



Brightness- and Motion-Based Blink Detection for Head-Mounted Eye Trackers

by

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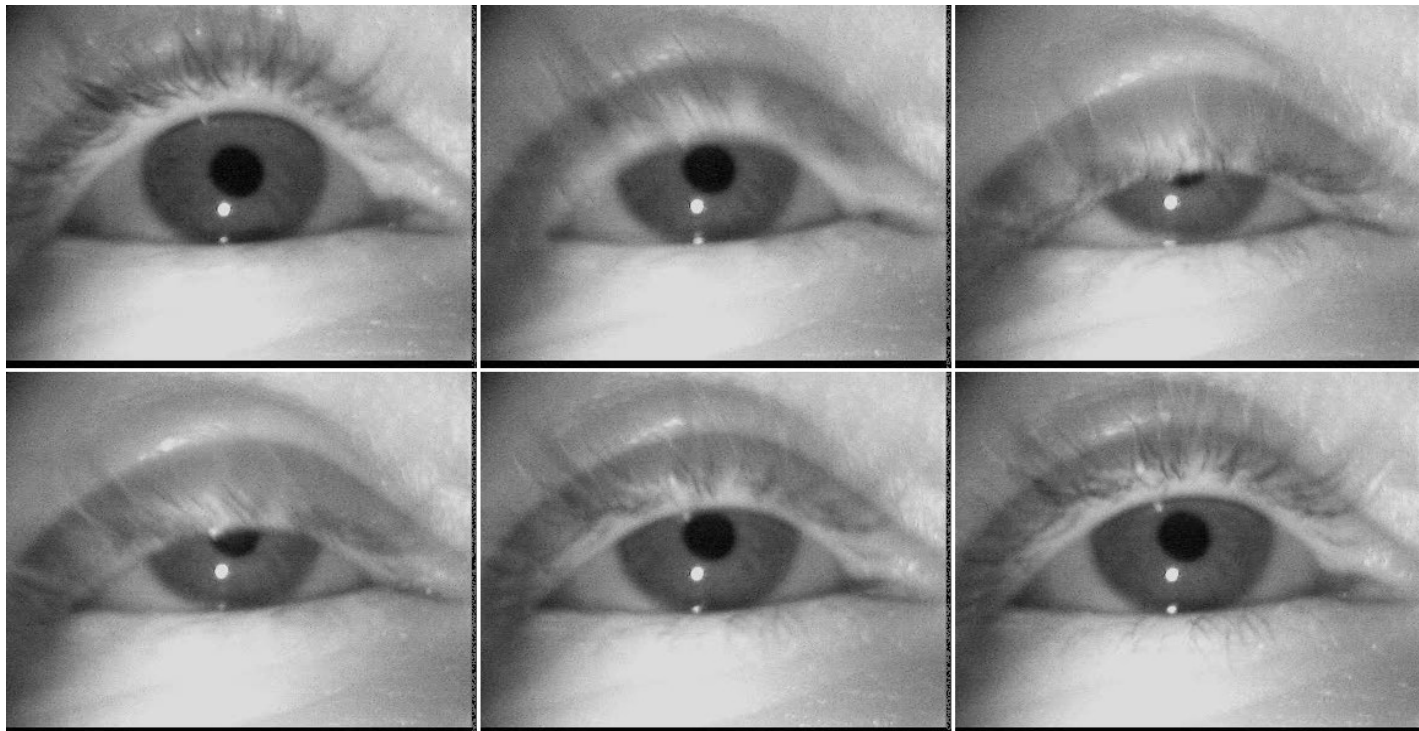


Blink facts

- Endogenous, reflex, and voluntary blinks
- Usually range from 75 to 400 ms
- Vigilance, fatigue, and drowsiness can be detected via blinks
- Noise in other eye-tracking applications

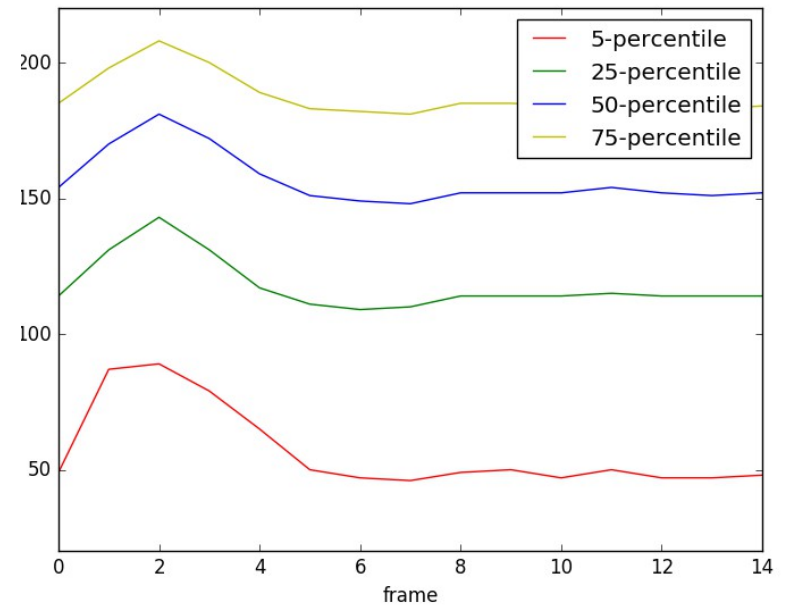
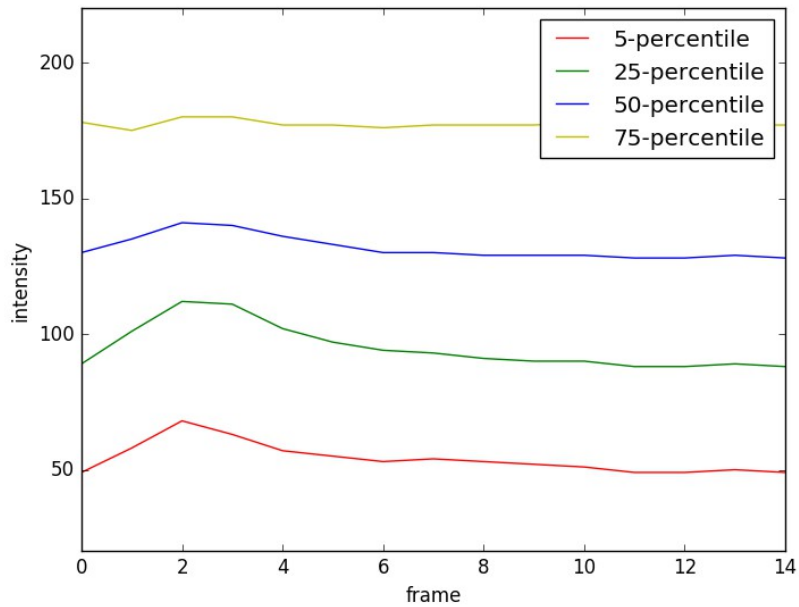


Typical blink



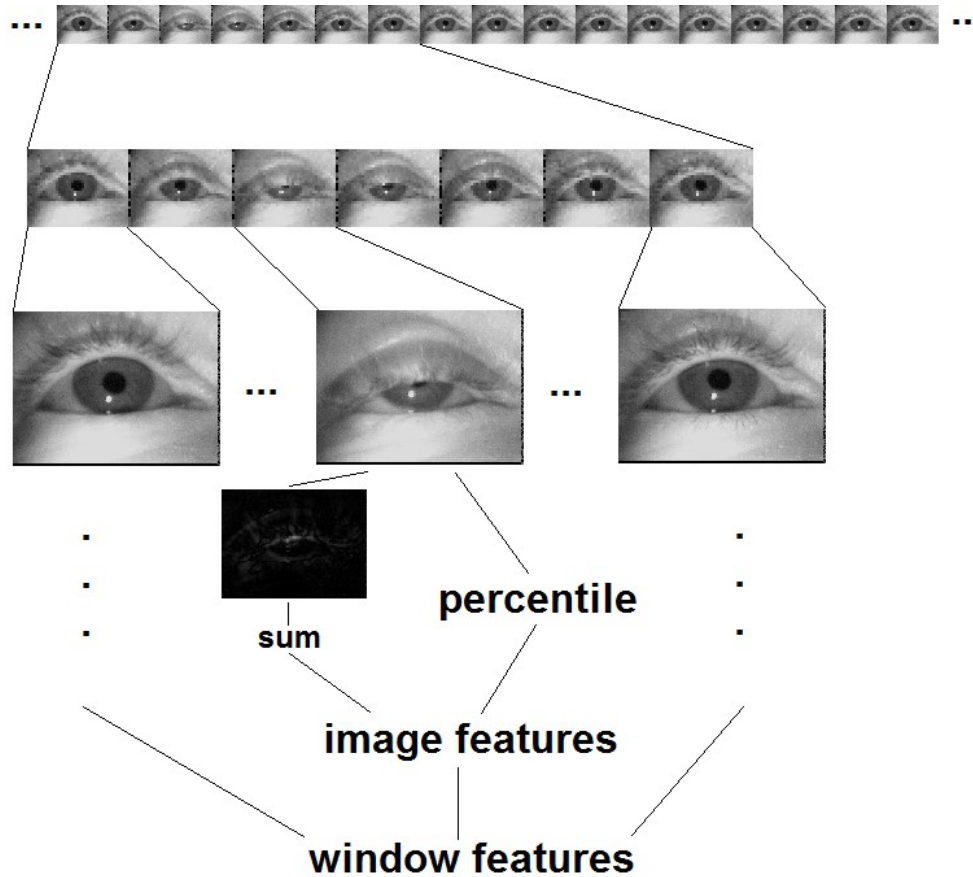


Intensity development





Feature selection





Classification via Random Forest

- Scales well with training data
- Can be adjusted according to computational power
- Potential for parallelization
- Can handle non-linearity



Difficulties



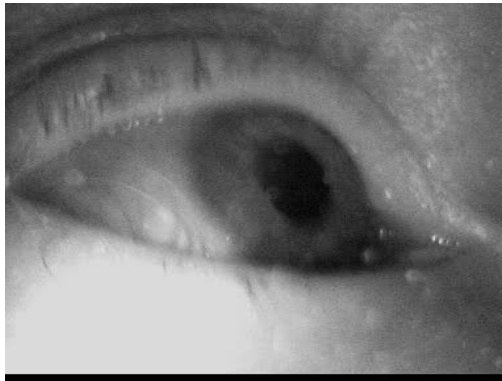
bad angle



only partial blink



make-up



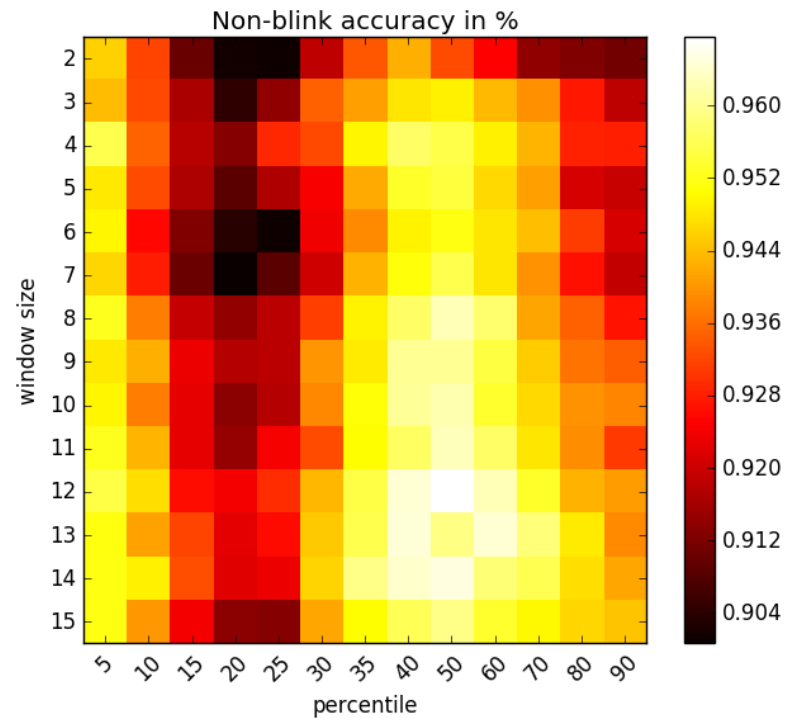
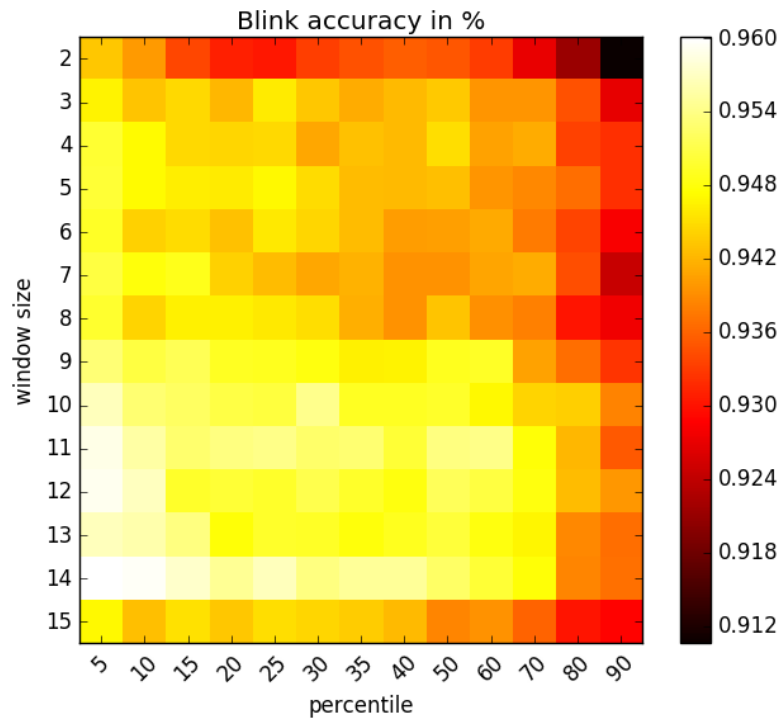
motion blur



reflections



Results





Conclusion

- Fast algorithm (0.6630ms per frame)
- Suited for pervasive eye tracking and mobile devices
- Overall 96,3795% accuracy for median and window size 11



Thank you for your attention!
