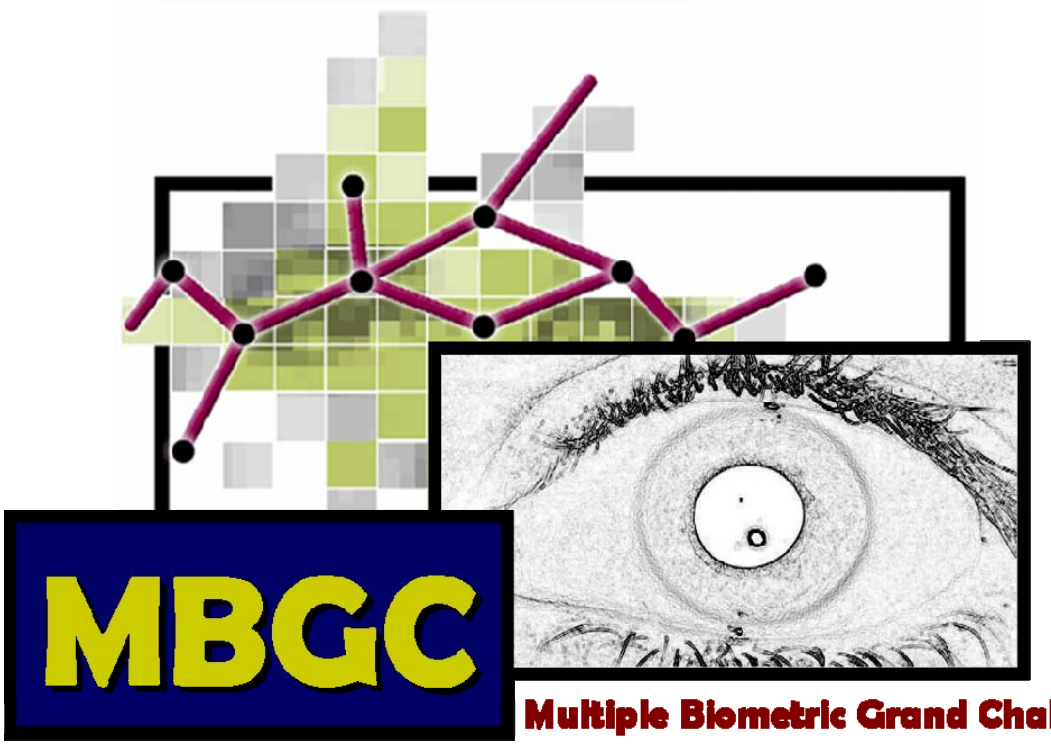
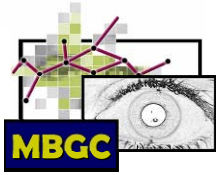


Still Face Challenge Problem
Multiple Biometric Grand Challenge
Preliminary Results of Version 1

05 December 2008

Still Face Background

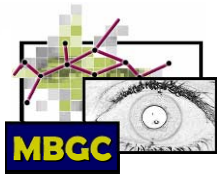


- FRVT 2006
  - Verification rate =.99 at FAR =0.001
  - Frontal
  - Controlled illumination
  - High resolution (400 pixels between the eyes)
  - Large scale laboratory collection

MBGC Still Face Goals

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

MBGC Still Face Goals



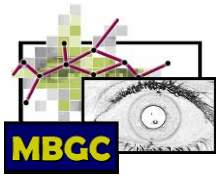
- Many applications of still face involve:
  - Unconstrained illumination
  - Low resolution
  - Compressed imagery
  - Non-frontal

MBGC Still Face challenge problem addresses these constraints.

Still Face

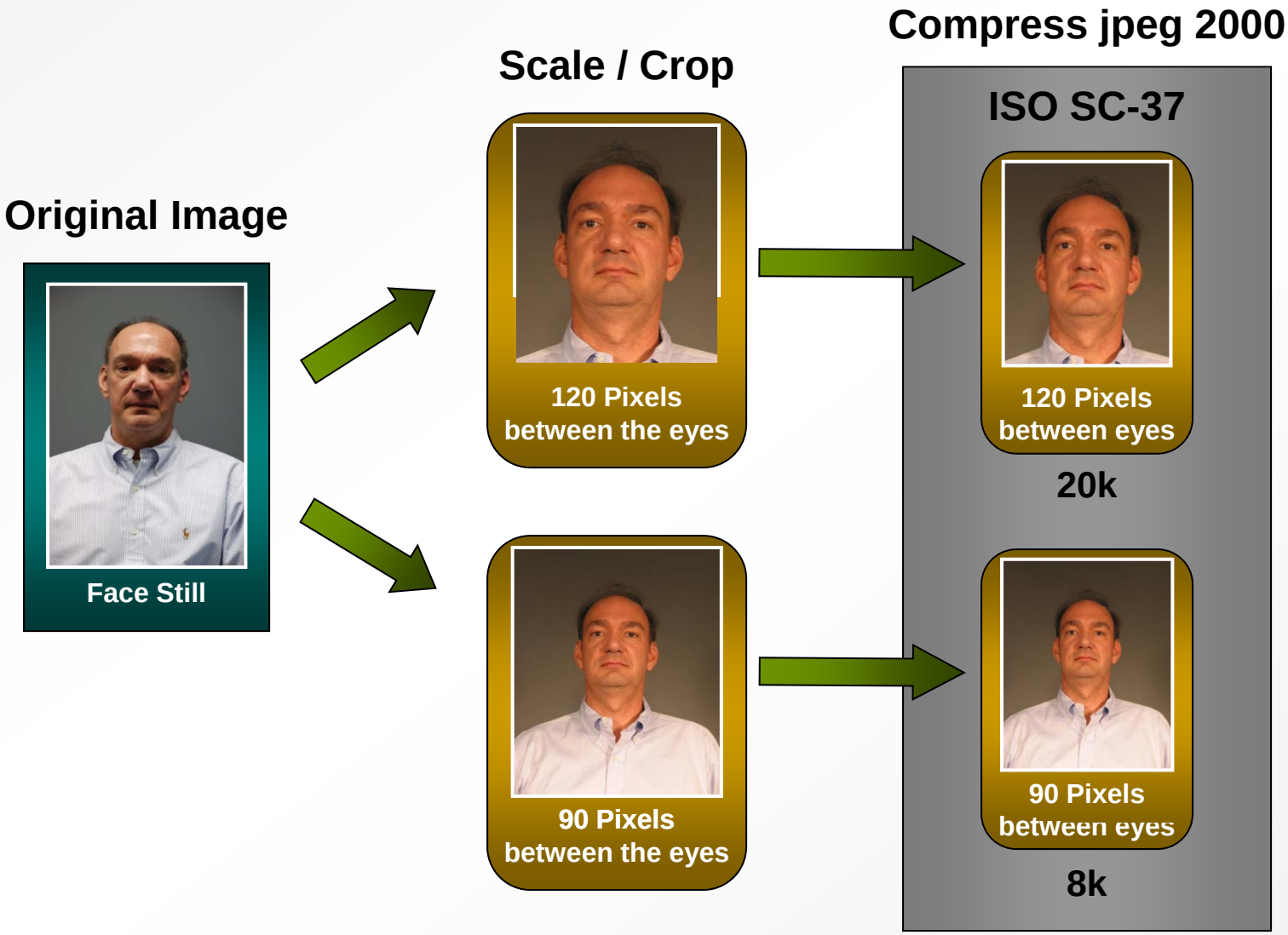
- Two target sets – AY03-04 (FRGC)
  - Controlled illumination frontal
  - Uncontrolled illumination frontal
- One query set – AY04-05
  - Uncontrolled illumination frontal
  - Uncontrolled illumination non-frontal

Effects of Lower Resolution and Compression on FR



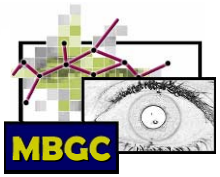
- Determine effect of
  - Lower resolution
  - Compression
- Process original images to meet data requirements
  - Scale and crop
    - 120 and 90 pixels between the eyes
  - Compress images
    - 20KB and 8KB

Still Face Processing



Results from Still Face Challenge Problem Version 1…

Participants



Legend
DUT
L1
PittPatt
Cogent
Toshiba

- Dalian University of Technology
- L-1 Identity Solutions AG
- Pittsburgh Pattern Recognition
- Cogent Inc.
- Toshiba Corporation

NIST

Frontal vs. Non-frontal

Controlled

Number of Stills

16,028

Uncontrolled

Number of Stills

8,014

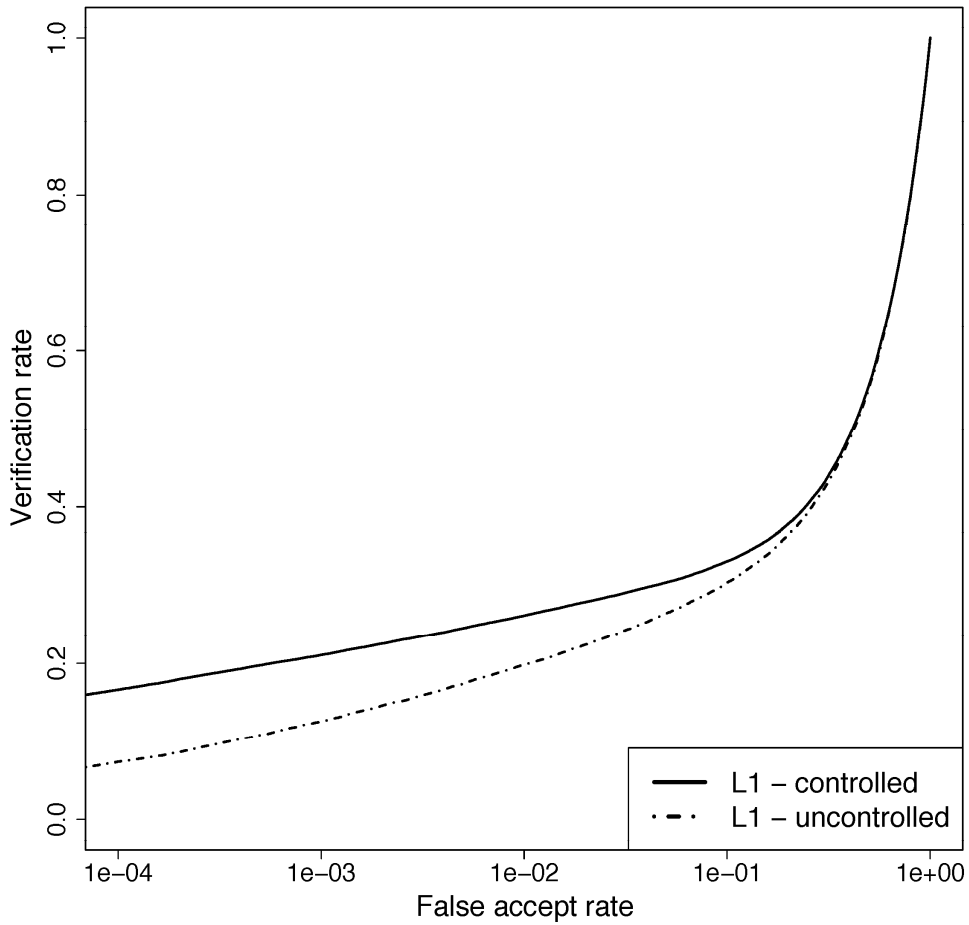
Uncontrolled

Number of Still Images

3,097

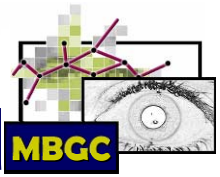
Uncontrolled

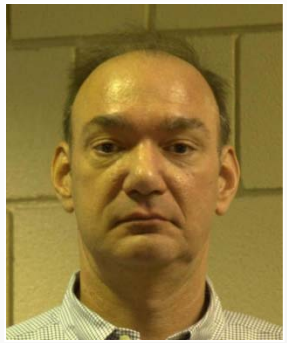
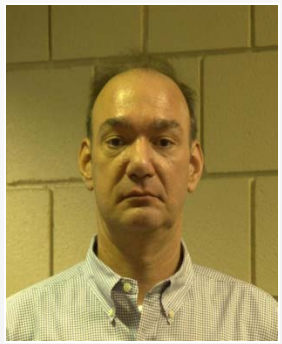
Frontal vs. Non-Frontal ROC



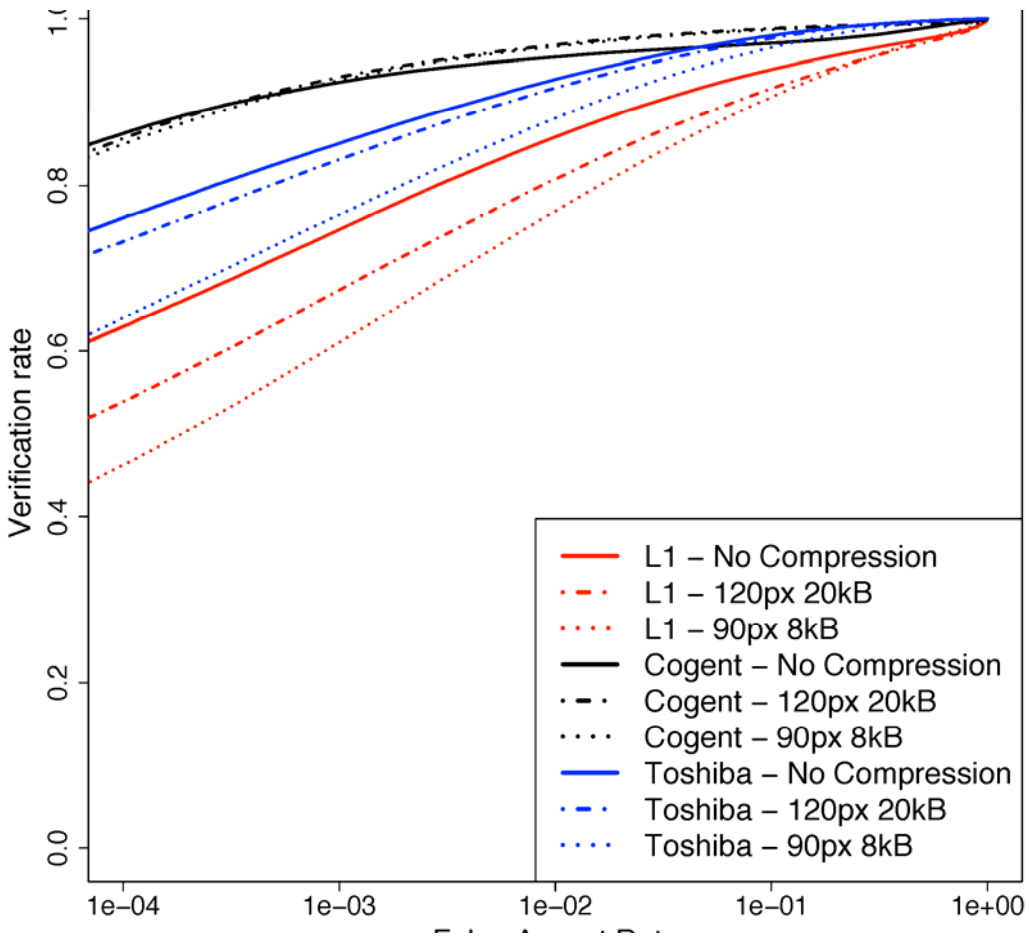
Results from an Open Book Challenge Problem, NOT an Independent Evaluation

Controlled vs. Uncontrolled



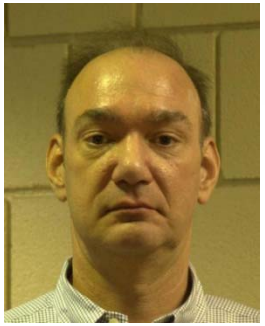
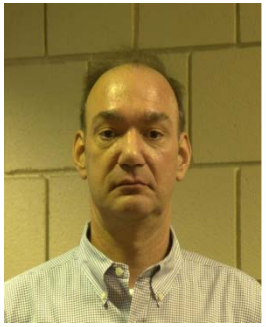
Number of Images 16,028		Number of Images 10,687
	No Compression	
	Compression 120 pixels 20 KB	
	Compression 90 pixels 8 KB	

Controlled vs. Uncontrolled Frontal

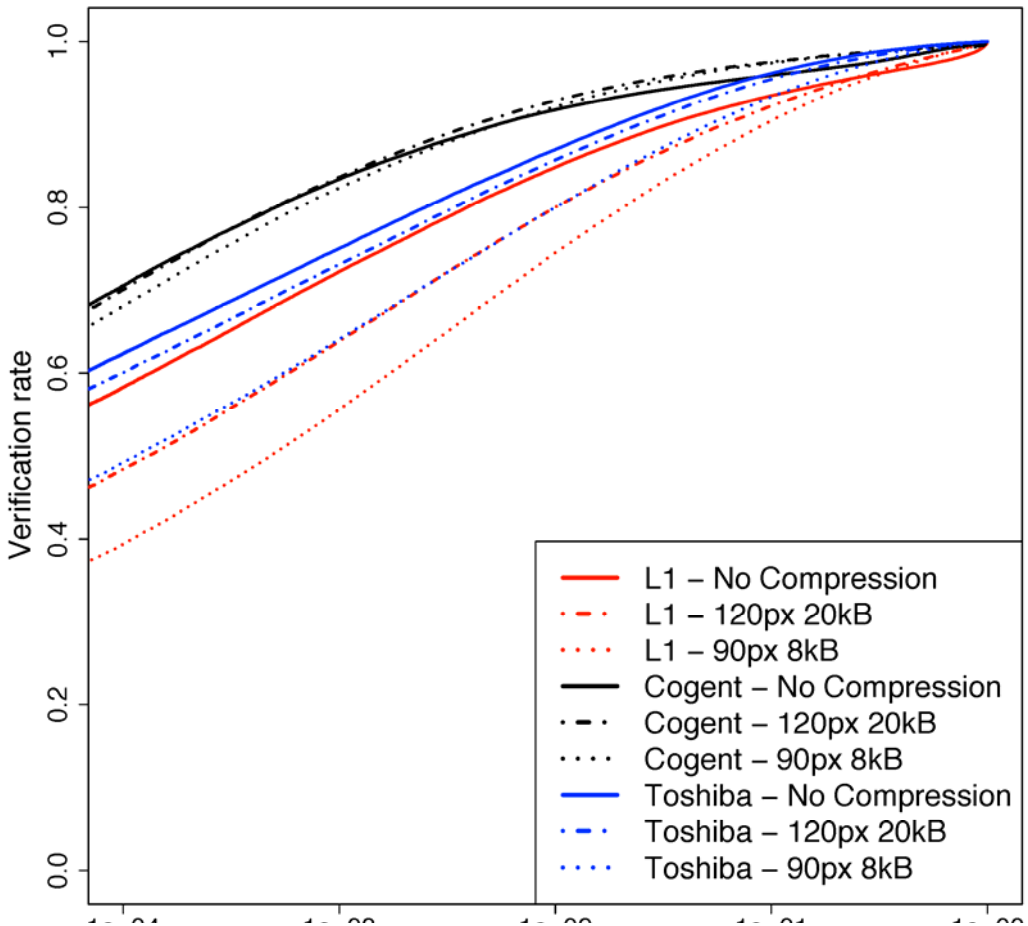


Results from an Open Book Challenge Problem, NOT an Independent Evaluation

Uncontrolled vs. Uncontrolled

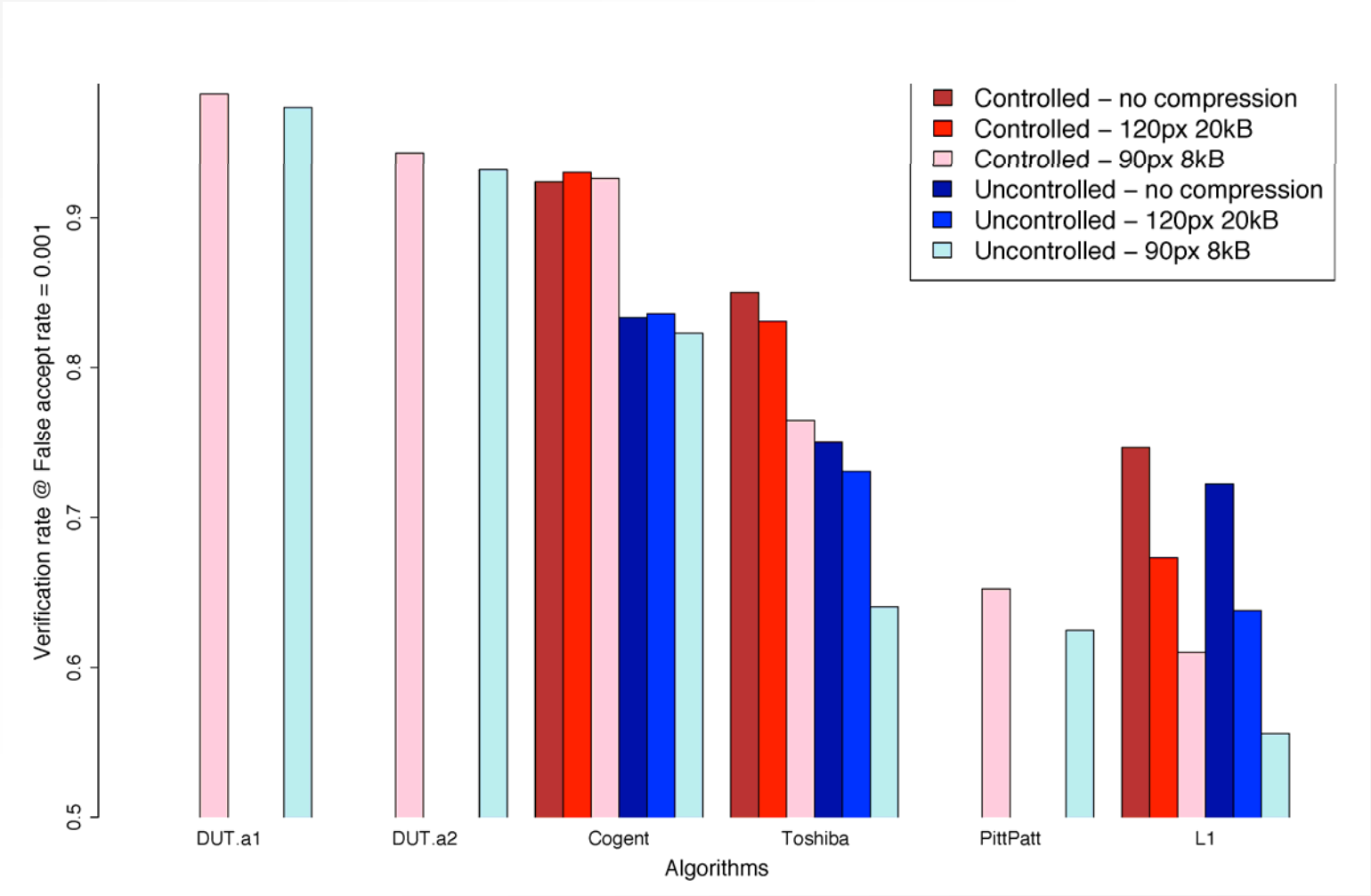
Number of Images 8,014		Number of Images 10,687
	No Compression	
	Compression 120 pixels 20 KB	
	Compression 90 pixels 8 KB	

Uncontrolled vs. Uncontrolled Frontal ROC



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

Summary Frontal



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

Conclusion

- Cross pose matching is very difficult.
- Performance on controlled images is easier than on uncontrolled.
- More studies are needed to characterize an algorithm's response to resolution and compression.