

# Beyond Breathalyzers: Towards Pre-Driving Sobriety Testing with a Driver Monitoring Camera

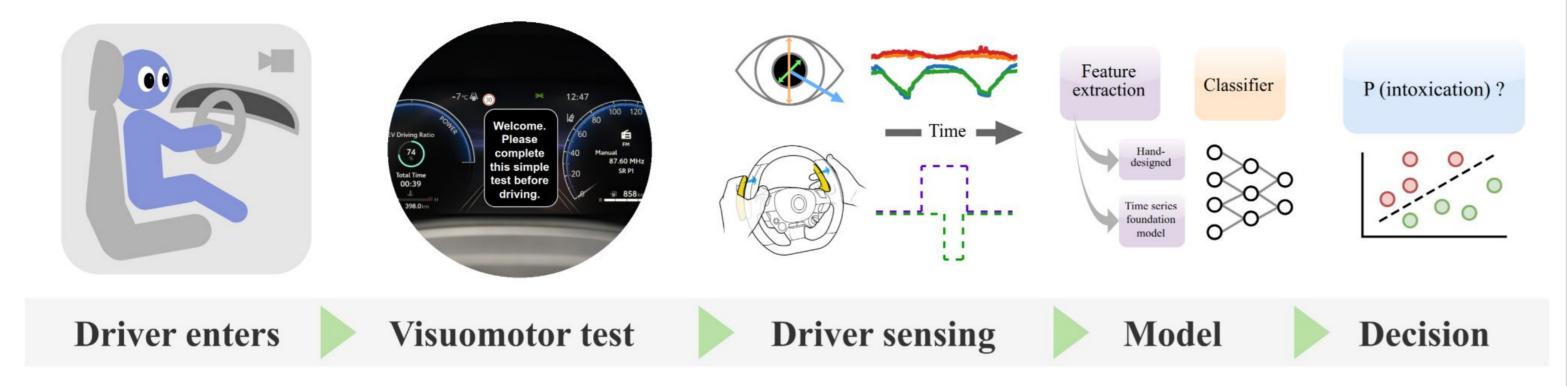




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#### Goal

Predict alcohol impairment of driver before they drive, using only a driver monitoring camera.

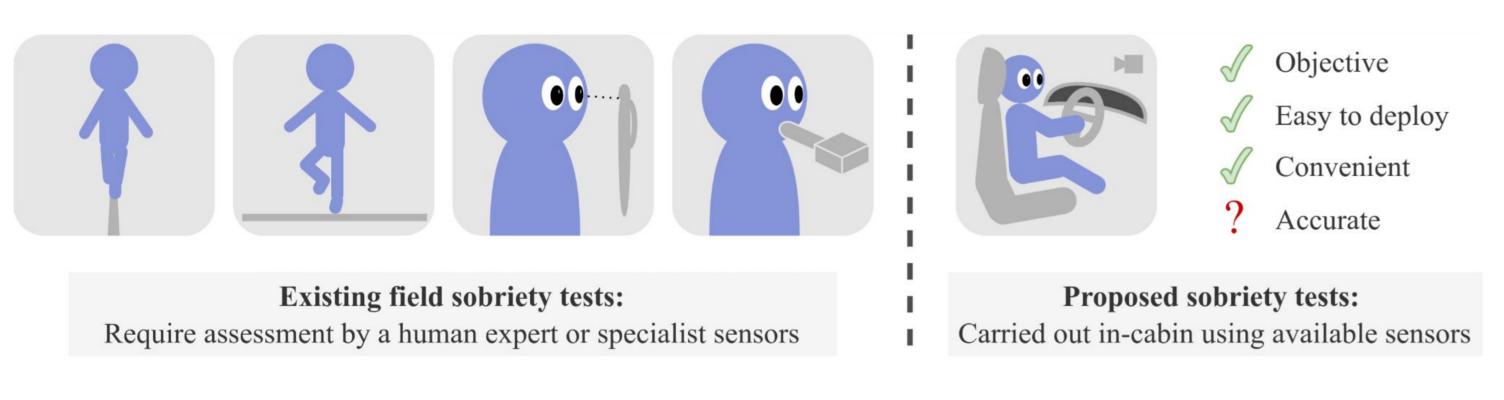


# Why?

> fatal road traffic accidents alcohol-related

Driver monitoring cameras more common Early detection better

## What's new?

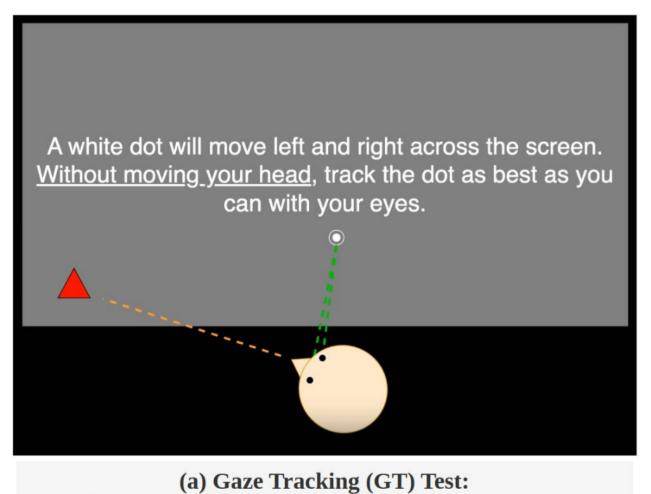


Automated, objective, convenient (<10s)

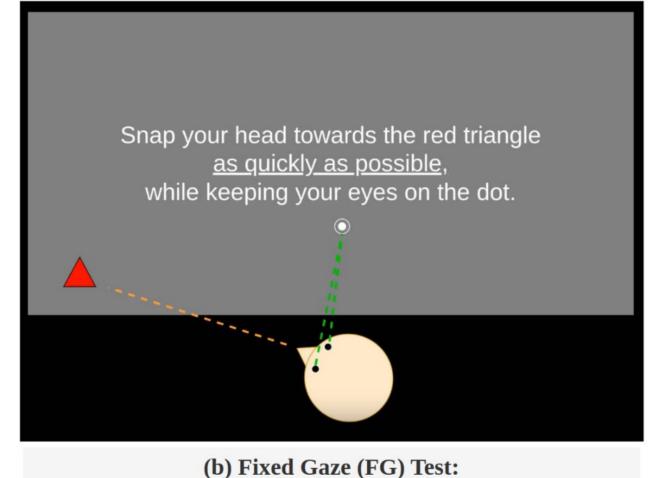
No need for extra sensors or equipment

Focus on gaze (privacy, generalizability)

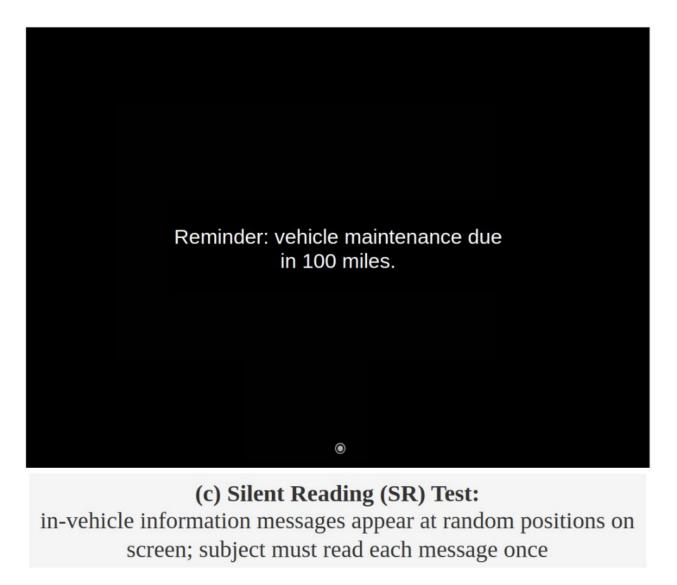
## Proposed tests

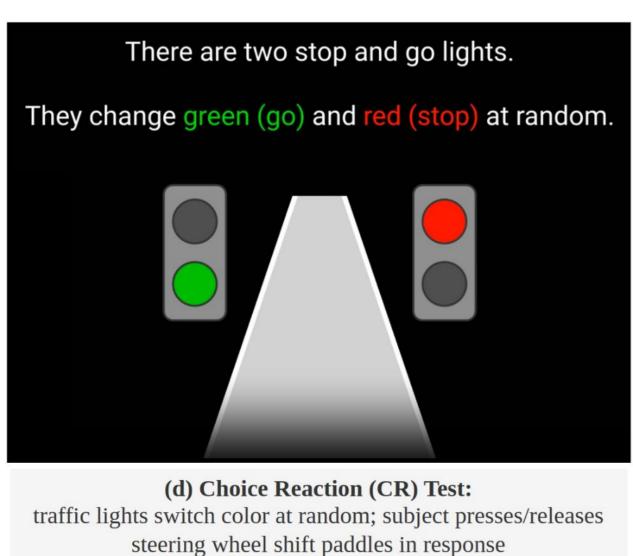


white dot (gaze target) moves horizontally; red triangle is fixed



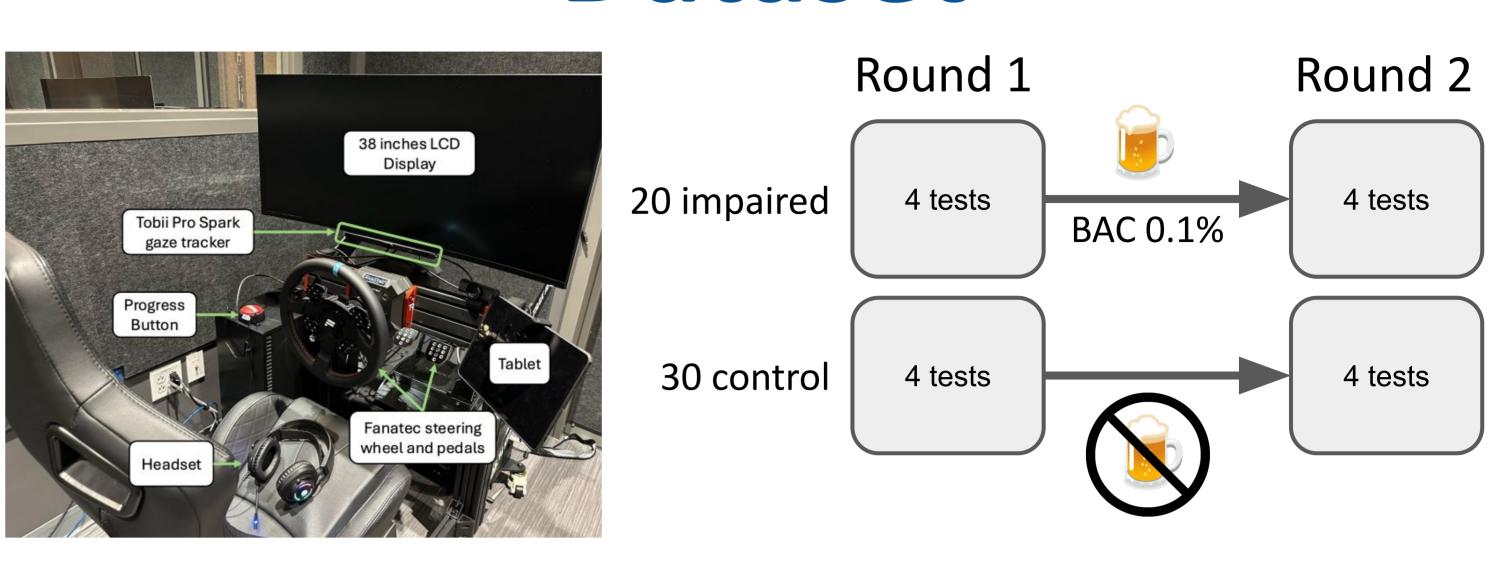
white dot (gaze target) is fixed; red triangle jumps horizontally





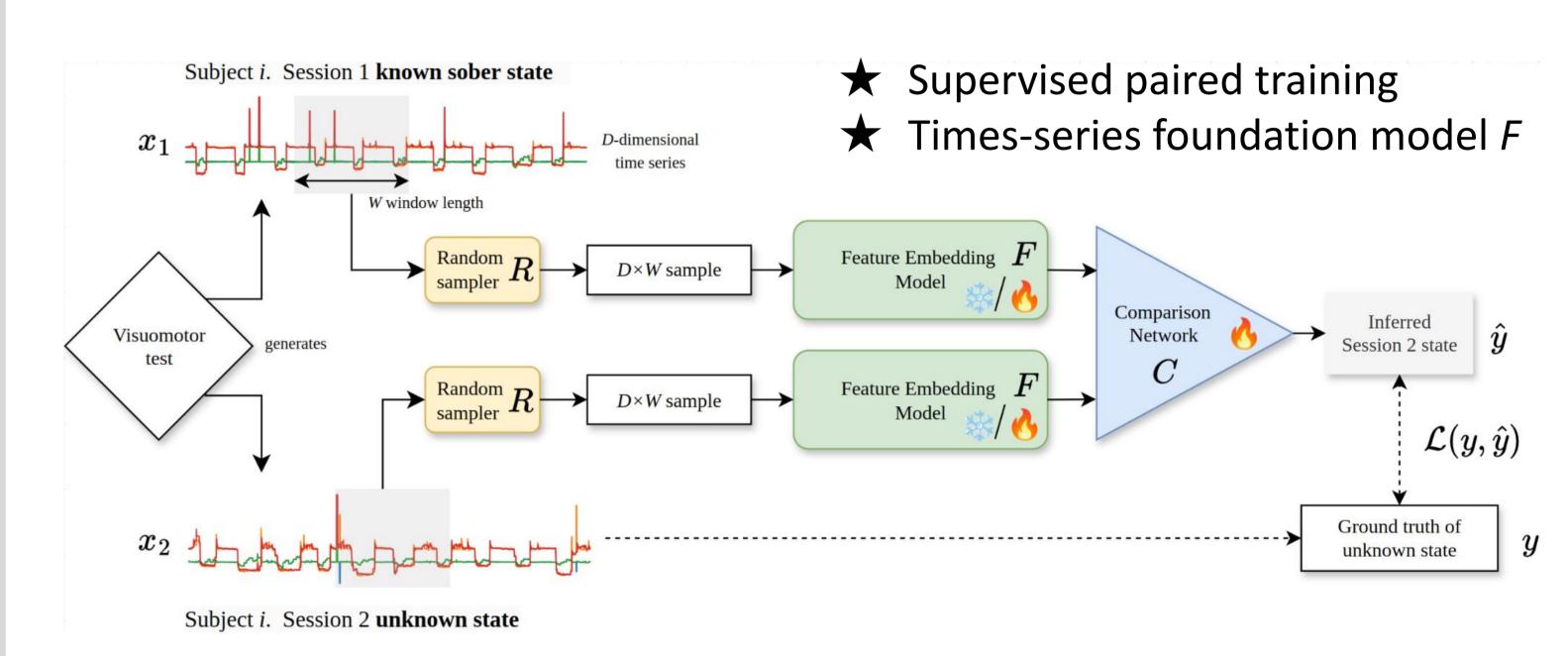
We designed four candidate visuomotor tests, to stress different types of user behavior to try to quickly elicit detectable signs of drunkenness.

### Dataset

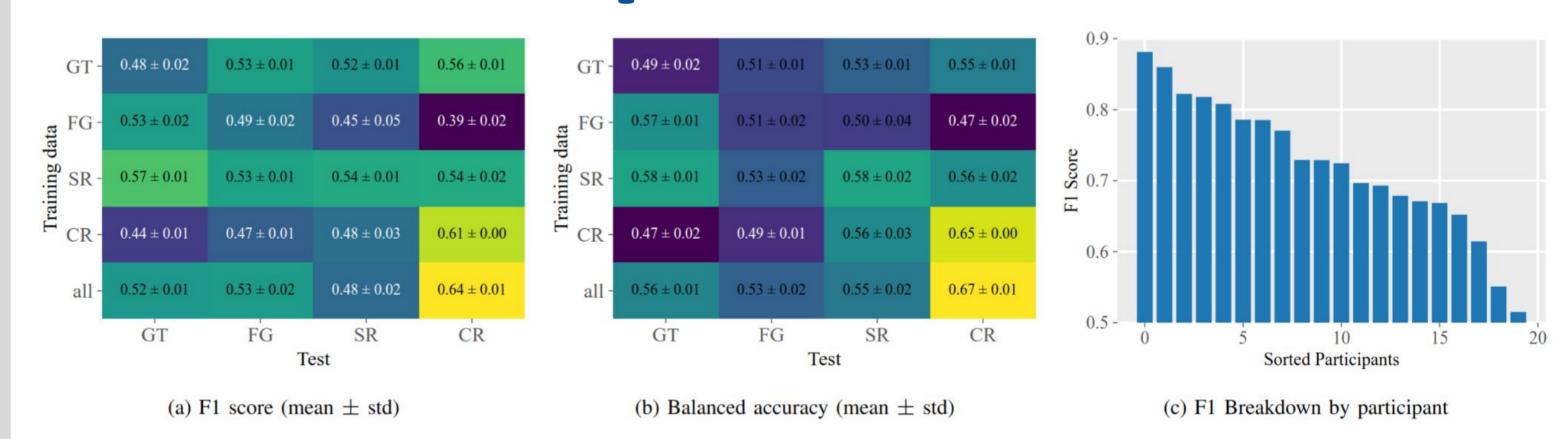


7.2h gaze tracking & reaction data from 50 subjects (total 100 samples per test)

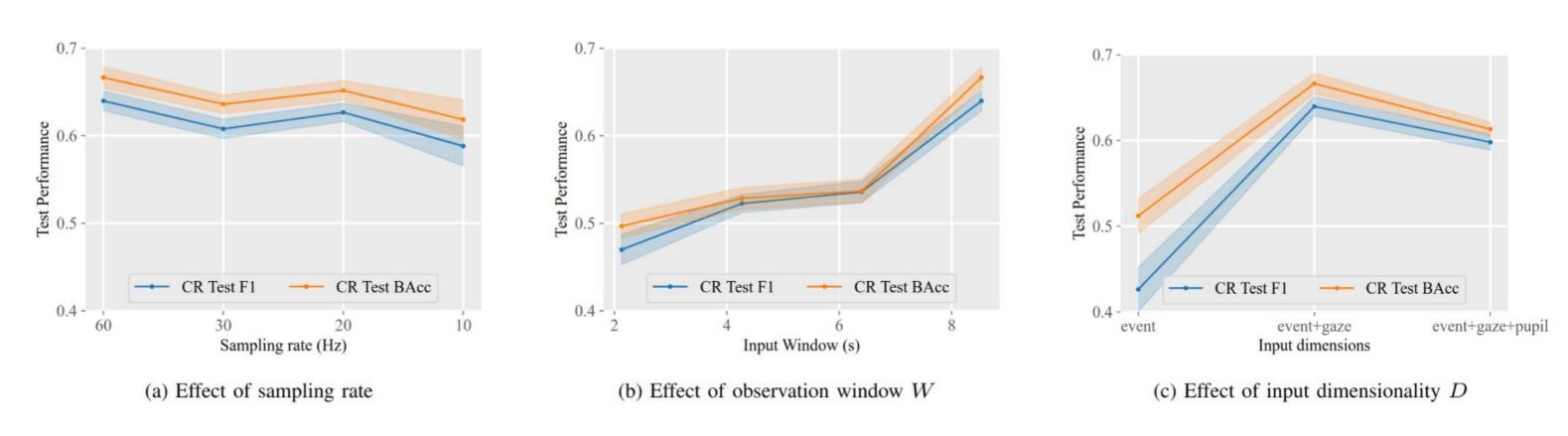
## Model



## Experiments



Choice reaction test most promising Gaze tracking may be too noisy with fast motion



More data (input observation window, training data) would likely improve performance

### What's next?

Promising, but need more:

- → data (repeats, subjects)
- → models (self-supervised, modalities)
- → test designs (many possibilities)
- → in-situ testing (real vehicle)

Data & code available!

