

The TORSIO

The Unique Neural Network Experience In 3D Eye Movements Measurements

Horizontal, Vertical, and now... Torsional

The Torsional Software for Ocular Torsion Measurement

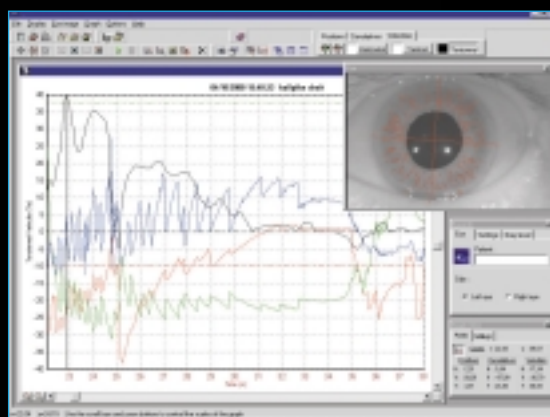
The neural network allows to track gradients of gray levels. The network is thus anchored to the iris to measure ocular torsion:

- Real-time display of the three dimensions of eye movement
- Real-time display of the iris pattern to maintain constant reliability control (high resolution eye image)

- Gives positions, slow phase velocities and cumulative tracing for each component as well as real time histogram of the ocular torsion angle.

Stimulations: static OCR ("head tilt head test") for otolithic response, caloric, Dix Hallpike maneuvers and positionals, kinetic rotational...

The Stakes: setting new standards and protocols and design a new test for the future of vestibular exploration?



Recording of the 3 components of a positional nystagmus in Dix Hallpike right with syndrome of canalithiasis of the right posterior canal.

Ulmer VideoNystagmoGraphy and SYNAPSYS

SYNAPSYS was founded in 1993 to develop on-line analysis of physiological signals and produces innovative medical instrumentation in the field of balance disorders diagnosis.

The Ulmer VNG is the result of many years of clinical practice constantly improved thanks to an end-users feedback process enabling them to share their experience and fit perfectly their everyday practice.

Over 400 users worldwide already adopted the technology setting SYNAPSYS as the world's leading manufacturer of VNG technologies.

For development, SYNAPSYS has built close partnership with the French National Scientific Research

Center (CNRS) and made preferential relationships with the ANVAR and INSERM and major worldwide Hospitals.

SYNAPSYS is certified ISO9001/EN46001, marked CE Class IIA – IEC 601-1-1 and EN 55022 EMC for Emissions and EN 50082-1 EMC for Electromagnetic Shielding.

In 1995, SYNAPSYS was ranked in the top-ten best Start-ups by the French specialized press ("L'Usine Nouvelle").

In 1997, SYNAPSYS was awarded with the innovation Trophée by the State Department of Provence Alpes Côte d'Azur and received last year the trophy of "Strategy" from the Business School of Marseilles.



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Keep an **Eye** open on the Ulmer VNG...
in a Blink ...VideoNystagmoGraphy of an Eye!
Immersive Measurements for the Neuro-Otology Market
Horizontal velocity
Ab. preponderance
Unilateral Weakness



SYNAPSYS

Cutting Edge Technology in a World of Balance

The Ulmer VNG-VideoNystagmoGraphy is a complete real-time eye movement analysis technology that meets the demand and standards for VNG testing. While comfortable for the patient, and easy to use for the clinicians, the Ulmer VNG enhanced the effectiveness of diagnosis for patient with balance disorders.



VideoNystagmoGraphy-VNG and Infrared Cameras: the Eye of the Ear

Eye movements are recorded using CCD video cameras mounted on light tight masks. A hardware and software PC-based system analyzes the video images for the different components of the eye movements: nystagmus beats and slow phase velocities.

Recordings and eye images are displayed online and collected patient data stored in a Patient Manager database.

Different type of masks are available whether using a 2-channel or 4-channel system, light-occluded or free-field-of-vision.



VNS Goggles

- IR high resolution CCD Cameras
- Any type of nystagmus recording
- Light-weight (7 oz) and comfortable

- Visible light completely blocked out
- Biocompatible IR lighting
- Built-in fixation light for fixation suppression

VISIO Fast Eye Tracking

- Unlimited horizontal and +90/-20° vertical visual free field
- High frequency camera with 50, 100, 180 and 200 images/s
- One-camera Binocular analysis



Software & Modules Highlights

Overview of the Ulmer VNG

While Windows®-based since 1997, the Ulmer VNG provides with online eye position, slow phase velocities and analyses display. The eye image is also displayed for subjective control and diagnosis as well as faster examination.

Monocular or binocular, the system is configured to each individual needs and practice. Labels can be inserted on and off-line, sound files indicate procedures of irrigation, footswitch possibility and high quality colored printouts for tests results review and filing.



View of the Saccade test screen

A Complete Set for Vestibular Testing

The VNG software provides with comprehensive evaluations meeting European and US vestibular examinations standards.

- **Ocular Motor Testing:** Saccade, Smooth Pursuit, and Optokinetic. Analysis of the ocular motor function in response to a stimulus displayed on a TV or projected on a wall with a video projector
- **Vestibular Testing:** Positional and Spontaneous Nystagmus, Gaze, Dix-Hallpike, and Caloric
- **Audiometer:** stores the air and bone audiograms as well as the trapezius reflex thresholds and Weber

The Competitive Advantages

- **Provides with a unique set of meaningful VNG normative data**
- **Higher reliability of the eye detection with infrareds**
- **User-friendly:** double-click and start! System designed by a practitioner to meet your needs as a practitioner, and not as a computer engineer
- **Reduced examination average time to 45 minutes**
- **Over 400 users worldwide trusted the Ulmer VNG**
- **Unique «cumulative» or desaccadic tracing :** display of Directional Preponderance and asymmetry
- **Extensive packages:** TORSIO-3D VNG software and VISIO for higher frequency
- **Experience and service commitment:** customizing technology to fit your needs, on-site installation and training, one-year warranty on hardware and free software update, free phone and email assistance, continuing education courses and sponsorship, free **BLINK** Newsletter.

Unique Eye Detection Providing 99.98% Reliability

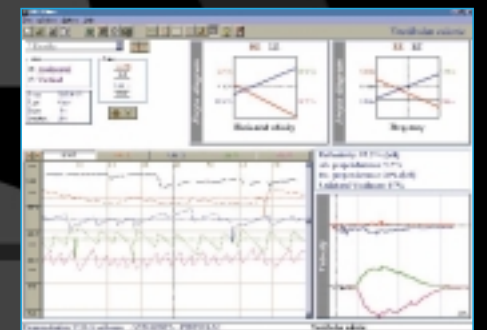


- Eye filmed directly right in front with a macro lens (3 cm or 1.18") for an optimization of the eye movements measurement

- **Automatic eye centering and lock-onto-pupil system:** no adjustment of the goggles or camera needed!
- Problem of dark eyelid overcome
- **Calibration:** visual in one click, or geometrical for faster examination

Data Management and Report

- Patient information and associated collected data are stored in a Patient Manager
- Patient data can be imported and exported for pathology study on remote PC workstation or data sharing thru email
- One, two, four or eight-test-per page offers neat colored data printouts for quick review and hardcopy filing.
- Comments are stored into a RTF file template also used as a summary for the tests



View of the Caloric test screen

The Balance Product Line

- **TORSIO:** The Neural Network Experience in 3D Eye Movements
- **NYSTAGView:** Monitoring Eye Movement - video eye movement recorder
- **MED4:** Rotational Chair and Active Head Rotation Sensor

And also VarioAir Irrigators, Auris ABR*, SPS Posturography* ...

(* Note: These products are currently not available for sale in all countries. Refer to your local distributor for further information.

