

Fun with the low-cost 'Eye Tribe' eye-tracker

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Meet the Eye Tribe

Is the Eye Tribe accurate enough?

How do I set up the Eye Tribe?

How do I prepare an experiment with the Eye Tribe?

How do I analyze data from the Eye Tribe?

That's great! Can I have a go?

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Cheap, open-source, accessible, portable

Is the Eye Tribe accurate enough?

Dalmaiijer, 2014

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Comparison of Eye Tribe with Eyelink 1000

Is the Eye Tribe accurate enough?

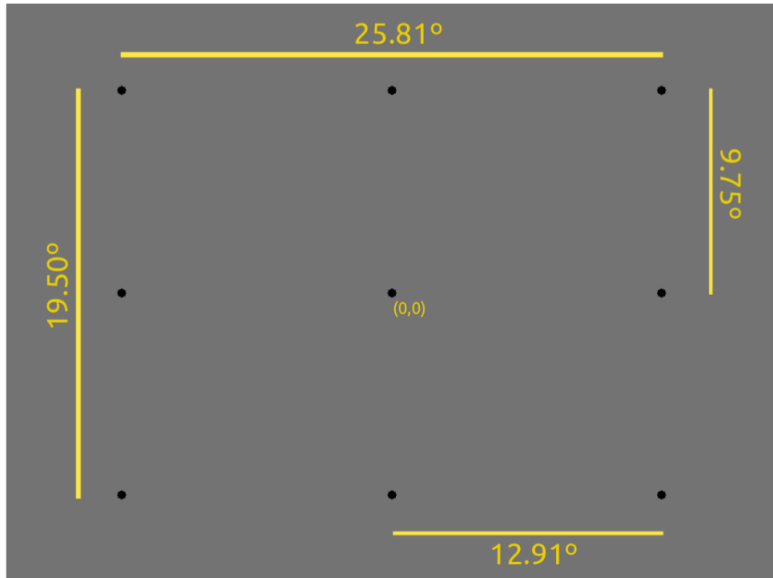
Dalmaijer, 2014

Comparison of Eye Tribe with Eyelink 1000

5 participants completing calibration and face-viewing tasks

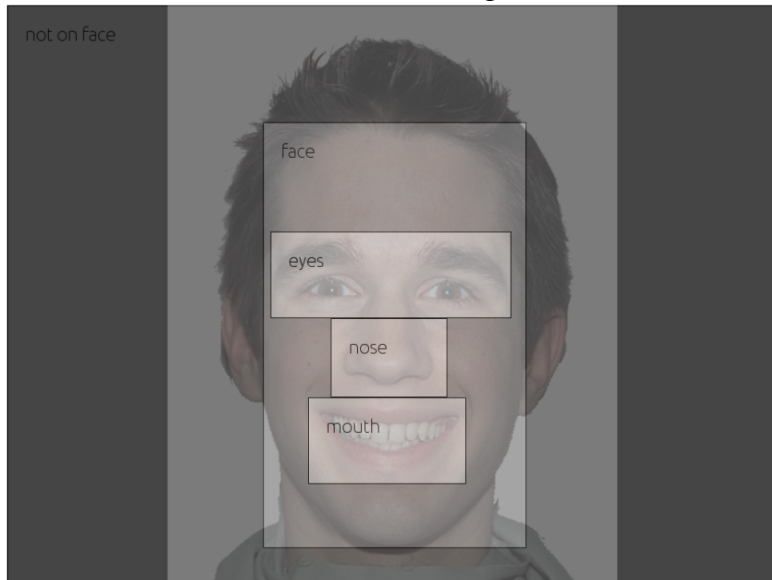
Is the Eye Tribe accurate enough?

Calibration



Is the Eye Tribe accurate enough?

Free face viewing



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Gist: good enough for gaze tracking and pupilometry, less so for saccade metrics

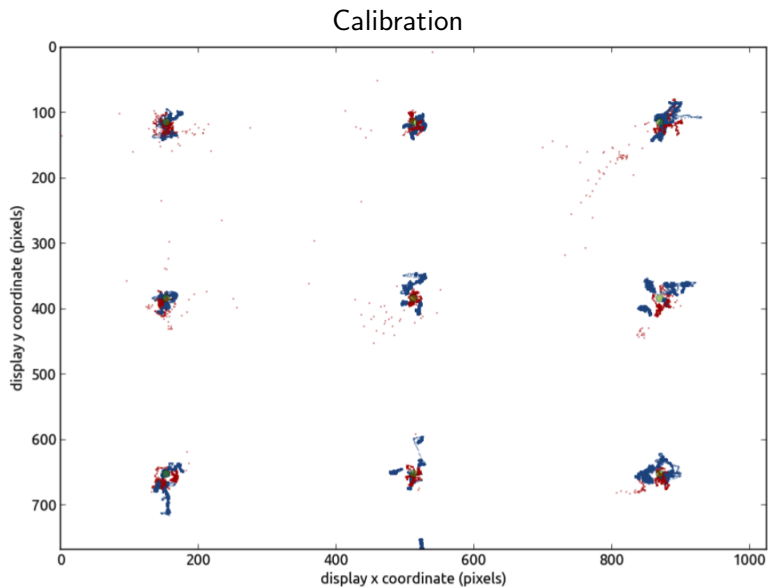
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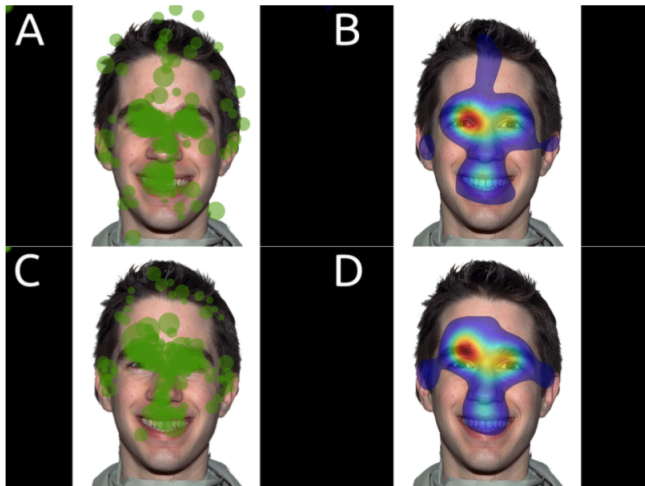
Here I'll just show you the fixation plots for both trackers

Is the Eye Tribe accurate enough?



Is the Eye Tribe accurate enough?

Free face viewing



How do I set up the Eye Tribe?

Plug and play!

How do I set up the Eye Tribe?

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60cm distance

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Plug and play!

60cm distance

Chin rest (recommended)

How do I set up the Eye Tribe?



How do I set up the Eye Tribe?

Execute the Eye Tribe server

Example output (JSON):

```
{ "frame": { "lefteye": { "avg": { "x": 0, "y": 0 },  
  "psize": 0, "raw": { "x": 0, "y": 0 },  
  "pcenter": { "x": 0, "y": 0 } } },  
  "raw": { "x": 0, "y": 0 }, "time": 785680700,  
  "righteye": { "avg": { "x": 0, "y": 0 },  
    "psize": 0, "raw": { "x": 0, "y": 0 },  
    "pcenter": { "x": 0, "y": 0 } } },  
  "fix": false, "avg": { "x": 0, "y": 0 },  
  "timestamp": "2016-02-04 19:28:30.396",  
  "state": 8 } }
```

How do I prepare an experiment with the Eye Tribe?

Edwin Dalmaijer's lab have produced toolkits for Matlab & Python

The Python library (PyGaze) can be used in the OpenSesame experiment designer

Python implementation is straightforward

How do I prepare an experiment with the Eye Tribe?

Examples!

https://github.com/danielplawrence/eye_tracking/

Initializing the tracker:

```
eyetracker=EyeTracker(dis)
```

Starting the tracker:

```
eyetracker.start_recording()
```

Writing to the tracker log:

```
eyetracker.log('Hello World')
```

Stopping the tracker:

```
eyetracker.stop_recording()
```

Closing the tracker:

```
eyetracker.close()
```


An example experiment

If a speech form is associated with multiple social meanings, are they both activated during sociolinguistic perception? (?)

Visual world paradigm

Listeners hear speech tokens containing variants known to be associated with a range of social characteristics e.g. age, social class, ...

They match them to a set of characters who vary systematically on these dimensions

Which alternatives do listeners consider when making their selection?

An example experiment



How do I analyze data from the Eye Tribe?

The tracker logs fixations at 30ms/60ms intervals

Log start and end of trial in the experiment

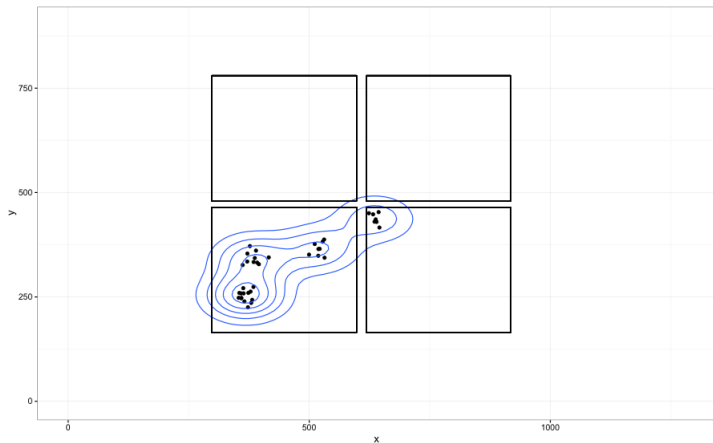
Use a script to extract fixation data and code for trial info
e.g. selected image

'state' provides info regarding tracking quality ('7' is optimal)

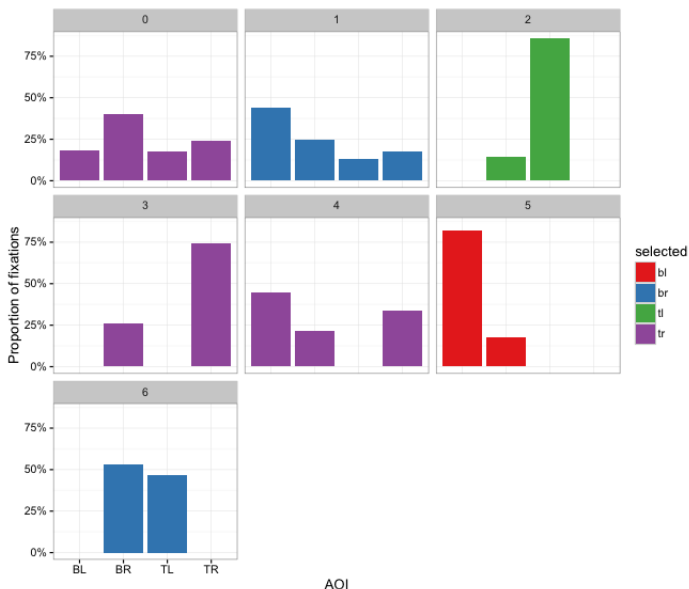
Use a script to assign xy positions to areas of interest

Example code on github page

How do I analyze data from the Eye Tribe?



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That's great! Can I have a go?

Sure!

https://github.com/danielplawrence/eye_tracking/

<https://peerj.com/preprints/585.pdf>

<http://theeyetribe.com>

<http://www.pygaze.org>