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# Journal of Computational Physics

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## ABSTRACT

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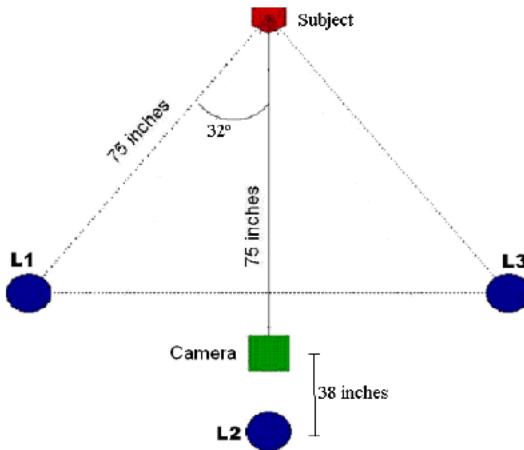
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**Table 1. Summary of different works pertaining to face and speech fusion**

| Study                                   | Algorithm used                                  | DB Size | Covariates of interest   | Top individual performance                                       | Fusion Performance                 |
|---|---|---------|--|--|------------------------------------|
| UK-BWG (Mansfield et al., 2001)         | Face, voice: Commercial                         | 200     | Time: 1–2 month separation (indoor)  | TAR* at 1% FAR#<br>Face: 96.5%<br>Voice: 96%                     | –                                  |
| Brunelli (Brunelli and Falavigna, 1995) | Face: Hierarchical correlation<br>Voice: MFCC   | 87      | Time: 3 sessions, time unknown (indoor)                                      | Face:<br>TAR = 92% at 4.5% FAR<br>Voice:<br>TAR = 63% at 15% FAR | TAR = 98.5% at 0.5% FAR            |
| Jain (Jain et al., 1999)                | Face: Eigenface<br>Voice: Cepstrum Coeff. Based | 50      | Time: Two weeks (indoor)   | TAR at 1% FAR<br>Face: 43%<br>Voice: 96.5%<br>Fingerprint: 96%   | Face + Voice + Fingerprint = 98.5% |
| Sanderson (Sanderson and Paliwal, 2002) | Face: PCA<br>Voice: MFCC                        | 43      | Time: 3 sessions (indoor)<br>Noise addition to voice                         | Equal Error Rate<br>Face: 10%<br>Voice: 12.41%                   | Equal Error Rate 2.86%             |
| Proposed study                          | Face, voice: Commercial                         | 116     | Location: Indoor and Outdoor (same day)<br>Noise addition to eye coordinates | TARs at 1% FAR<br>Indoor-Outdoor<br>Face: 80%<br>Voice: 67.5%    | TAR = 98% at 1% FAR                |

\*TAR—True Acceptance Rate

# FAR—False Acceptance Rate

**Fig. 1. Studio setup for capturing face images indoor. Three light sources L1, L2, L3 were used in conjunction with normal office lights.**

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$$S'_{\text{pg}} = \frac{S_{\text{pg}} - \min(S_{\text{pG}})}{\max(S_{\text{pG}} - \min(S_{\text{pG}}))} \quad (1)$$

In mathematical expressions in running text “/” should be used for division (not a horizontal line).

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### Supplementary Material

Supplementary material that may be helpful in the review process should be prepared and provided as a separate electronic file. That file can then be transformed into PDF format and submitted along with the manuscript and graphic files to the appropriate editorial office.