Screenshots taken during ETRA 2021

A collaborative document
organizing
Welcome

Conference Platform: MeetAnyway

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Short Paper Previews

Predicting intent to interact

Find us during the Poster Sessions for more details.

Contact: brendanjohn@ufl.edu
Keynote I Peter König

Amazing introduction
Keynote Peter König 2

On the role of embodied cognition

2 - MOVE

Previous EEG spatial navigation studies find alpha suppression in parietal and occipital areas during spatial updating. However, with few exceptions, they are conducted using stationary setups.

Statements on the physiological mechanisms of real world navigation are often based on extrapolation.
WHAT DO GAZE MOVEMENTS TELL ABOUT THE INTENDED ACTION?

Task and performance. In contrast to previous studies, we investigate non-overtrained tasks.

Left: In a virtual environment participants sorted objects based on color and/or shape while we measured their eye and body movements. Sorting objects based on just one object feature were considered EASY, whereas sorting based on both features was considered HARD.

Middle: Humans can do this task well and perform near optimal ($\Delta \approx 1$) or at a moderate penalty ($\Delta \approx 6$) in EASY and HARD trials respectively.

Right: Visualizing the drop-off locations reveals a strong bias to the 4 left most and 4 top most shelves. This is not part of the task and a voluntary decision by the subjects. We observe this bias in virtually all of our 60 subjects.

Humans use task irrelevant constraints to reduce search space.
Comparison of Eye Trackers

EQUIPMENT, EYE TRACKING

To validate our mobile eye tracker we perform simultaneous (1) recordings with a high quality lab standard eye tracker.

The overall shape and even little details match in both recordings. A quantitative evaluation (data not shown) confirms the subjective impression of these example data.

The quality and congruence of the two eye trackers is high.
A QUANTITATIVE ANALYSIS OF THE TAXONOMY OF ARTISTIC STYLES

We can use measurement of eye movements (and pop-out) for an objectively defined taxonomy of artistic styles.

A. By style transfer we create variations of base images in 7 different.
B. These are used in a pop-out experiment (Does Van Gogh pop-out of Cezanne?),
C. and an eye-tracking experiment. (Induce Van Gogh and Cezanne similar scan paths?).
D. The hierarchical relation is transitive!
Session 2

Compare Dictionaries

Too Large  MinHash

The minimal response of a set of hash functions over the dictionary → repeated comparison of randomly sub sequences of two scanpaths.
Awesome keynote by Päivi Majaranta

Thank you for your attention!
Awesome keynote by Päivi Majaranta

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Awesome keynote by Päivi Majaranta

User Experience

- Usability
- Customizability
- Social norms
  - ability to maintain gaze contact
  - dwelling on people might be rude
- Acceptability
  - abnormal eye movements in public
  - self-consciousness
  - privacy, safety, etc.

More research on the UX aspects is needed!

Akkii et al. (NordiCHI 2016), Majaranta et al. (2011), Majaranta et al. (2019), Mele & Federici (2012)

Learn more: www.cc.gatech.edu/fac/Thad.Starner
Full Papers 5
Discussion
University of Stuttgart
Visualization Research Center (VISUS)

Thank you!

Maurice Koch

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Examples
Personal encounters

outside

inside

Anya
Jack

Steve

Oliver
Steve 2

Dylan
Chris
Our Approach

III. Use synthetic data set to train convolutional neural network (CNN)

Simulation Data → Synthesize Data → Input to CNN → Classification→ Train CNN on VOI Classification

Phase III: CNN Training
Full Papers 6
Talk 1
Dataset for Eye Tracking on Virtual Reality Platform

Sachin S. Talathi
Facebook Reality Labs Research
Direct Retinal Projection

Printing with laser on the retina

Resulting experience is top-notch:
- Photorealistic colours
- Can be used in bright sunlight
- Can see black against bright background
- Very high spatial and temporal resolution
- Varifocal (continuous) 20 cm to infinity
- Very low power consumption

However, a good eye tracker is needed to guide the laser beam as the eye moves
Full Papers
VI
Talk 3
Results

- Gaussian filter
- Bilateral filter
- Non-local means
- Cauchy noise

Comparisons:
- Comb
- Comb Reverse
Doctoral Symposium
Doctoral Symposium
Mentor Panel
Doctoral Symposium Keynote

Visual Working Memory as a fundamental component of the eye movement system

Stefan Van der Stigchel
Helmholtz Institute, Utrecht University
Doctoral Symposium Keynote

Experimentation in Software Engineering: The New Frontier

Janet Siegmund

Norman Peitek
Bottom-Up vs. Top-Down Comprehension

Brain activation in %

Time in seconds

-10 0 10 20 30 40

Meaningful Identifier — Meaningless Identifier
Doctoral Symposium Quiz - Who am I?
Workshops: COGAIN and Deep learning
Deep Learning in the Eye Tracking World

Paweł Kasprowski
Silesian University of Technology
Gliwice, Poland
Keynote 3: Philipp Reiter, eye square
Keynote 3: Philipp Reiter, eye square
Keynote 3: Philipp Reiter, eye square

USM modelling with Neusrel
Integrating eye-tracking metrics into higher models
Townhall meeting
Tutorial 3: The Neurology of Eye Movements by Jorge Otero-Millan
Ocular counter roll

![Graph showing ocular counter roll](image)