Towards usable authentication on mobile phones: An evaluation of speaker and face recognition on off-the-shelf handsets

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This slide set is only meant for visual support during the presentation, and should not be used for reference purposes before or after the presentation.

For reference, please read the paper, not the presentation.

http://www.wired.com/wired/archive/11.09/ppt2.html
http://blogs.hbr.org/silverman/2010/04/powerpoint-is-evil-redux.html

User authentication on mobile phones...

… is difficult
because it should be:

- secure
- quick
- unobtrusive
- robust
- fun
- and much better than the one published by *<the other company>* a few weeks ago.

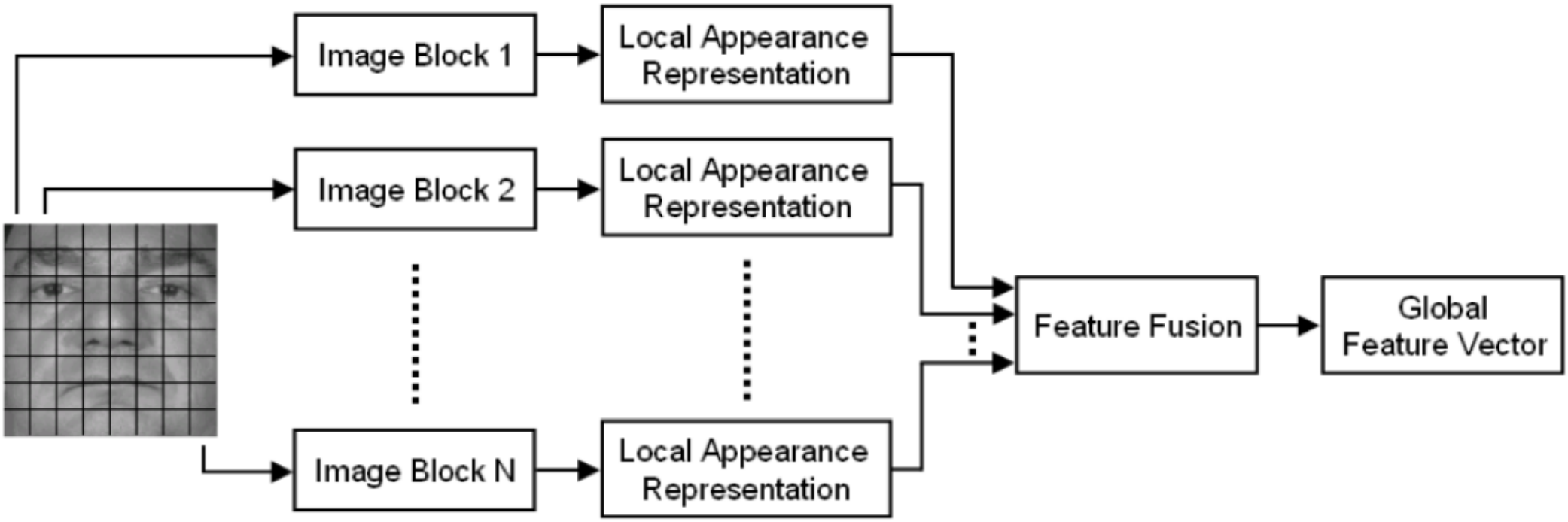
A really new idea: why not try biometrics?

Results for speaker recognition

30.6	35.8	40.5	44.8	37.0	41.8	38.5	41.4
36.9	30.0	39.8	55.5	33.9	34.2	34.5	36.2
40.7	39.2	27.8	37.0	41.3	43.5	37.5	45.3
44.6	52.3	38.5	31.2	56.4	64.9	57.7	61.8
32.3	29.9	36.1	54.3	28.6	30.9	30.1	31.7
38.5	33.6	39.6	57.7	34.0	31.1	34.2	34.6
37.0	32.3	35.8	51.1	34.0	34.1	30.9	35.5
35.5	33.8	39.3	54.6	32.9	35.3	34.6	28.0

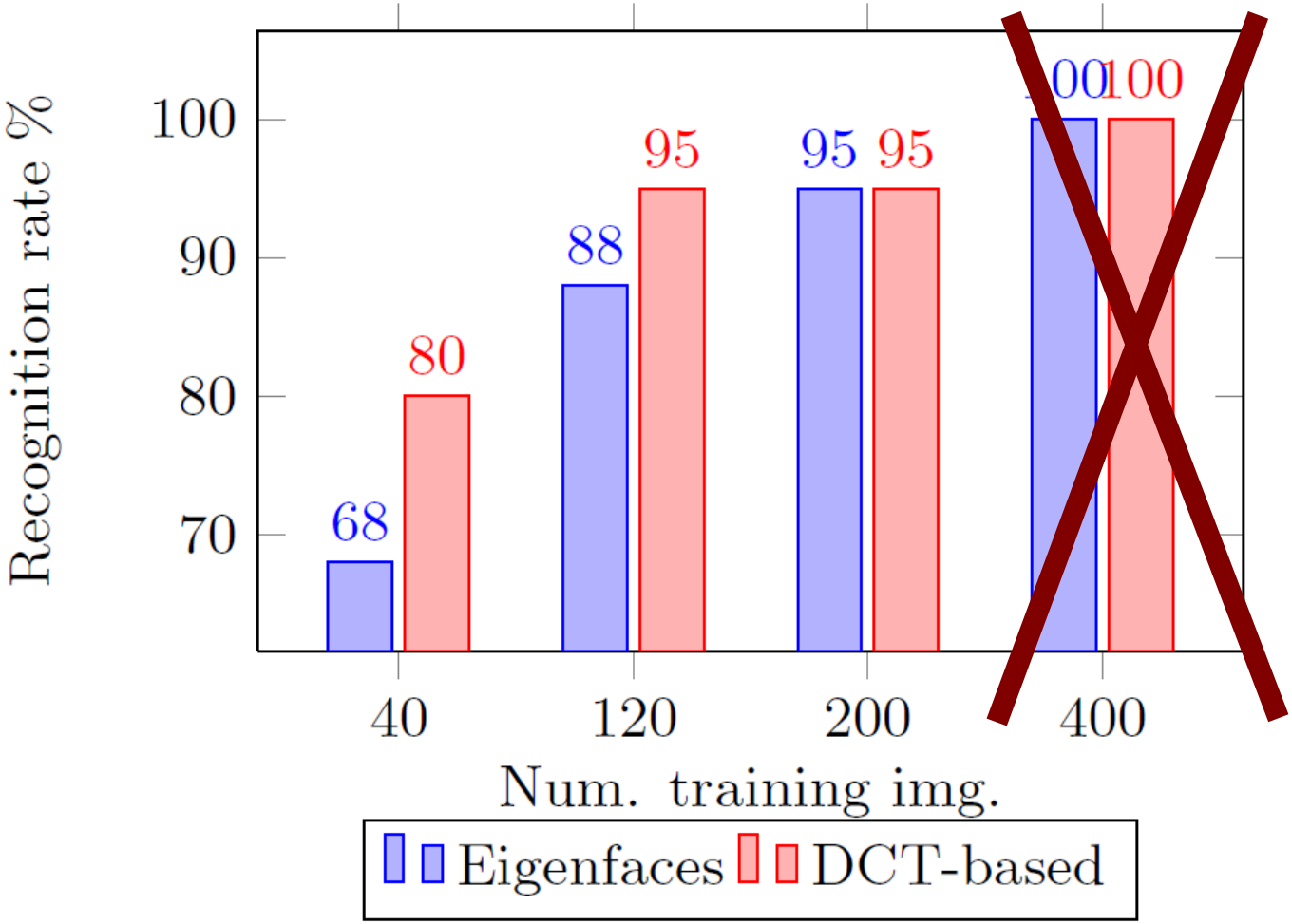
Features: Mel frequency cepstral coecients (MFCC)
Classifier: simple Vector Quantization (VQ) with k-means clustering for training
Hardware for evaluation: HTC Desire HD, 8kHz, 8 bit quantization
Training set: 60 seconds with same text for all speakers
Testing set: 15 seconds with different text for each speaker
Details: in the paper

Face recognition optimized for phones

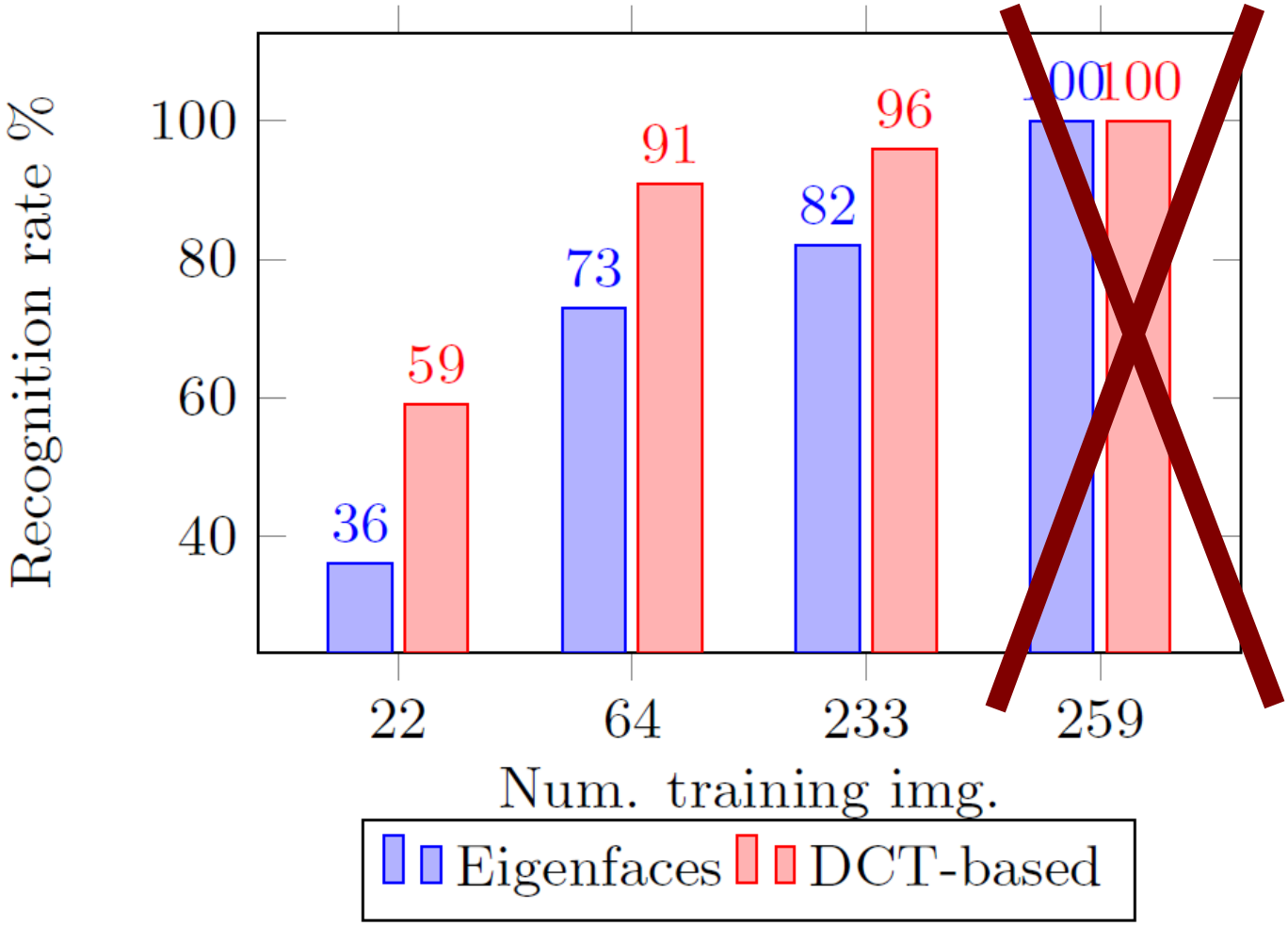


H. K. Ekene. A Robust Face Recognition Algorithm for Real-World Applications. PhD thesis, Universität Karlsruhe, 2009.

Results with ORL database



Results with Caltech database



There can be more then one!

Biometric authentication on mobile phones is **hard**

Why not use an arbitrary number of them together (e.g. gait recognition), driven by the application needs?

Framework for multi-method authentication and implementations for speaker and face recognition on Android online at https://gitorious.org/android-user-auth

Thank you for your attention!

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OpenPGP keys: 0x249BC034 (new) and 0xC3C24BDE (old)
717A 033B BB45 A2B3 28CF B84B A1E5 2A7E 249B C034
7FE4 0DB5 61EC C645 B2F1 C847 ABB4 8F0D C3C2 4BDE