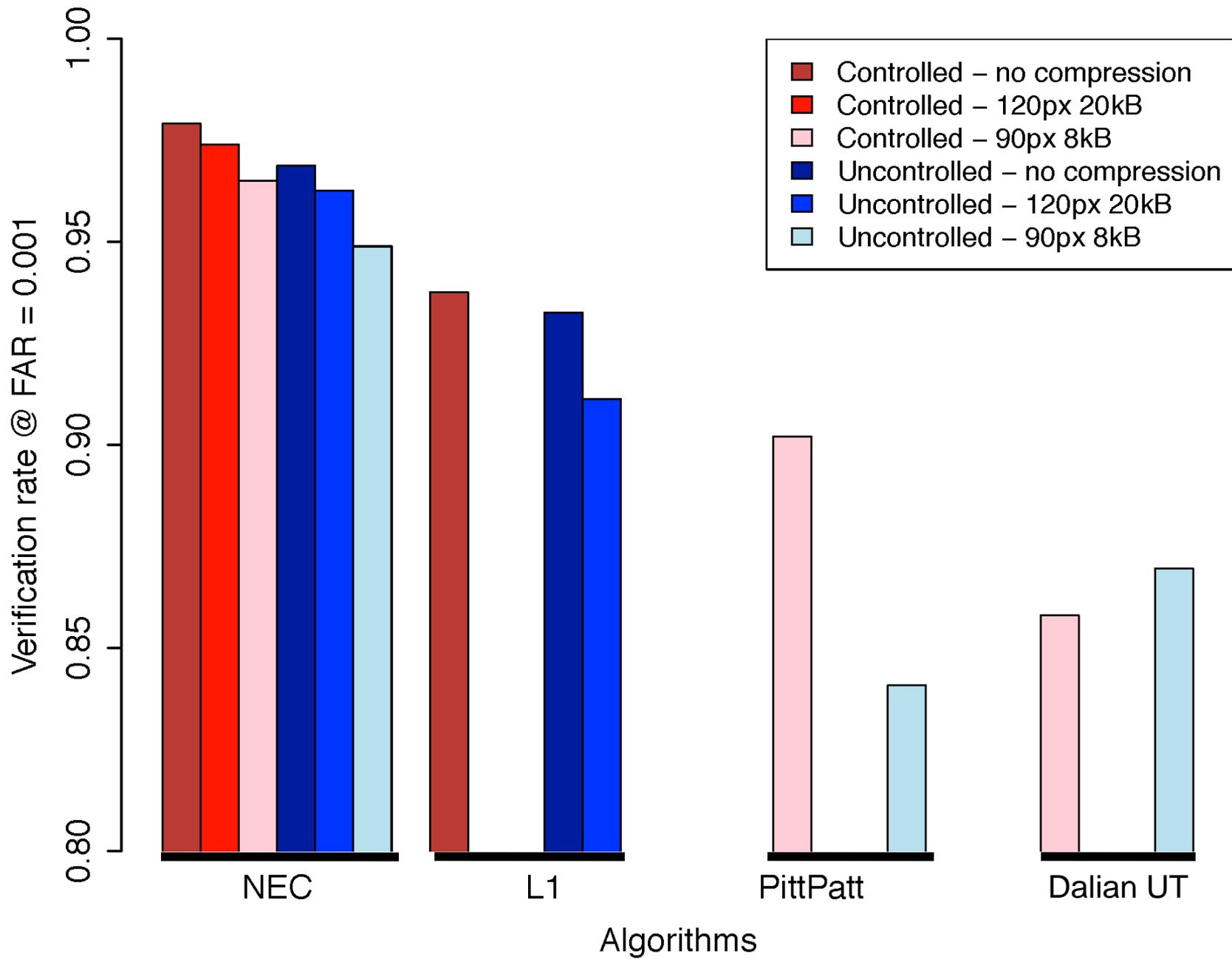
Number of Images
10,687



Uncontrolled vs. Uncontrolled ROC



Summary Frontal



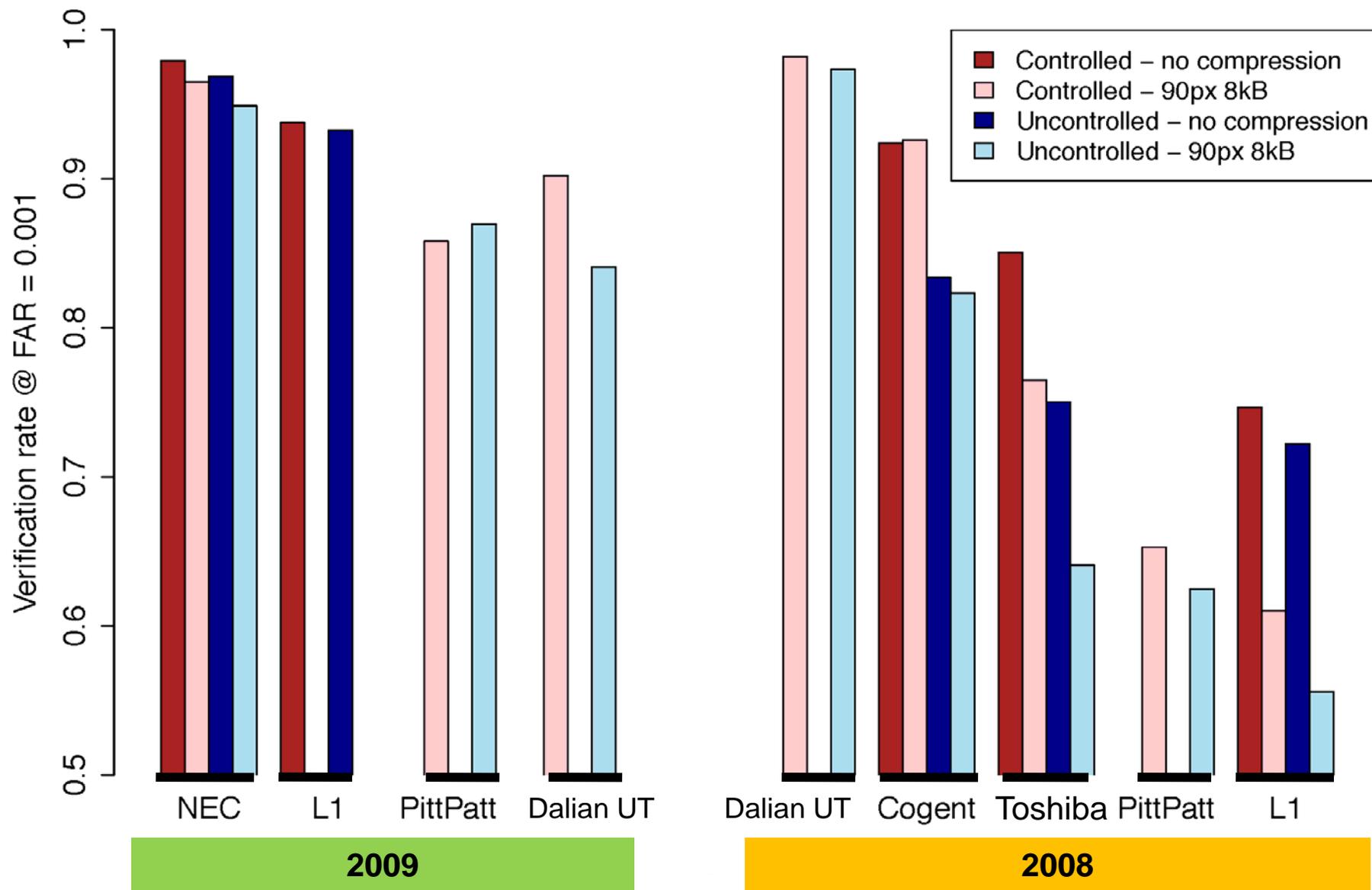
2008 to 2009 Summary

- Progress since December 2008
- Challenge remained the same
 - Data
 - Experiments

2009 & 2008 Participants

	2008	2009
• Dalian University of Technology	Dalian UT	Dalian UT
• L-1 Identity Solutions AG	L1	L1
• Pittsburgh Pattern Recognition	PittPatt	PittPatt
• NEC Corporation		NEC
• Cogent Inc.	Cogent	
• Toshiba Corporation	Toshiba	

Summary 2009 / 2008

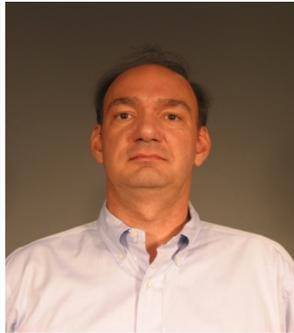


Frontal

vs.

Non-frontal

Controlled



Number of Stills

16,028

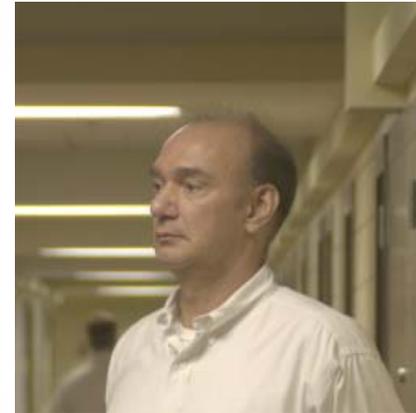
Uncontrolled



Number of Stills

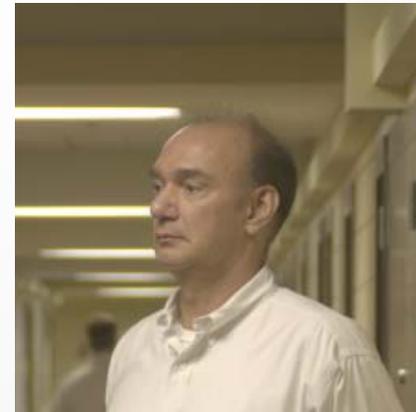
8,014

Uncontrolled



Number of Still Images

3,097



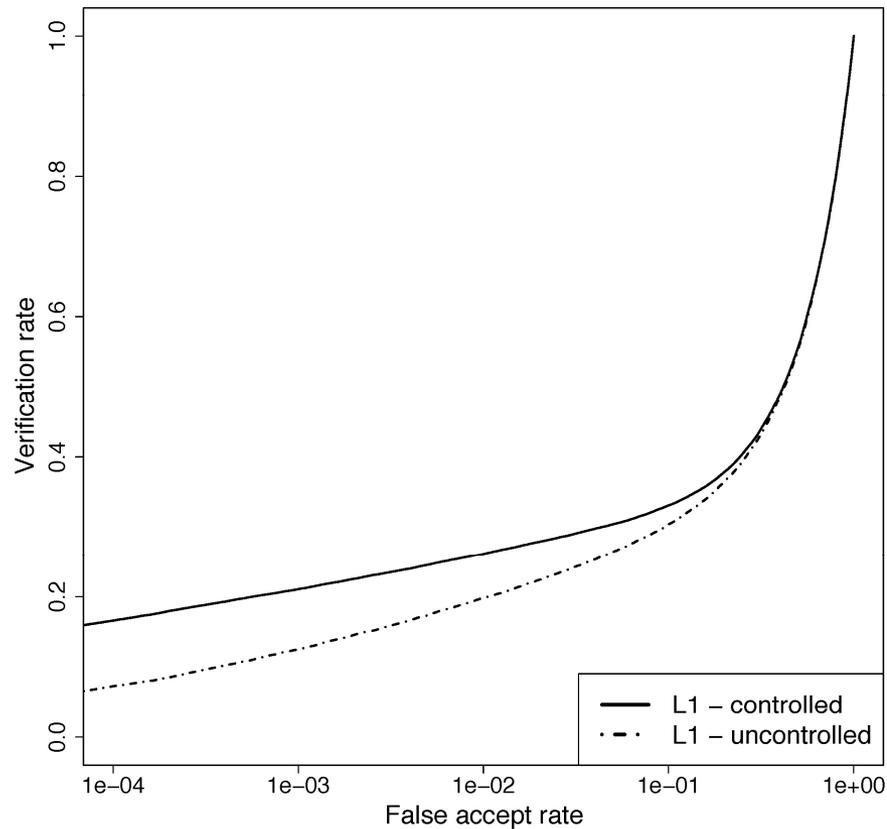
Uncontrolled

Frontal vs. Non-Frontal ROC

NO SUBMISSIONS

Frontal vs. Non-Frontal ROC

Reigning Champions from MBGC V1 2008



Results from an Open Book Challenge Problem, NOT an Independent Evaluation

Summary

- Increase in performance.
- Smaller uncontrolled effect.
- Smaller compression effect.
- Cross pose matching is very difficult.