

Thesis Introduction

Eye Tracking Data Classification

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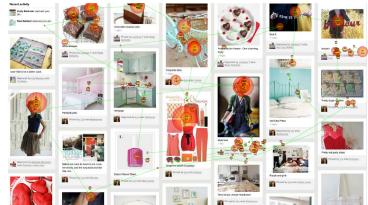
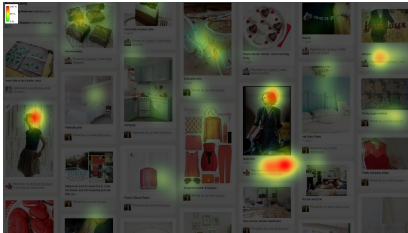


Thesis Introduction

- Motivation
- Eye Tracking
- Research
- Eye Tracking Data Classification

Motivation

Eye Tracking Data



Source: www.eyegaze.com

Motivation

Scientific aspects

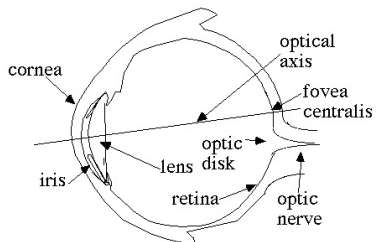
- ... can you find patterns in eye movements?
- ... how can you classify those patterns?

Medical aspect

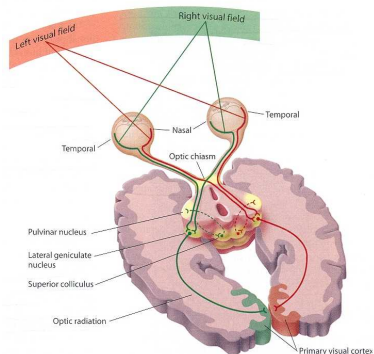
- ... early diagnosis of diseases via eye tracking?

Eye Tracking

The Human Visual System



The human eye



Human visual system

Eye Movements

There are 4 main eye movements:

- **saccade**
rapid change of the visual center
- **fixation**
visual tracking of a stationary object
- *smooth pursuit*
visual tracking of a moving object
- *nystagmus*
compensation of retinal movement

Eye tracking principles

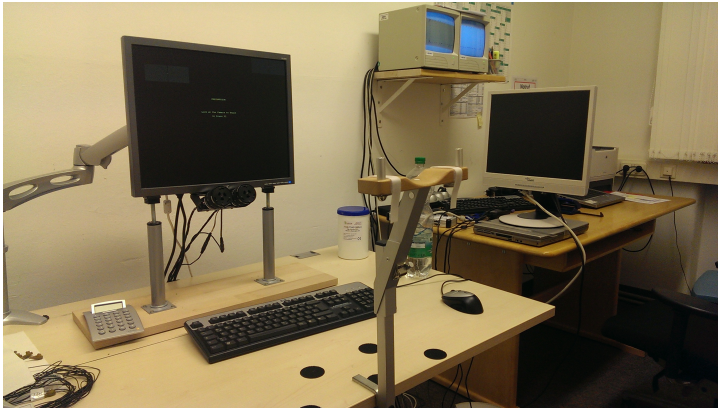
There are various systems.

For research in this thesis a binocular system was used.



- recording of both pupils with 2 cameras
- measurement of the eye position for both eyes (x,y), the pupil size and the time
- data saved in csv files

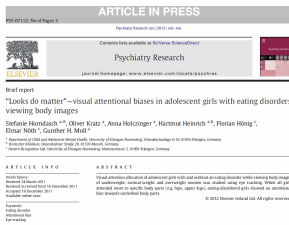
Eye tracker setup for clinical tests



Research

“Looks do matter” – visual attentional biases in adolescent girls with eating disorders viewing body images

Eye tracking study by Horndasch et al.



Article by Horndasch et al.

- analyzed the gaze behavior of adolescent girls with eating disorders via eye tracking
- viewed pictures of underweight, normal-weight and overweight women
- conclusion of the article: Patients with eating disorder fixated more at unclothed body parts compared to normal controls



Eye tracking in progress

Eye Tracking Data Classification

Eye Tracking Data Classification

For the classification you need good features.

Where can we get features from?

- position of the eye

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- first fixation in the picture

Eye Tracking Data Classification

For the classification you need good features.

Where can we get features from?

- position of the eye
- fixation and saccades
- first fixation in the picture
- Region of Interest (ROI)

Region of Interest

- specific area in the evaluated image
- summed gaze time is calculated

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Concept

Literature overview

- human visual system
- eye tracking methodology

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Feature extraction

- find and test features used by Horndasch et al.
- generate own features
- test classification with WEKA

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Implementation

- implementation of the feature extraction
- integration in “Eye Tracker Tool”

Questions, wishes, suggestions?

The End