

# **2D Still Face Recognition Performance (SAIT)**

**- FRGC v.2.0 -**

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**2006. 03. 22**

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**Introduction**

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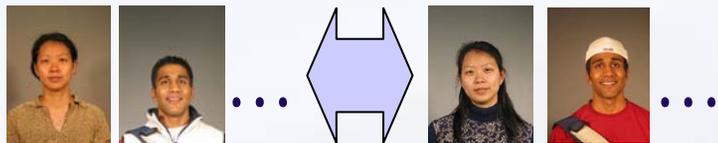
# FRGC 2D Face Recognition Exp.

## FRGC v.2.0 2D Experiments

- 2D Frontal Face Recognition : Exp. 1(1:1), Exp. 2(4:4), Exp. 4(1:1)
- Data Set: 4M pixels, ~ 36,000 images

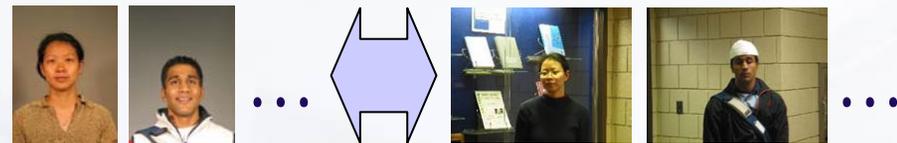
### Exp. 1 (1:1)

- Target: 1 Controlled Still 2D Image
- Query: 1 Controlled Still 2D Image
- High Security (e.g. Biometrics)
  - Controlled Environment



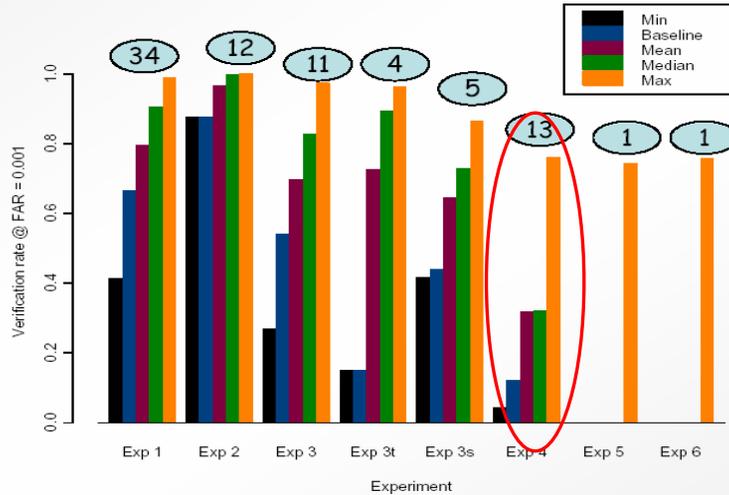
### Exp. 4 (1:1)

- Target: 1 Controlled Still 2D Image
- Query: 1 Uncontrolled Still 2D Image
- Real Application (e.g. Surveillance, Access Control)



## FRGC Exp. 4 : Most Challenging Problem

– Exp4: 76%(Feb. 2005), less than 85 %(Oct. 2005, BC2005)[by J. Phillips]

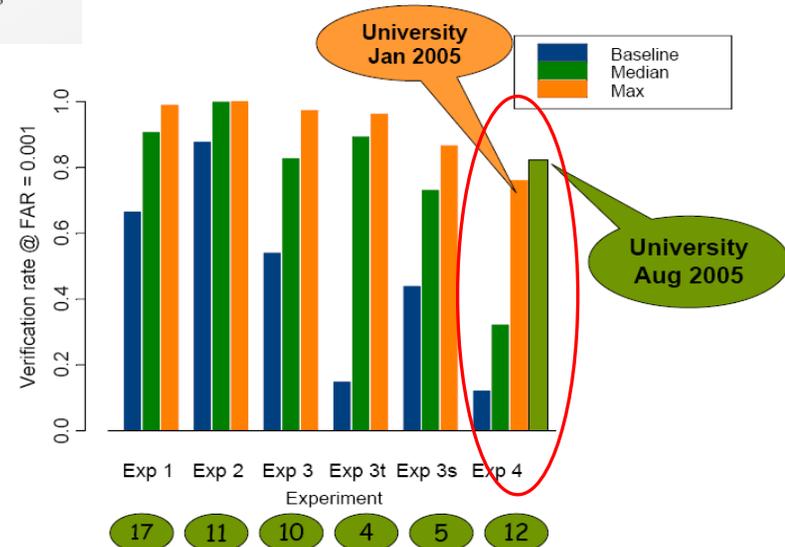
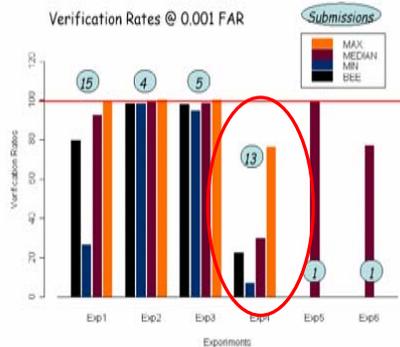


Excerpts from presentations by J. Phillips

## FRGC v.2.0(2005.Sep)

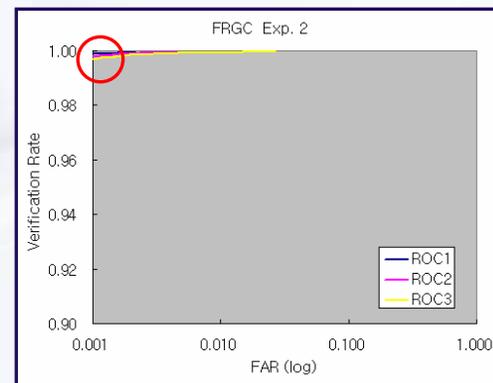
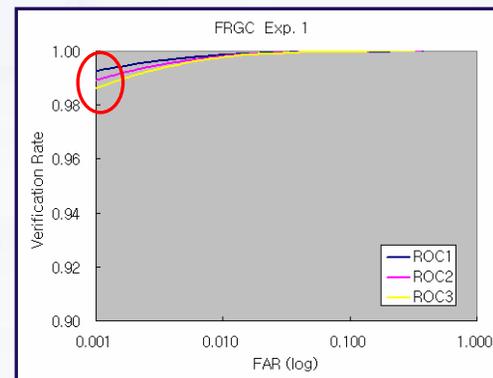
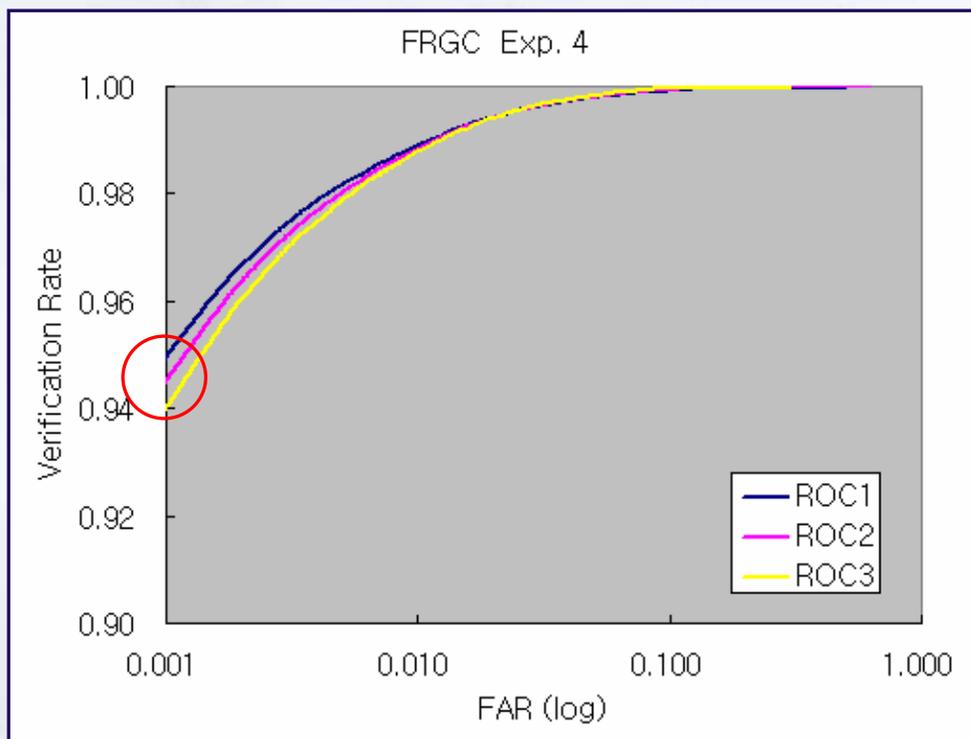
## FRGC v.1.0(2004.Oct)

## FRGC v.2.0(2005.Feb)



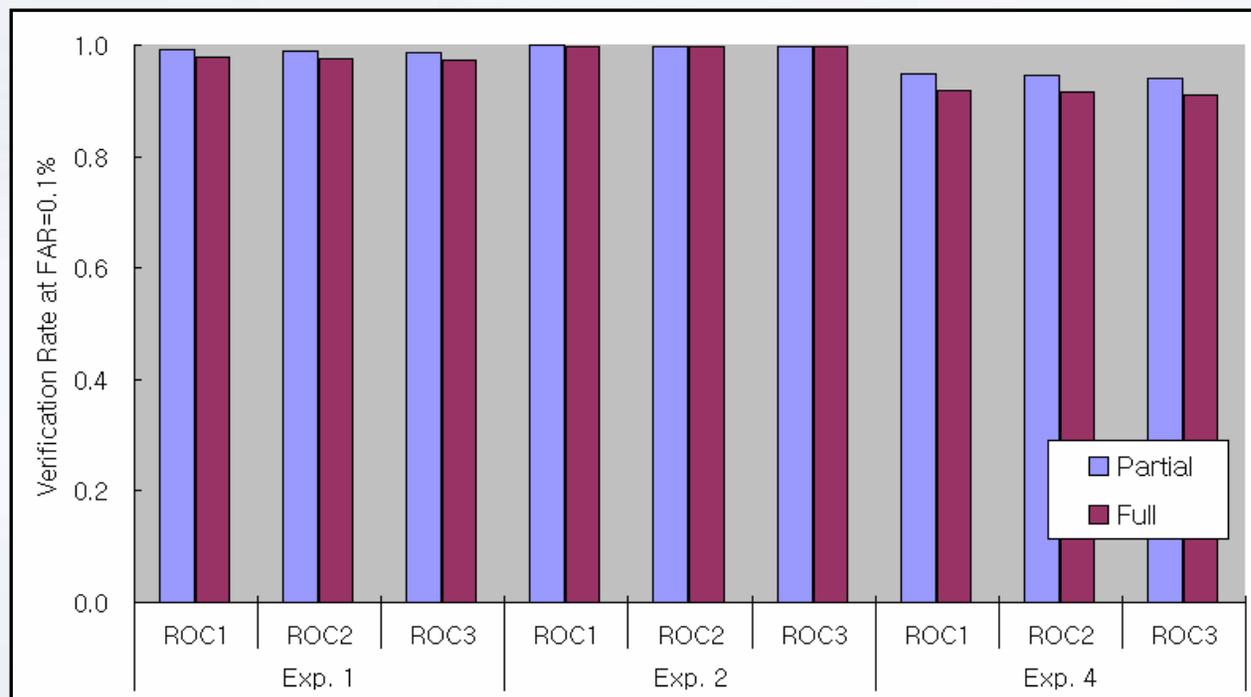
- Exp. 4 (Uncontrolled, 1:1) : VR (at FAR=0.1%) = 94 ~ 95 %\*
- Exp. 1 (Controlled, 1:1) : VR (at FAR=0.1%) = ~99 %\*
- Exp. 2 (Controlled, 4:4) : VR (at FAR=0.1%) = ~100 %\*

All the three experiments were performed using a single algorithm, which was trained by the FRGC training set only.



\* The mask matrices in the original bee v.2.0 distribution, which include minor mistakes, are used for the evaluation. Therefore, there may be slight change of verification rates depending on the upcoming correction of mask matrices.

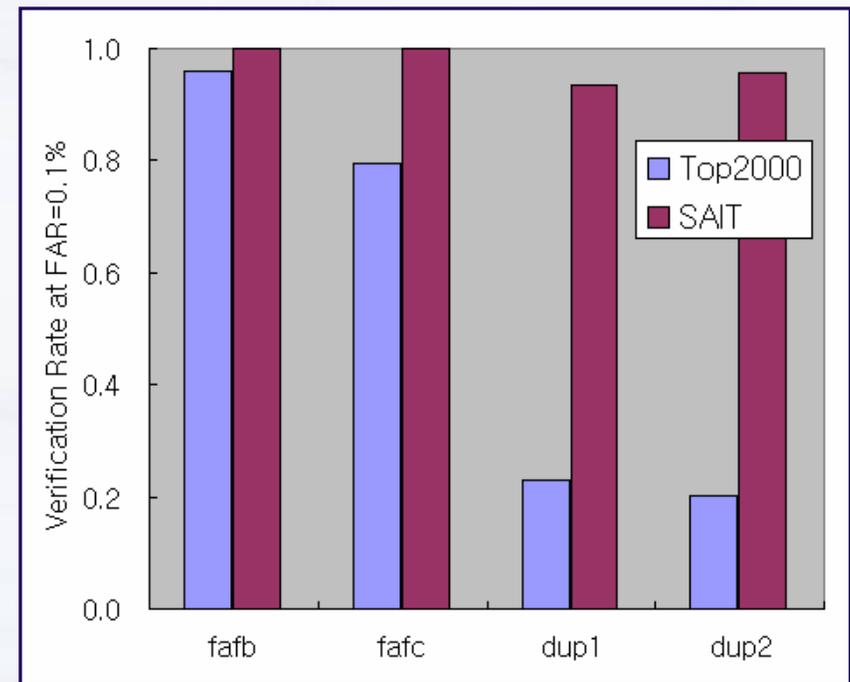
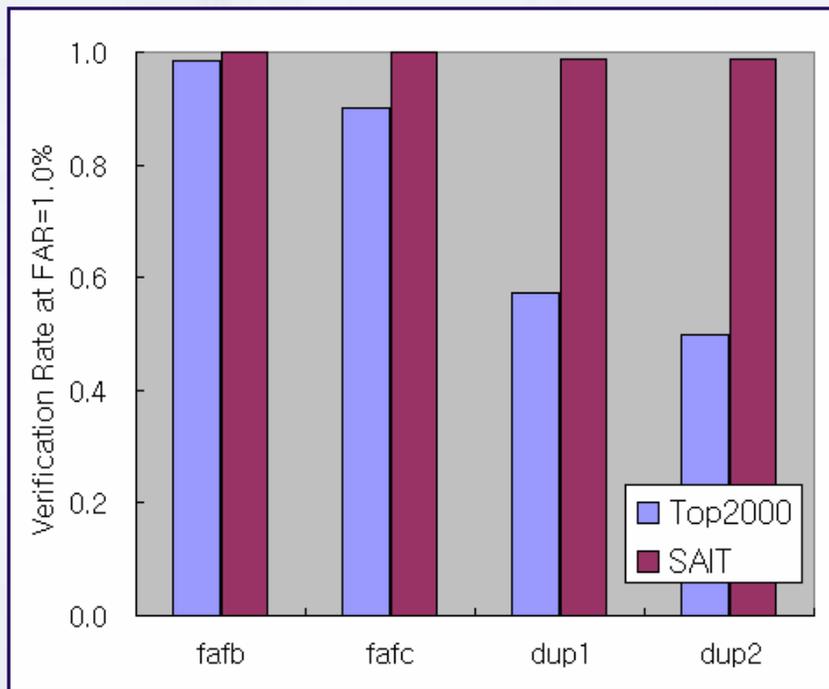
- Exp. 1 (Controlled) : 1~2 % decrease (99% → 97 ~ 98 %)
- Exp. 4 (Uncontrolled) : ~3% decrease (94~95 % → 91 ~ 92 %)
- Exp. 2 (Controlled) : little decrease



- Face and Eye Localization Rate
  - 99.1 % (Controlled)
  - 97.9 % (Uncontrolled)

- Partial Matching : Ground truth for eye locations
- Full Matching : Full Automatic Face and Eye Localization

- VR (at FAR=1%) = 99~100 %
- VR (at FAR=0.1%) = 93 ~ 100 % : decrease in aging scenario
- Robust to Illumination and aging change



- **SAIT 2D Face Recognition Performance for FRGC**
  - Robust to illumination change
  - Little decrease in Full Automatic Face Detection : less than 3 %
  
- **We appreciate the FRGC Team for their great efforts and contributions for promoting development of Face Recognition Technology.**
  
- **Thank you for attention.**