

Pseudo-Holographic Display Technology

developed & patented by



Company Presentation

Company overview

- psHolix AG was founded in March 2015 in Basel, Switzerland
- Dr Naske, the founder of the technology and CTO, has injected 25 patents
- psHolix owns now more than 57 patents, 2 are in production
- More than 2 Million USD have been invested so far
- Dr Naske has worked 10 years on this project before it was merged into psHolix AG
- Demo products are ready (8K display, laptop, tablet, mobile phones, VR headsets)
- Based on the cutting-edge technology behind the eyewear-less 3D displays, the company has build following technologies
 - Virtual Reality (VR, AR, MR) Headset Software
 - autonomous car software

The next AI-driven display technology

- 12 years advanced research in Autostereoscopy
- 1,000 times more perspectives than competition and therefore better natural perception
- Highest fidelity in spacial viewing experience for everyone everywhere (no transition zones, multi users, no need for head tracking)
- 2DTV backwards compatible with highest resolution
- No headache and eye strain when watching 3D content over a longer period of time
- Compatible with all contents (Games, TV, DVD, YouTube, etc)
- Compatible with all technologies (HDR, OLED, LCD, Retina, etc)
- Technology can be applied on all resolutions and sizes
- 2D and 3D in a window at the same time is possible without any quality loss

Benefits of psHolix display technology

patented by psHolix

1. Experience high quality 3D without glasses
2. Multiviewer solution, everyone can see the same spatial content in front of the screen
3. Unique **Super Multi View in real time**: Infinite (actual 28'000) perspectives allow floating views and show better natural perception (no accommodation conflict, that means no headache and no eye strain)
4. Better depth perception with **stereo based extension** (image seems deeper)
5. Walk around effect
6. Stress-less 3D viewing with **eye anatomy adaption** (reduced workload for the brain)
7. clear image everywhere, no ghosting because of **invisible transition zones**
8. Simultaneous 2D and 3D (even on the same screen); no switching required
9. 2D and 3D in perfect HD quality (backward compatible)
10. Compatible with all content available in the market, no change of content required
11. Compatible with all display technologies in the market (2K, 4K, 8K, LCD, OLED, etc.)
12. Compatible with image quality improvements (HDR, HDR+, etc.)
13. No limit in screen sizes, works on mobile phones, tablets, laptop, TV, etc

VR & Head Mounted Display

The psHolix software also works on HMDs and is applicable for VR, AR & MR
psHolix solves the accommodation conflict in VR

Further advantages:

- No eye strain
- No headache
- Better natural perception
- Higher depth perception
- Stress-less 3D viewing
- Anatomy adaption to the human eye
- Super multi-view technology
- Stereobase extension
- High PPI quality performance
- No additional power consumption
- Less memory required
- No higher heating



Autonomous Cars

psHolix anatomy adaptation can be used for object detection

psHolix is able to solve following problems:

The psHolix technology can support camera-based ADAS (Advanced Driver Assistance Systems) to distinguish between edges of objects like cars, trucks, pedestrians, animals, etc. or simple textures like from a large street sign or advertising.

Example from the latest Tesla accident with the truck:

A truck which is standing or crossing a street, would have been identified because the background of the truck would have been identified as a farer object and the truck would have been identified as one single closer object. Even if the truck is not moving. The latest Tesla accident would have been avoided.

The psHolix software uses the input from a stereo camera of a car to assign a distance to every pixel of the image on the fly (live). **Object detection** is one of the key features of our algorithm based on our anatomy adaptation. Secondly our technology helps to "identify and highlight" the borders and edges of objects and is creating a **bigger depth** (Stereo based extension). Therefore the ADAS get a better input to take a decision.

The inventor



Dr. Rolf-Dieter Naske is a German computer scientist, who studied mathematics and computer science. His favorite area of interest is digital image processing, which he is doing since 1978. He filed his Ph. D. thesis in the area of Artificial Intelligence about hand writer recognition in the year 1984. His inventions led to more than 50 patents in the area of 2D to 3D conversion and auto-stereoscopic display technology. In 1998 he developed the first head-mounted display-based computer systems for gaming. Since 1999 he is working in the field of 3D television. For more than ten years Dr. Rolf-Dieter Naske is creating the next generation holographic displays for psHolix.

The next AI-driven display technology



- 20 years in the 3D market
- Award-winning products since 1998



Gebrauchsinformation

cyber-PC

Gesellschaft für Multimedia Anwendungen mbH
Oberhauptstraße 7
22335 Hamburg

ZUSAMMENSETZUNG:

Der cyber-PC enthält schon in seiner Grundausstattung alle Substanzen (Hardware), die eine schnelle Wirkung garantieren: 133 MHz Intel Pentium Prozessor, 16 MB EDO RAM, 256 KB Pipelined Burst Cache, 1 GB EIDE Festplatte (ohne FarbtoFF), 8-speed CD-ROM Laufwerk, 64 Bit Grafikkarte mit 2 MB Videospeicher, internes 28.800 Modem, 15" Monitor sowie Lautsprecherboxen, Joystick und Shutterbrille (rezeptfrei).

Angereichert wird diese ausgewogene Zusammenstellung mit einer Vielzahl von Softwareprodukten: Basis ist Win95, kombiniert mit den Microsoft-Produkten Excel, Word und Powerpoint. Dazu kommen die Vollversion des Muntermachers Descant II, der CyberComic „Normality“ und eine Reihe 3D-Spiele.

Für die absolute Bewegungsfreiheit auch in entfernten virtuellen Welten ist der cyber-PC mit Netscape/Vscape und dem VRT-Visualizer in Kombination mit dem Gastzugang zu T-Online, AOL (Achtung: nicht AOK) und CompuServe ausgestattet.

WICHTIGE ERGÄNZUNG: CYBER-PC PROFESSIONAL

Die Variante „professional“ enthält statt der Shutterbrille den „glasses“-Datenhelm und das Abenteuer-Phantasie-Erlebnispiel „Magic Carpet 2“.

BESTELUNG:

Wenn nicht anders verordnet, sollte eine Konfiguration für's Büro und eine für den privaten Bereich

NEBENVORTEILE:

Direkte Nebenwirkungen sind nicht bekannt. Allerdings können bei zu intensiver Nutzung des cyber-PC's Lähmungserscheinungen im Zeigefinger auftreten, die es verhindern, den cyber-PC auszuschalten. Bei einzelnen Personen können durch ständige und intensive Nutzung des cyber-PC's Störungen im Sozialverhalten auftreten. Deshalb bietet IDF allen cyber-PC-Kunden die

AUTOMATISCHE, KOSTENLOSE MITGLIEDSCHAFT IM CYBER-CLUB GERMANY

Die Clubmitglieder werden regelmäßig über Neuerungen im 3D- und VR-Bereich informiert, können sich untereinander über e-mail austauschen und auf eine Reihe internationaler Netzanschlüsse über den IDF-Server günstig zugreifen.

KOSTEN:

Der cyber-PC ist in der Grundausstattung, also in der Version mit der Shutterbrille, erhältlich ab ~~4.995,- €~~ 395,- €! Für die Variante „professional“ legt man lediglich 395,- €! drauf und kann dann mit dem Datenhelm im Cyberspace spielen, einkaufen, lernen, arbeiten oder einfach nur surfen.

BESTELLUNG: CYBER-PC'S GIBT ES NUR BEI IDF * BESTELLUNGEN LAUFEN ÜBER *** FAX: 040/750 39 39 11
E-MAIL: idf@idf.de *** TELEFON: 040/750 39 39 0 *** ODER SCHRIFTLICH AN IDF 04088 *****

Alle Preise inklusive MwSt. zzgl. Versandkosten.
Die Lieferung erfolgt innerhalb kürzester Zeit.



Award

In September 2019 psHolix won the KIDS (Korean Information Display Society) Award at IMID 2019 in Korea. The price was sponsored by Samsung.



Dr. Naske and the General Chairman of IMID 2019 Jae Soo Yoo

The market sizes

- The global **3D display market** size is expected to reach **USD \$204.16 billion** by 2025.
www.grandviewresearch.com/press-release/global-3d-display-market
- The global **autonomous vehicle market** size is projected to be valued at USD \$54.23 billion in 2019, and is projected to garner **USD \$556.67 billion** by 2026.
www.alliedmarketresearch.com/autonomousvehicle-market
- The **augmented and virtual reality (AR/VR) market** amounted to a forecast of USD \$16.8 billion in 2019 and is expected to expand drastically in the coming years, with forecasts for 2023 eclipsing **USD \$160 billion**.
www.statista.com/statistics/591181/global-augmented-virtual-reality-market-size/
- The entire **video gaming market** is expected to be worth over **USD \$180 billion** by 2021.
www.statista.com/statistics/292056/video-game-market-value-worldwide

Sample use cases

Gaming Monitors & Laptops



Control Center (Drones monitoring, battle fields surveillance, etc)



Design & Engineering (AutoCAD, 3DS Max, etc)



Sample use cases

TV set and monitors



healthcare monitors



Automotive Displays & Mirrors



Why psHolix is better than competitors ?

- 2-3 times larger depth perception than the competitors.
- Stress-less 3D viewing over a longer time period.
- 2D and 3D on the same monitor (competitors require 2 separate monitors)
- Low production costs (thin film 0,1mm)

Comparison with competition

Features	Samsung	LG	Sharp	SONY	KDX	Stream TV	psHolix
Headache & eye strain reduction	No	No	No	No	No	No	Yes
Sharp image everywhere	No	No	No	No	No	Yes	Yes
2D backward compatible	No	No	No	No	No	Yes	Yes
Larger depth perception (up to factor 2 to 3)	No	No	No	No	No	No	Yes

psHolix technology on 8K 32" display

1. Multiple viewers from any distance
2. Highest sharpness
3. No transition zones
4. 2D backwards compatible for TV broadcasting (can be used as a TV set)
5. 2D and 3D at the same time
6. Software and hardware solution
7. Better than the competition



psHolix technology on 4K notebook

1. Multiple viewers from any distance
2. Highest sharpness
3. No transition zones
4. 2D backwards compatible for TV broadcasting (can be used as a TV set)
5. 2D and 3D at the same time
6. Software and hardware solution
7. 3D video conferences



psHolix technology on 3K 8" tablet

1. Multiple viewers from any distance
2. Highest sharpness
3. No transition zones
4. Technology also works on tablets and smartphones for 3D pictures, video and video conferences
5. Software and hardware solution



psHolix technology on smartphones

1. Multiple viewers from any distance
2. Highest sharpness
3. No transition zones
4. Technology also works on tablets and smartphones for 3D pictures, video and video conferences
5. Software and hardware solution



psHolix technology on an automotive display

1. Multiple viewers from any distance
2. Highest sharpness
3. No transition zones
4. Technology also works on automotive displays
5. Can be used as a standard automotive display
6. Can be used for rear view mirrors
7. Software and hardware solution



psHolix technology on a Head Mounted Display

1. Technology also works on HMDs
2. Technology is applicable for VR, AR & MR
3. Software solution
4. No accommodation conflict (no headache, no eyestrain)
5. The system highlights the borders of objects and the content gets more depth



psHolix autonomous driving application

1. Anatomy adaptation can be used for object detection
2. Software solution
3. The system highlights the borders of objects and the content gets more depth
4. The system can be used to compute the distance of objects and cars



psHolix products



Future outlook

- Since 2018 psHolix is in intense discussions with global companies in the display and VR sector to either license or sell the technology and the patent portfolio. Several candidates are detected and intense discussion are going on.
 - psHolix is offering the hardware and software technology to the display market
 - psHolix is offering the software technology to the VR market
 - psHolix is offering the software technology to the car industry
- The goal is to sell the complete technology and patents portfolio in the next 12 month.
- Independent reports confirm the valuation depends on the business line up to \$1.84 billion USD.

Contact details:

psHolic AG

Wallstr. 8

4051 Basel

Switzerland

info@psholic.com

More info @ www.psholic.com