Dan Witzner Hansen investigates to which extend information from images of eyes can be obtained through computationally tractable techniques and how this information can be used in future applications. His focus is on robust methods for extracting information from the eyes. He investigate how this information can be employed as a part of the next generation of contactless and continuous biometric identification modalities and how it can be used for the general public everyday and out-of-laboratory use. His research covers aspects from computer vision, machine learning, HCI, neuroscience and psychology. Among other things the has contributed to the research in eye-based biometric markers and development of novel and low-cost gaze trackers. These eye trackers have together with novel gaze-based interaction techniques been used for interaction for physically disabled persons with great success.

Publications

High-Accuracy Gaze Estimation for Interpolation-Based Eye-Tracking Methods

Orangulas: effect of scheduled visual enrichment on behavioral and endocrine aspects of a captive orangutan (Pongo pygmaeus)

Label Likelihood Maximisation: Adapting iris segmentation models using domain adaptation

Aiming for the quiet eye in biathlon

Eye movement recordings in natural settings

Using Priors to Compensate Geometrical Problems in Head-Mounted Eye Trackers

Computer-implemented gaze interaction method and apparatus

Variability through the Eyes of the Programmer

System and Method for Eye Tracking
A GAZE TRACKER AND A GAZE TRACKING METHOD
Mardanbegi, D. & Hansen, D. W., 11 Aug 2016, IPC No. A61B3/113; G06F3/01, Priority date 4 Feb 2015, Priority No. DKPA201570064 20150204

Pupil Center as a Function of Pupil Diameter

Depth Compensation Model for Gaze Estimation in Sport Analysis

Why have microsaccades become larger? Investigating eye deformations and detection algorithms.

Head and eye movement as pointing modalities for eyewear computers

Head mounted device for point-of-gaze estimation in three dimensions

Robust glint detection through homography normalization

Method of Determining Reflections of Light

Proceedings of the Symposium on Eye Tracking Research and Applications 2014: Conference ETRA ‘14 Eye Tracking Research and Applications

Synergies between head-mounted displays and head-mounted eye tracking: The trajectory of development and its social consequences

Eye-based head gestures for interaction in the car

Gaze-Based Controlling a Vehicle

Time, Interaction, and Design in Support of a Good Life

Towards Wearable Gaze Supported Augmented Cognition
Conclusion and Look to the Future

Eye-based head gestures

Parallax error in the monocular head-mounted eye trackers

EYE GAZE TRACKING

Discussion and Future Directions for Eye Tracker Development

Methodology for designing, implementing and evaluating assistive mobility technology to enable the social inclusion and independence needs of an ageing population

Mobile gaze-based screen interaction in 3D environments

Towards gaze-controlled platform games

Evaluation of a low-cost open-source gaze tracker

Homography Normalization for Robust Gaze Estimation in Uncalibrated Setups

In the Eye of the Beholder- A Survey of Models for Eyes and Gaze

Reflections of Head Mounted systems for Domotic Control
Mardanbeigi, D. & Witzner Hansen, D., 2010, IT University of Copenhagen.

Gaze-controlled driving
Location-based solutions in the experience center

Low-cost gaze interaction: Ready to deliver the promises

Eye Tracking

Location-based Services using Image Search

Location-based solutions in the Experience centre

Noise tolerant selection by gaze-controlled pan and zoom in 3D: Proceedings of the 2008 symposium on Eye tracking research & applications

Robust registration for change detection

Tracking the gaze of birds

An improved likelihood model for eye tracking

Improving face detection with TOF cameras

Robustifying eye interaction

Boosting particle filter-based eye tracker performance through adapted likelihood function to reflexions and light changes

Eye tracking in the wild
Improved Likelihood Function in Particle-based IR Eye Tracking

Command Without a Click : Dwell Time Typing by Mouse and Gaze Selections

Press clippings
Bedre eyetracking-algoritmer fra ITU kan give flere guldmedaljer
Dan Witzner Hansen & Fabricio Batista Narcizo
22/08/2016
1 item of Media coverage

Bornholmsk professor vil sikre øjets informationer
Dan Witzner Hansen
15/11/2021
1 Media contribution

Debat: Danmark har fordele i kampen om at blive international AI-frontløber
Dan Witzner Hansen
26/04/2021
1 Media contribution

Forskning baner vejen for sportsmedaljer
Dan Witzner Hansen
14/12/2022
1 Media contribution

Forskning i øjets bevegelse hjælper elitesporten frem i feltet
Dan Witzner Hansen
13/09/2016
1 item of Media coverage

Hvem kigger med
Dan Witzner Hansen & Jari Kickbusch
09/05/2014
1 item of Media coverage

Hvem kigger med?
Dan Witzner Hansen
09/05/2014
1 item of Media coverage

Ingen fælles standard for datasikkerhed i Danmark
Dan Witzner Hansen
30/04/2014
1 item of Media coverage

Kan virtual reality komme til at ligne virkeligheden så meget, at vi ikke kan se forskel?
Dan Witzner Hansen
24/07/2021
1 Media contribution
Læk sætter fokus på datasikkerhed
Dan Witzner Hansen
30/04/2014
1 item of Media coverage

Ny ITU-professor forsøger i øjets informationer
Dan Witzner Hansen
16/12/2021
1 Media contribution

SJÆLENS SPEJL: Afslørende blikke
Dan Witzner Hansen
18/02/2022
1 Media contribution

Projects