



The Next Frontier Of Medical Education

How Augmented & Virtual Reality Can Help the Healthcare Sector

Presented By Dan Lejerskar, Founder, EON Reality 21ST November 2019 at Digital Healthcare Transformation Denver, Colorado

Company Highlights

- **Market-leading Position:** world leader in Augmented Virtual Reality (AVR) based knowledge transfer
- **Proven Staged Strategy:**
- **Eon Human 2.0** government solution that can uplift millions of smart student & smart workers
- **Classroom 3.0** that enables academic institutions to help students Learn faster, remember longer and make better decisions and
- **Industry 4.0** that enable enterprises to upskill their workers
- **Mission-driven Organization:** EON Human 2.0 is bridging the gap between man and machine
- **Track Record With Blue-chip Customers:** including Exxon, GSK, Honeywell, GE, Mercedes, China Merchant Group, NTU, J&J, Shell and Pearson.
- **Massive, Disruptive And Growing Market:** AVR \$100B by 2020.
- **Enterprise-class Avr Saas Platform:** Securely creates, stores, analyzes, distributes and publishes AVR agnostically fueled by AI, IoT and GIS
- **Industry-leading Management Team:** proven experience in Enterprise solutions, Education and ICT.
- **Scalable Saas Based Platform:** compound annual growth rate of the order values is expected to grow with over 50% annually over the next 3 years





HUMAN 2.0
GOVERNMENT



CLASSROOM 3.0
ACADEMIC



INDUSTRY 4.0
ENTERPRISE

At the heart of healthcare is **empathy**.

When we talk about **digital transformations in healthcare**, what we're really talking about is how we can **improve existing processes better, deliver efficiencies and affordability to provide better care** and greater empathy to the people we are looking after.



What is at the heart of healthcare?



- Very often, you can find me super excited the **benefits of VR and AR in education.**
- But it clear to me, one of the **biggest benefits** that this technology can bring is in the area of **healthcare and medical education.**

- One good example is the area of **surgical training**.
- For many years now, the model of surgical training is done through **residencies**.
- Where residents as you know, literally undergo **on the job training** under the **supervision of surgeons**.
- This a model that works, because **nothing can replace experiential training**.



General Surgery Residency Inadequately Prepares Trainees for Fellowship: Results of a Survey of Fellowship Program Directors

Objective: To assess readiness of general surgery graduate trainees entering accredited surgical subspecialty fellowships in North America.

Methods: A multidomain, global assessment survey designed by the Fellowship Council research committee was electronically sent to all subspecialty program directors. Respondents spanned minimally invasive surgery, bariatric, colorectal, hepatobiliary, and thoracic specialties. There were 46 quantitative questions distributed across 5 domains and 1 or more reflective qualitative questions/domains.

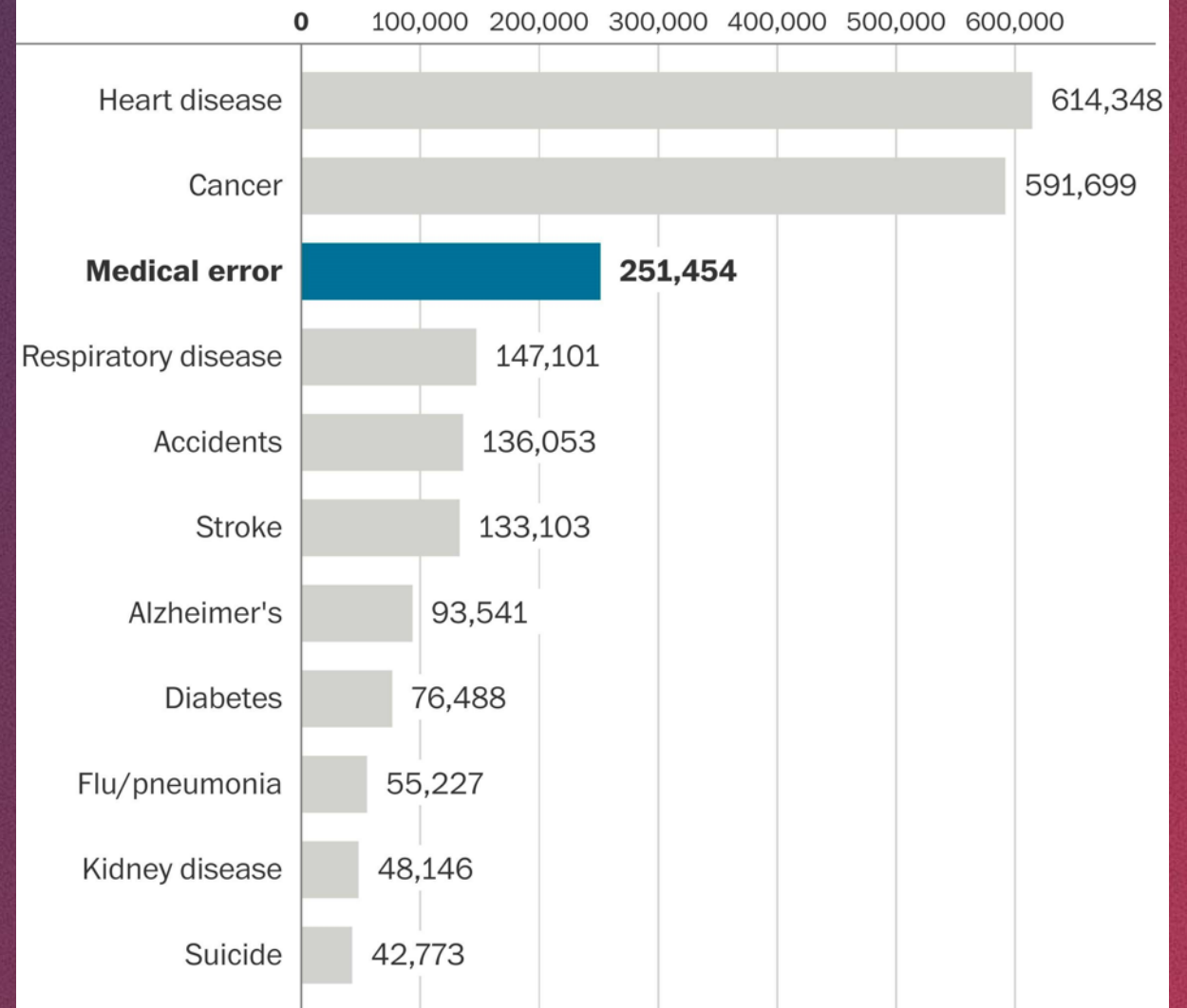
Results: There was a 63% response rate ($n = 91/145$). Of respondent program directors, 21% felt that new fellows arrived unprepared for the operating room, 38% demonstrated lack of patient ownership, 30% could not independently perform a laparoscopic cholecystectomy, and 66% were deemed unable to operate for 30 unsupervised minutes of a major procedure. With regard to laparoscopic skills, 30% could not atraumatically manipulate tissue, 26% could not recognize anatomical planes, and 56% could not suture. Furthermore, 28% of fellows were not familiar with therapeutic options and 24% were unable to recognize early signs of complications. Finally, it was felt that the majority of new fellows were unable to conceive, design, and conduct research/academic projects. Thematic clustering of qualitative data revealed deficits in domains of operative autonomy, progressive responsibility, longitudinal follow-up, and scholarly focus after general surgery education.

And this is translating directly into worrying statistics. A study published in another medical journal (The BMJ, 2016) found that medical error was the **third leading cause of death in the US**. Could these deaths been prevented with better and more rigorous training? No doubt.

Contentious study by Makary and Daniel (2016), but one would argue that one death by error is one death too many

Death in the United States

Johns Hopkins University researchers estimate that medical error is now the third leading cause of death. Here's a ranking by yearly deaths.



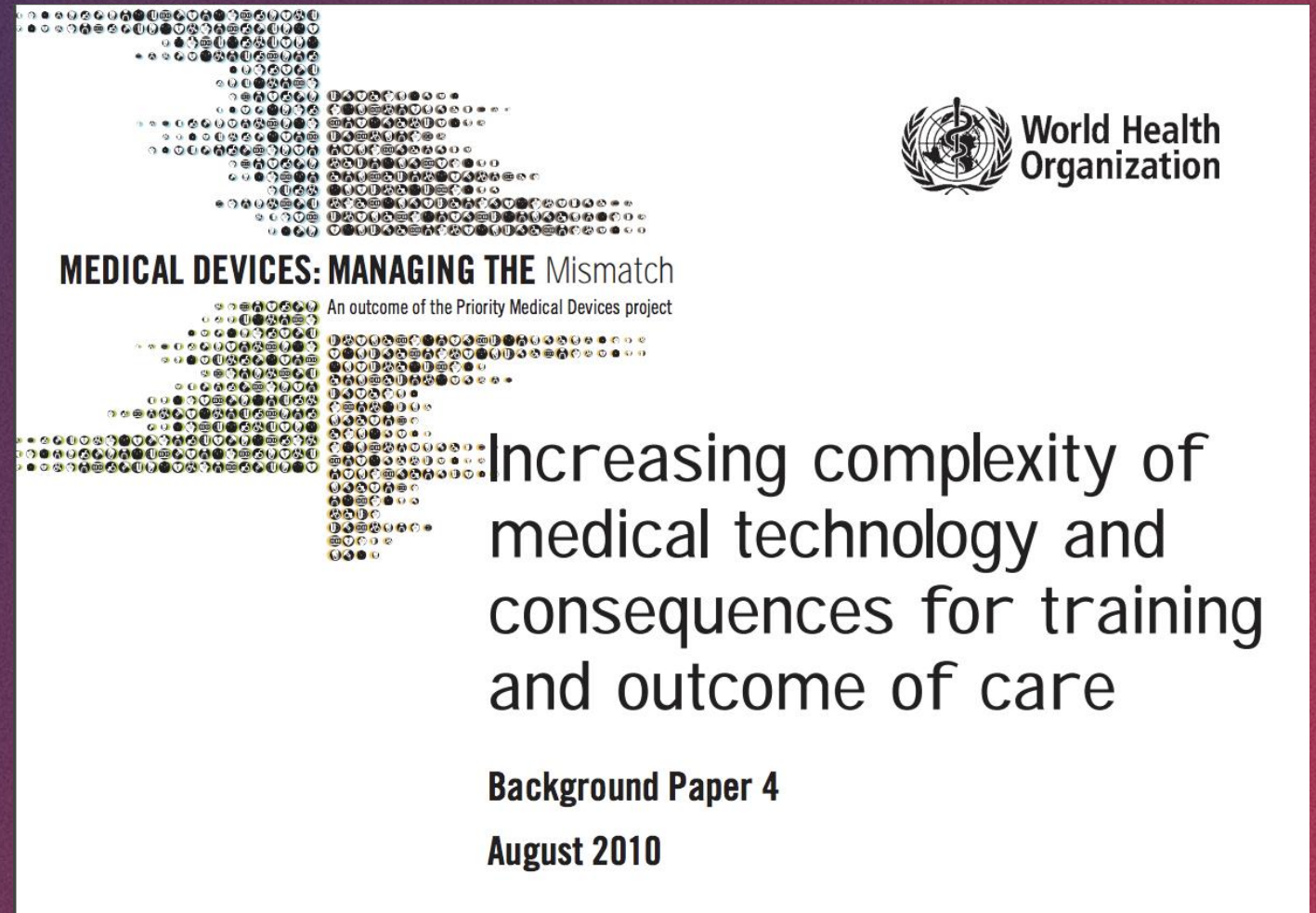
Source: National Center for Health Statistics, BMJ

THE WASHINGTON POST

Many of these procedures are not only very much dependent on technology, but are also technically complex to perform.

Such is the trend: new technologies require competent health professionals who are continuously expanding their breadth of knowledge and expertise.

WHO, 2010



Yet with procedures becoming more complicated with the rapid development of new devices and procedures, the risks become higher with clinicians needing more training to operate safely.

OLD METHODS ARE NO LONGER ACCEPTABLE

**If we teach today's students as we taught yesterday's,
we rob them of tomorrow."**

— John Dewey



VIRTUAL REALITY
(encapsulated environment)



AUGMENTED REALITY
(digital content overlaid on real world)

IDC Singapore Event

April 27, 2019



Professor Naomi Low-Beer

Vice Dean of Education - Lee Kong Chian School of Medicine

Pupillary Dysfunction

Diseases

None

Left Eye

Right Eye

☐ Relative Afferent Pupillary Defect

☒ 1st order Horner's syndrome

☐ 2nd order Horner's syndrome

☐ 3rd order Horner's syndrome

☐ 3rd nerve palsy

☐ Adies pupil

☐ Physiologic Anisocoria

Medications

None

Apraclonidine 0.5%

Cocaine 4%

Hydroxyamphetamine

Phenylephrine

Pilocarpine 2%

Pilocarpine 0.1%



Left Pupil: 4 mm
Right Pupil: 2 mm

Eye

Left

Right

Light intensity

Low

Med

High



LOYOLA
UNIVERSITY CHICAGO

EyeSim - Ophthalmology VR

A VR ophthalmic training simulator designed for the classroom.

"Please do not blink."

"Look straight ahead."



EyeSim

- EyeSim, developed together with Dr. Anuradha Khanna, is a Virtual Reality **ophthalmic training simulator** designed for educators to use in the classroom
- Learners can achieve mastery **learning through deliberate practice**
- **Initially available modules** include:
 - **Ocular anatomy**
 - **Pupil Simulator**
 - **Ocular motility** simulator
 - **Visual pathway** simulator



- Internal Carotid Artery T C ☐
- Ophthalmic Artery T C ☐

Ocular Branches
Retinal Arteries

- Central Retinal Artery T C ☐

Choroidal Arteries

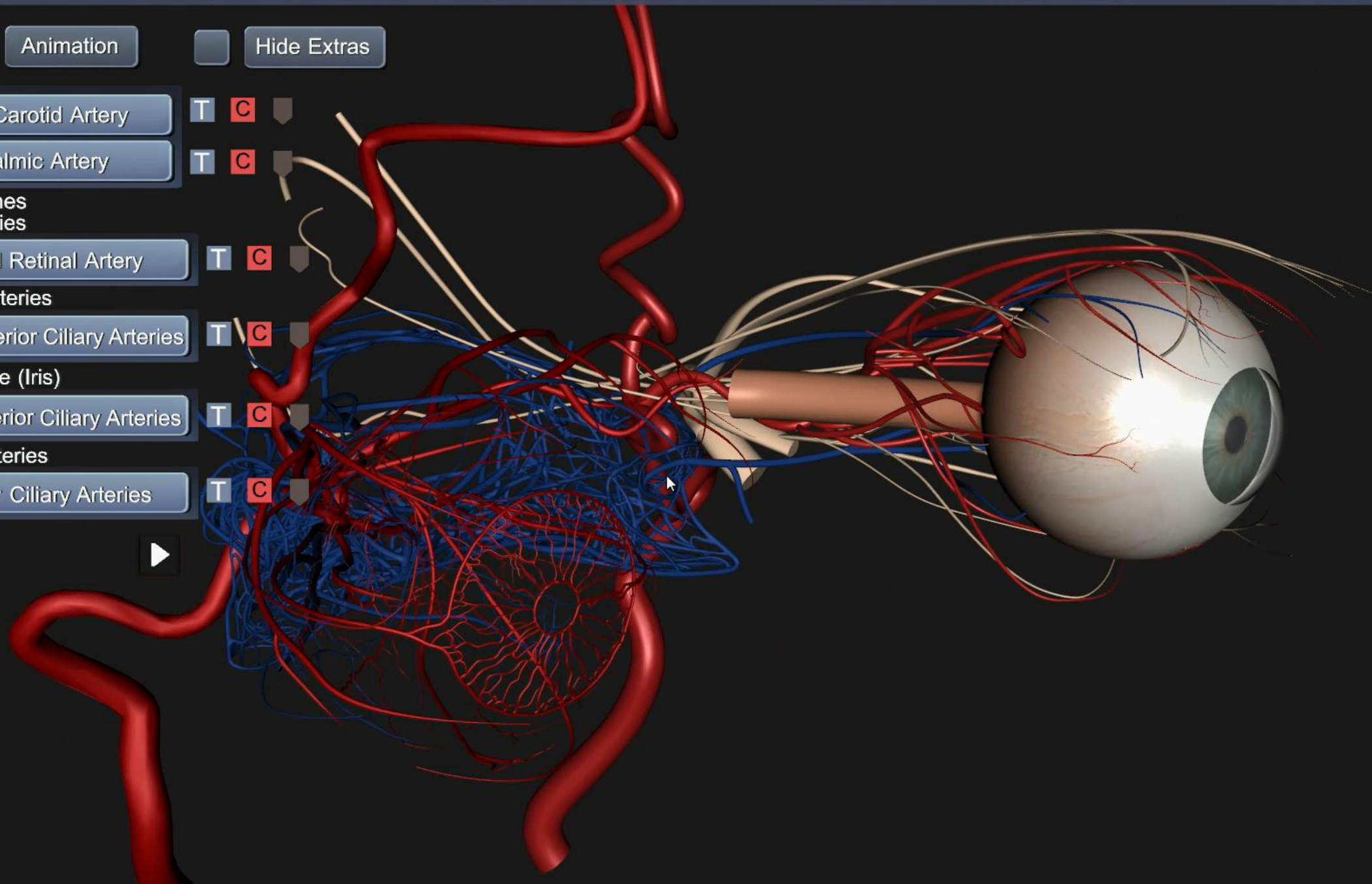
- Short Posterior Ciliary Arteries T C ☐

Arterial Circle (Iris)

- Long Posterior Ciliary Arteries T C ☐

Muscular Arteries

- Anterior Ciliary Arteries T C ☐



EyeSim™

Advanced Pupil Simulator

Developed By
Anuradha Khanna, MD

Subject Matter Experts:

Sachin Kedar, MD

Deepta Ghate, MD

EyeSim Team:

*Catherine Cox, Steve Bowden, Mark Cheben, Lloyd Churches, Stevie Giovanni, Marcin Kasica,
Sophia Li, Matthew Taylor, Michelle Williams, Palmer Williams, Sam Wan, Vincent Liu,
Edward Laurenzi, Chris Chapman, Stephen Hart*

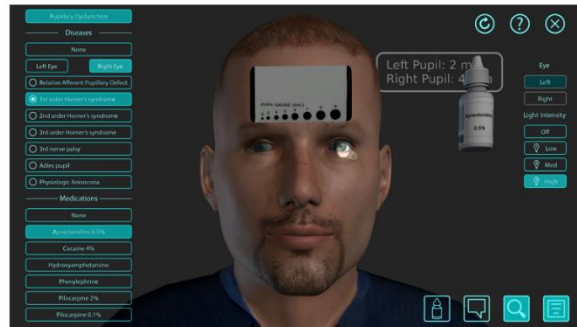


Learning pupillary examination using the Advanced Pupil Simulator among medical students and residents

Sachin Kedar^{1,2}, Jideofor K Ndulue¹, Deepta Ghatge¹,

¹Stanley M. Truhlsen Eye Institute; ²Department of Neurological Sciences, University of Nebraska Medical Center, Omaha, NE, United States.

Advanced Pupil Simulator®



- We recently designed a virtual reality-based application, Advanced Pupil Simulator® (APS) in collaboration with EON Reality Inc. and A Nu Reality
- EyeSim APS is a virtual reality application that allows trainees to work in a simulated environment to identify and master pupillary examination
- The APS consists of a monitor (HP Zvr), 3D goggles and a stylus. The stylus replicates the experience of holding a handheld light used in eye exams. The goggles gives a 3-dimensional representation of the image on the monitor and helps the image track the eye movement of the user.
- The APS has an interactive interface that simulates how medications and lighting affects the pupil. Eight pupillary conditions (normal, relative afferent pupillary defect (RAPD), Horner's, 3rd nerve palsy, Adie's pupil and physiologic anisocoria) can be simulated and confirmed using appropriate pharmacologic eye drops.

Methods

- 145 trainees (126 first-year medical students, 15 neurology and 4 ophthalmology residents) participated. All trainees reviewed an online power-point module, received a 15 minute demonstration and practiced pupillary examination in groups of 3 assigned to an expert faculty on the APS for 30 minutes.
- All trainees completed a Likert-type questionnaire (1 = not confident, 5 = very confident) before and after the session to assess confidence in performing pupillary examination.
- All trainees were objectively assessed for knowledge, comprehension, application and analysis using test mode on the APS.
- Statistical methods: Differences in pre-and post-training confidence was tested using

Results

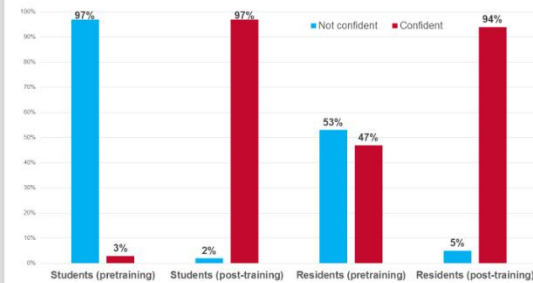


Figure 1. Participants confidence to perform pupillary examination before and after training with the Advanced Pupil simulator.

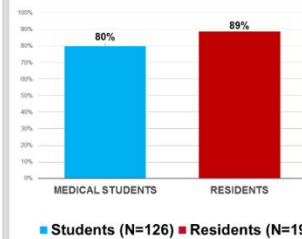


Figure 2. Proportion of participants who correctly demonstrated all steps of pupillary examination after training with the Advanced Pupil Simulator

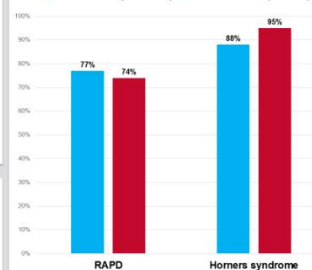


Figure 3. Post training assessment: Correct diagnosis of RAPD and Horner syndrome

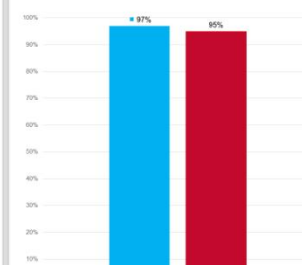


Figure 4. Post training assessment: pharmacological confirmation of Horner's syndrome



- 97% (122) students and 10 (52%) residents reported improved confidence in performing pupil examination after training with APS.
- 80% (101) students and 89% (17) residents were able to correctly list and demonstrate all steps in pupillary examination.
- 77% (97) students and 74% (14) residents correctly identified RAPD while 88% (111) students and 95% (18) residents correctly identified Horner's syndrome.
- Post training, students reported improved confidence in identification of all pupillary abnormalities ($p=0.00$), while residents reported improved confidence in diagnosing Adie pupil ($p=0.00$) and using pharmacologic agent to confirm anisocoria ($p=0.00$).

Conclusion

- Virtual-reality based practical training can shorten time to competency for critical medical examination techniques
- All trainees showed improved confidence in pupillary examination after using the APS.

Results

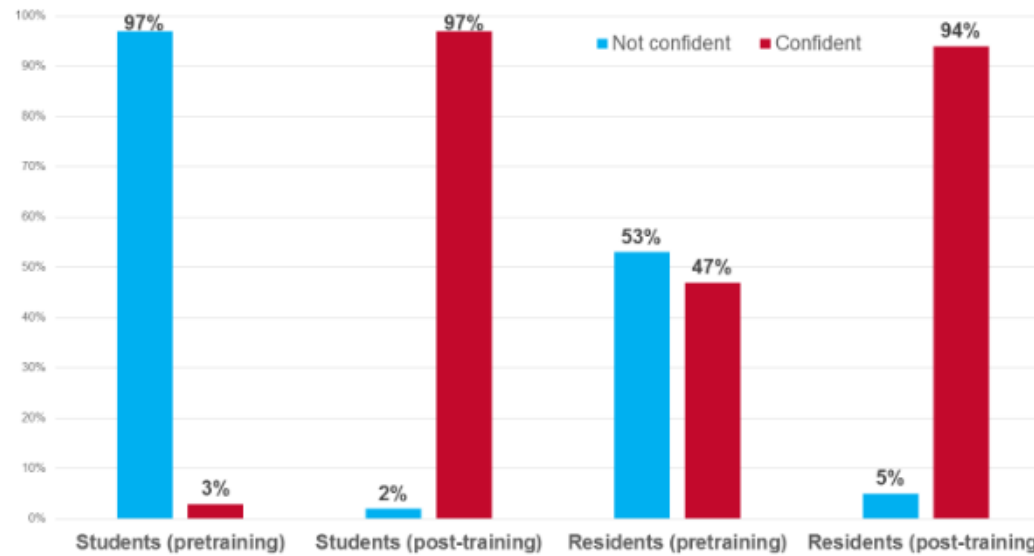
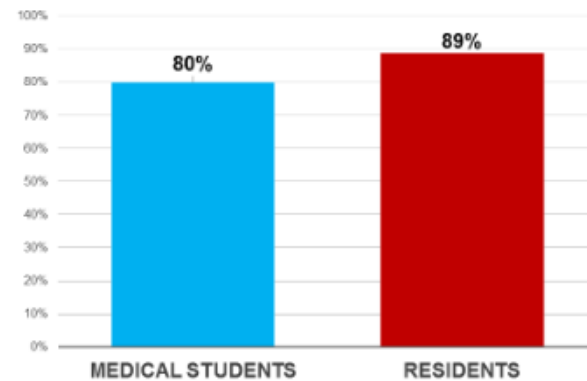


Figure 1. Participants confidence to perform pupillary examination before and after training with the Advanced Pupil simulator.



■ Students (N=126) ■ Residents (N=19)

Figure 2. Proportion of participants who correctly demonstrated all steps of pupillary examination after training with the Advanced Pupil Simulator



82%

28% of Higher Education institutions (>26,000) have engaged in some level of VR deployment.

82% have not yet moved beyond the pilot stages

**2018 VR/AR IN RESEARCH AND EDUCATION SURVEY CONDUCTED BY INTERNET2*

The AVR Platform

AVR

PTC

AUTODESK

SIEMENS

DASSAULT
SYSTEMES

LMS 360°
VIDEO

GIS

iOT

EON AVR
PLATFORM
AGNOSTIC

IMAGE
RECOGNITION



ODG



Google Lens

SLAM

LRS

oculus

Microsoft
HoloLens

FACEBOOK
AR STUDIO

SAP

Tango

VIVE

ARTIFICIAL
INTELLIGENCE

SCORM

UNREAL
ENGINE

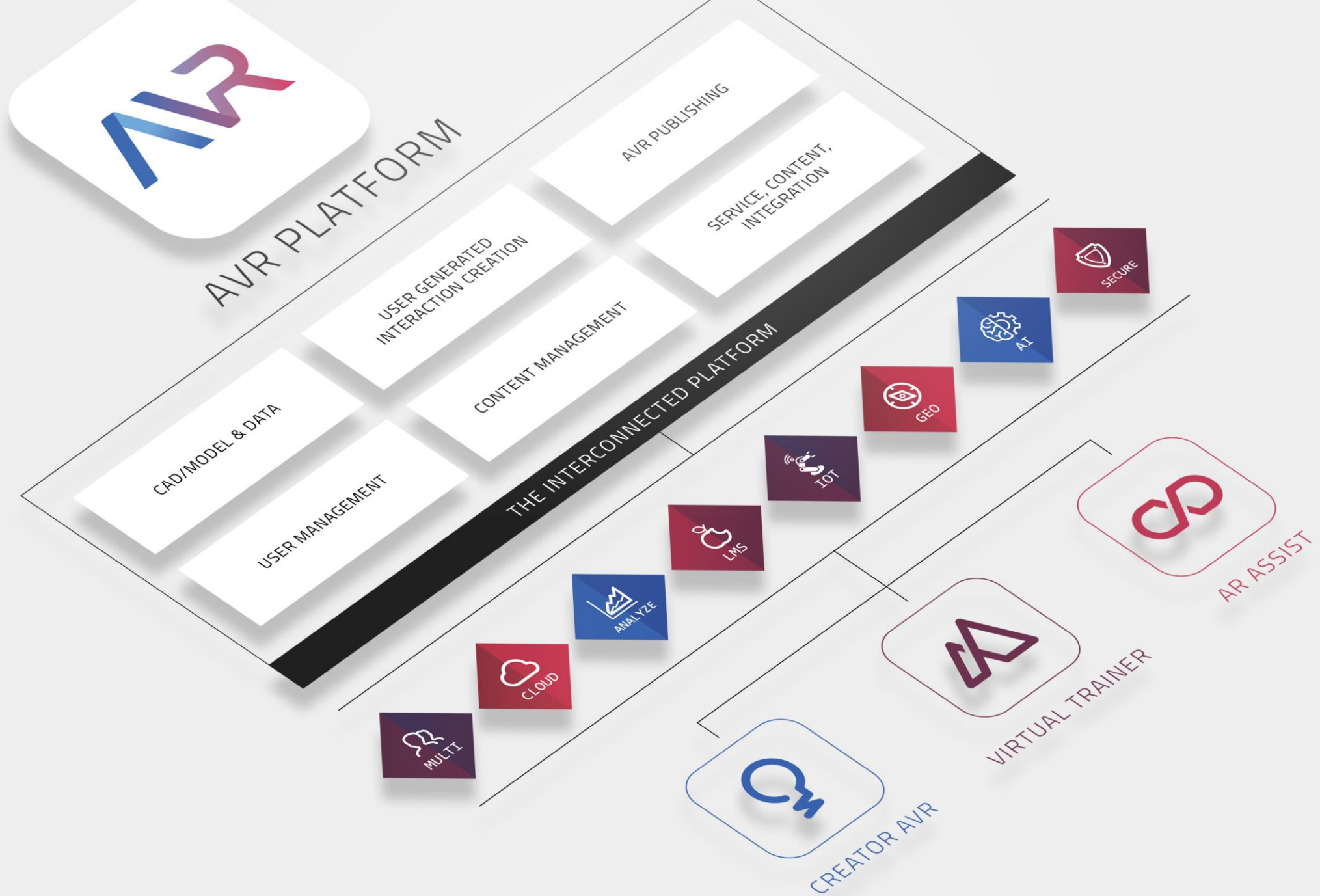
ORACLE

xAPI

OGRE



unity



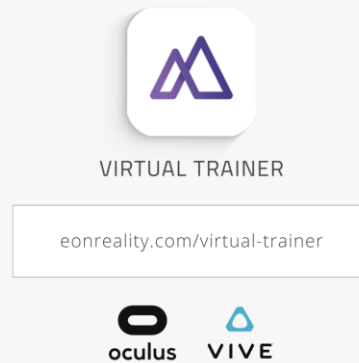
Learn



CREATOR AVR

Onboarding
Familiarization
Pre-training
Sales Training

Train



VIRTUAL TRAINER

Procedure Practice
Remote Training
Virtual Certification

Perform



AR ASSIST

AR Assisted MRO
Remote Expert Assistance
Real Time Data Display



Sign In

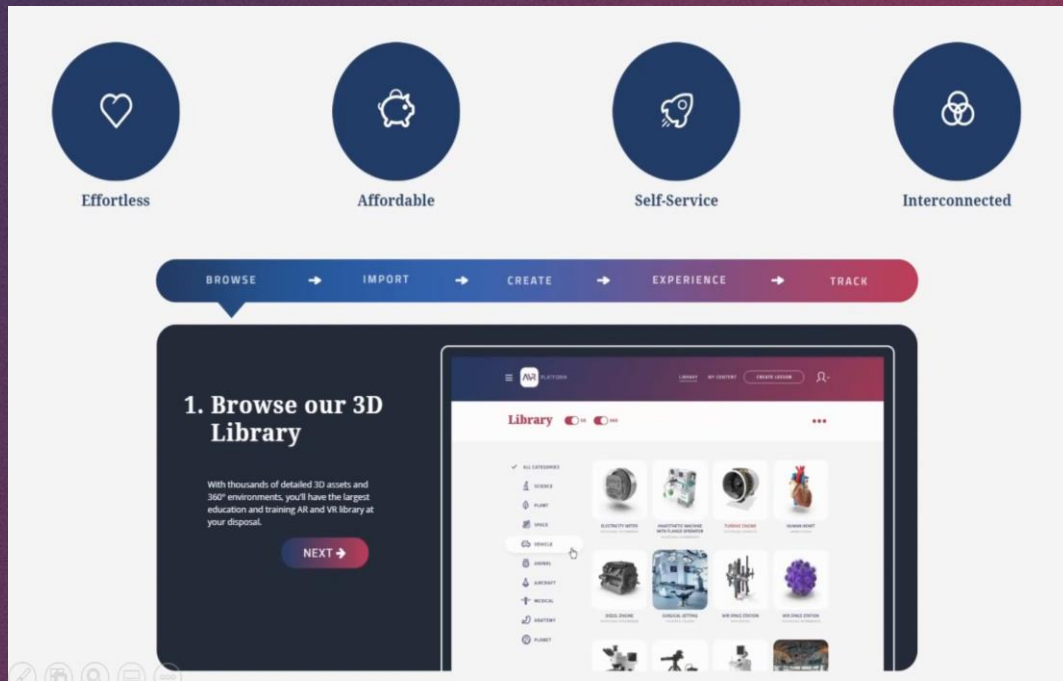
PASSWORD* 

NEXT →

[Forgot Password](#)

AVR PLATFORM – Comprehensive AVR Platform to Develop, Run, Manage, Access, Store, Host & Distr. AVR

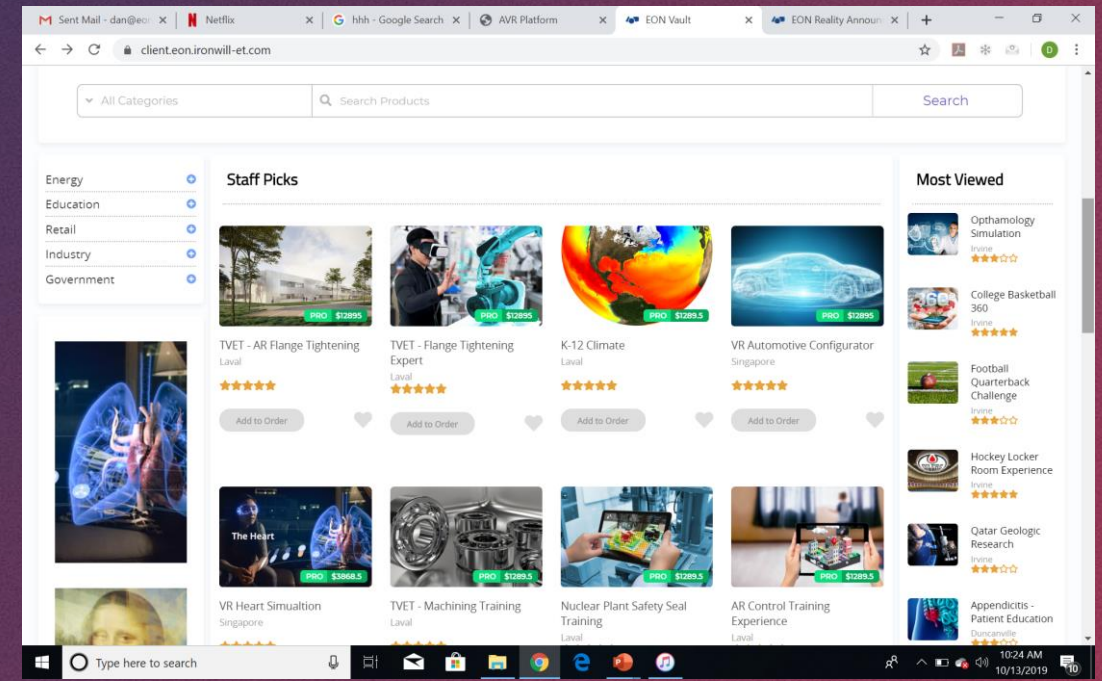
- Effortless
- Affordable
- Self service
- Interconnected VR AR Mobile
- Access to 870,000 3D assets



<https://betaaccount.avrplatform.com/Home/IndexV2>

VAULT - Vast Catalog of Augmented and Virtual Reality Applications

- Advanced Complete Application
- Addresses Specific Needs
- Supports advanced AVR Systems
- Certified by Academic Customers
- Marketplace with Revenue opportunities



<https://www.eonreality.com/press-releases/eon-reality-vault-announcement/>

EASI Platform

Effortless

- New Easy-To-Use User Experience On Desktop And Mobile

Affordable

- 870,000 New 3D Assets Integrated With The Platform,
- New AVR Application Vault

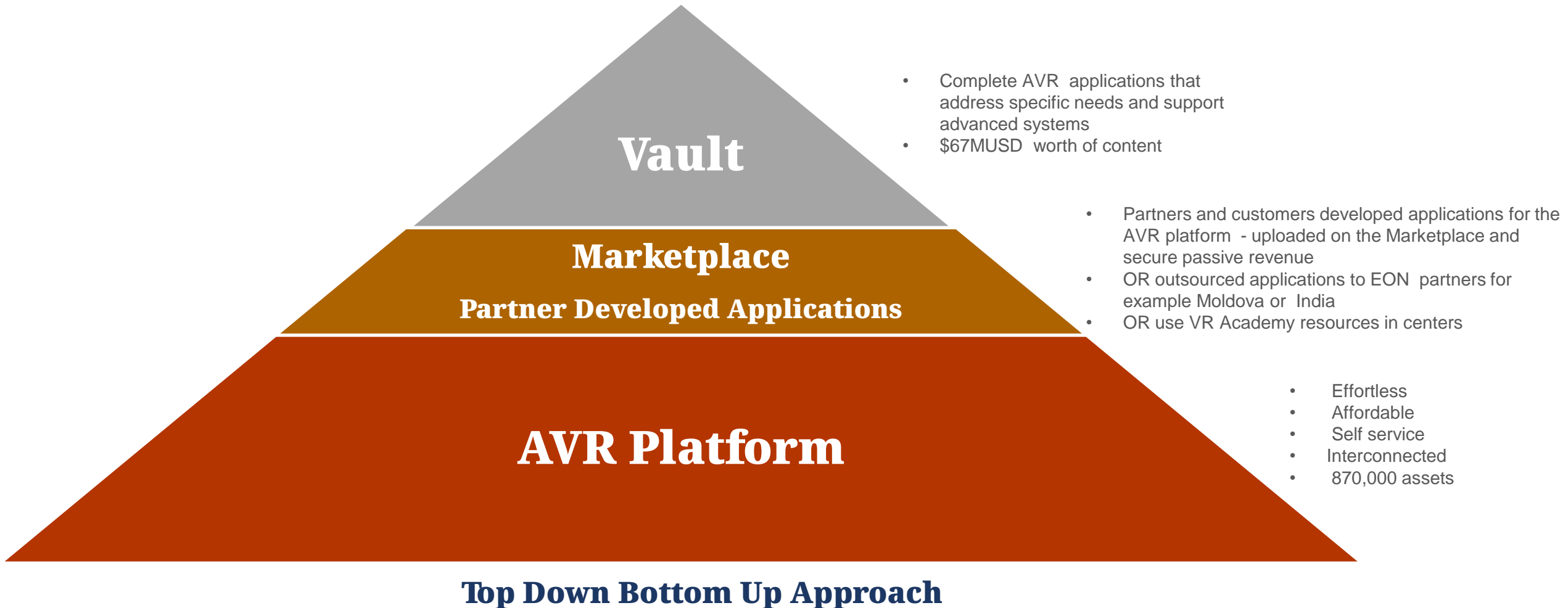
Self-Service

- New First Time User Experience,
- New 360 Content Creation,
- New CAD Cloud Conversion To AVR Portal

Interconnected

- New Virtual Trainer Interconnected Product Features

End To End Solution For AVR Knowledge Transfer



Advancing AVR Education & R&D

Eon Reality Education

ACADEMIC EXPERTS DRIVE
INNOVATION IN EDUCATION

EON Reality Education is a **non-profit focused on advancing the cause** of Augmented and Virtual Reality (AVR) **education and research.**







Led By Professor Bertil Andersson

Who reformed teaching through
introduction of **educational technology**
and **collaboration with Eon Reality** at
Nanyang Technological University

2007 -2011 PROVOST
2011-2017 PRESIDENT



**NANYANG
TECHNOLOGICAL
UNIVERSITY**
SINGAPORE

Eon Reality Education Advisory Board Members



Bertil Andersson
Chairman
Former President of NTU



Ihron Rensburg
Vice Chairman
Former President of University
of Johannesburg



Jenny Higham
Principal of St George's
University of London



Montserrat Gomendio
Deputy Director of the
Directorate for Education
and Skills, OECD



Jose Ignacio Wert
Former Minister of
Education, Culture
and Sports, Spain



Jan Carlstedt
Senior Advisor
– Medicine,
NTU



Peter Looker
Head of Learning,
Teaching &
Pedagogy, NTU



Chee Yeow Meng
Interim Dean,
College of
Science, NTU



José Escamilla De Los Santos
Education Innovation Director,
Tecnológico de Monterrey

AVR Adoption

EON Academic Customers & Partners





35% Increase in Test Scores

Students Remember Longer And Increase Test Scores
86% of Students in the VR Classroom improved their Test Results

Attention levels doubled (**92% vs 46%**)
Test Scores increased with **35%**

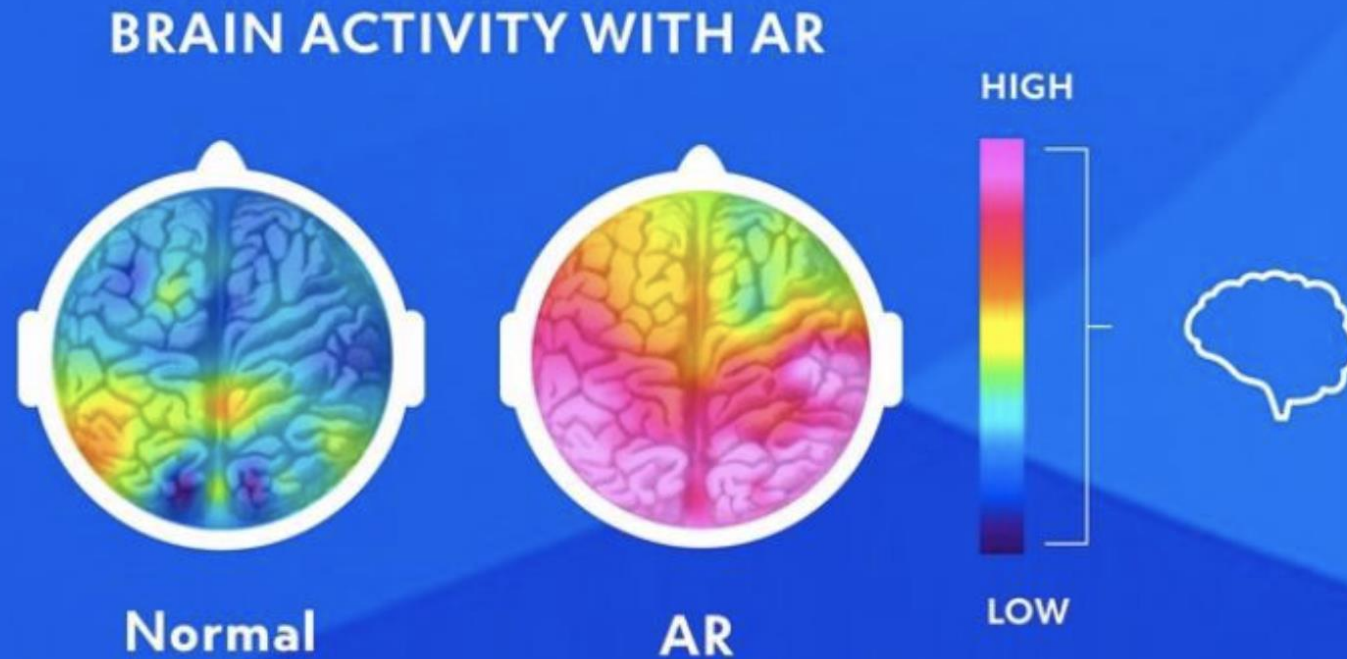
BBC Published study

"Students can see how things function. Instead of learning about the heart statically they can see it in a solid way, literally see blood passing through the valves, see exchange of oxygen, rotate it, tilt it and zoom in," Said Prof Bamford.

BBC

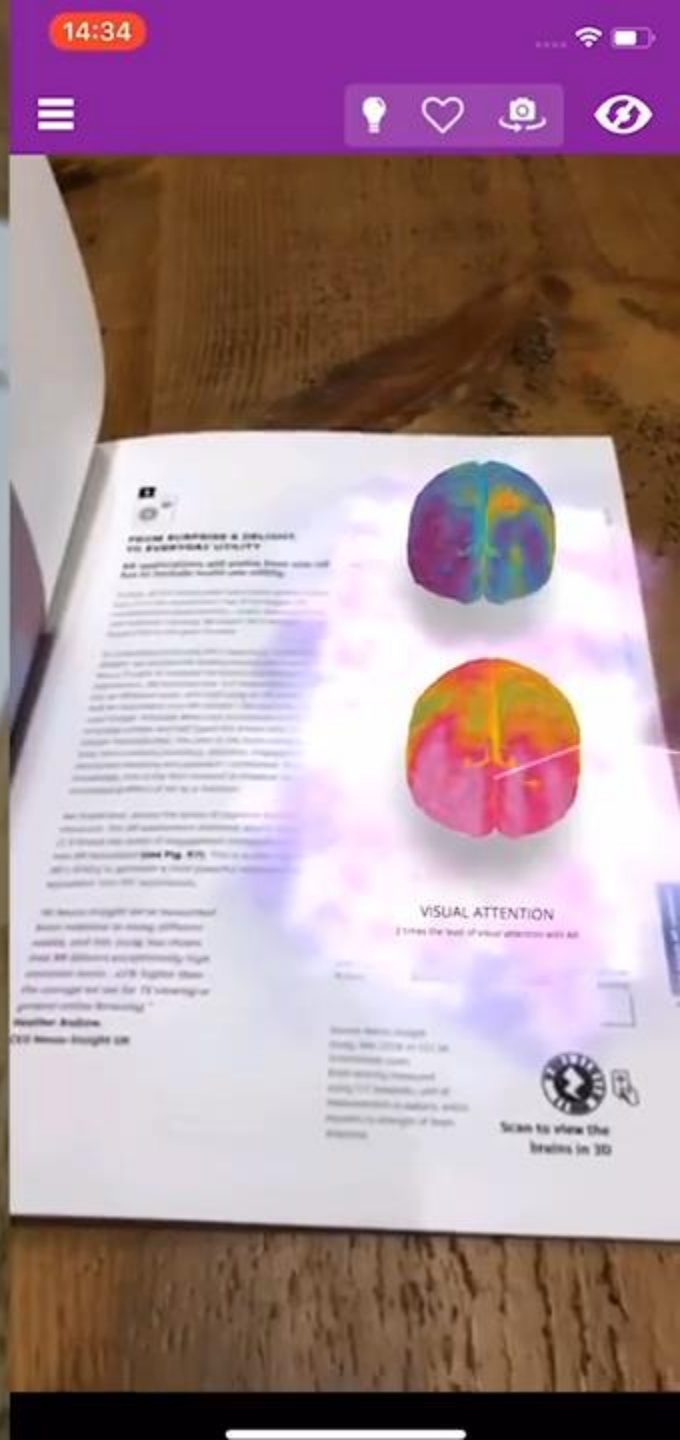
1) From <http://www.bbc.co.uk/news/technology-15115059>
2) From <http://www.dlp.com/downloads/DLP-CaseStudy-Classroom3.pdf>

70% Increase in Memory Encoding



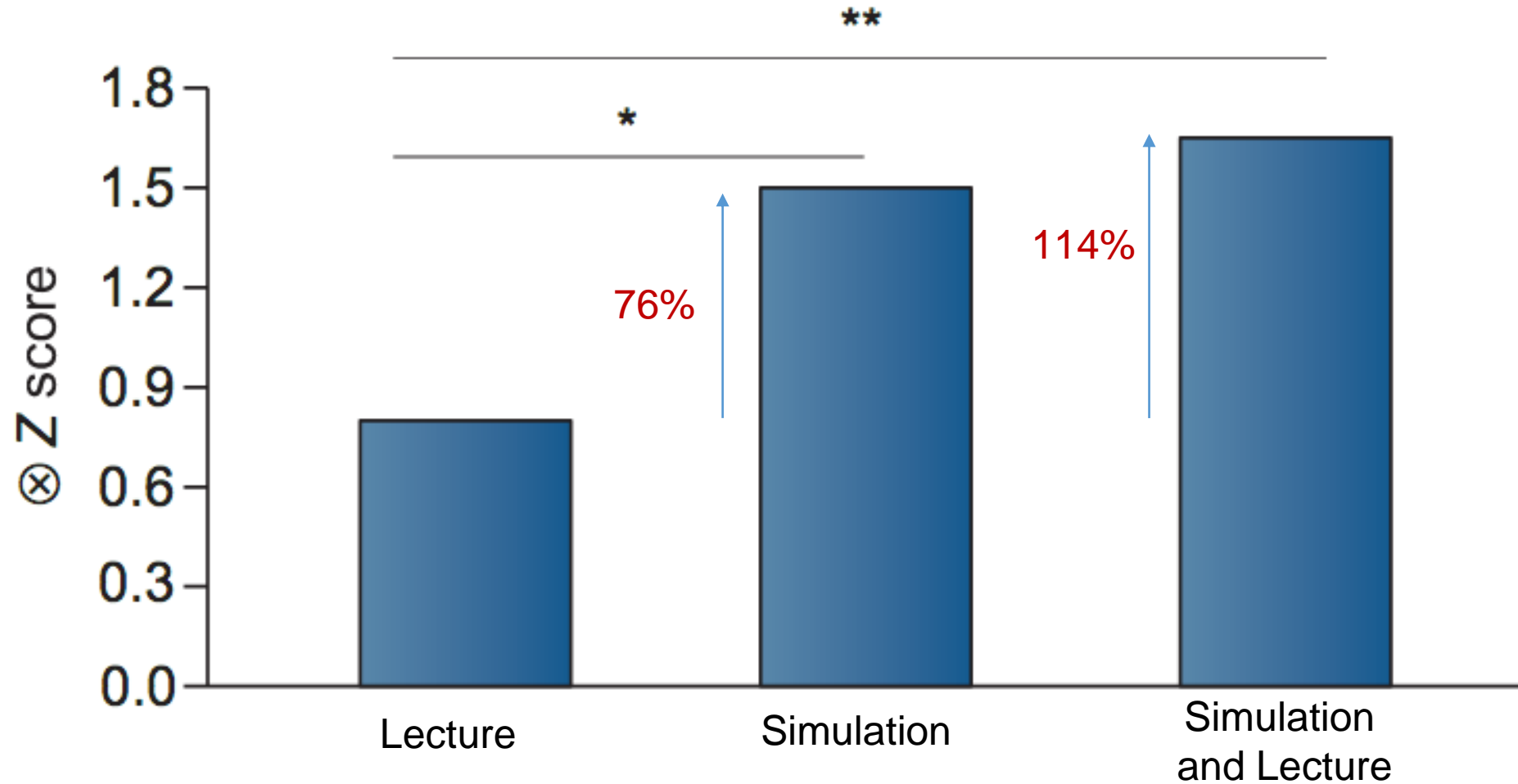
AR delivered **almost double (1.9 times) the levels** of visual attention compared to their non-AR equivalent.

What they found was that memory encoding was **70% higher** in the AR tasks compared to the non-AR tasks.



Improving Biotech Education Through Gamified Laboratory Simulations

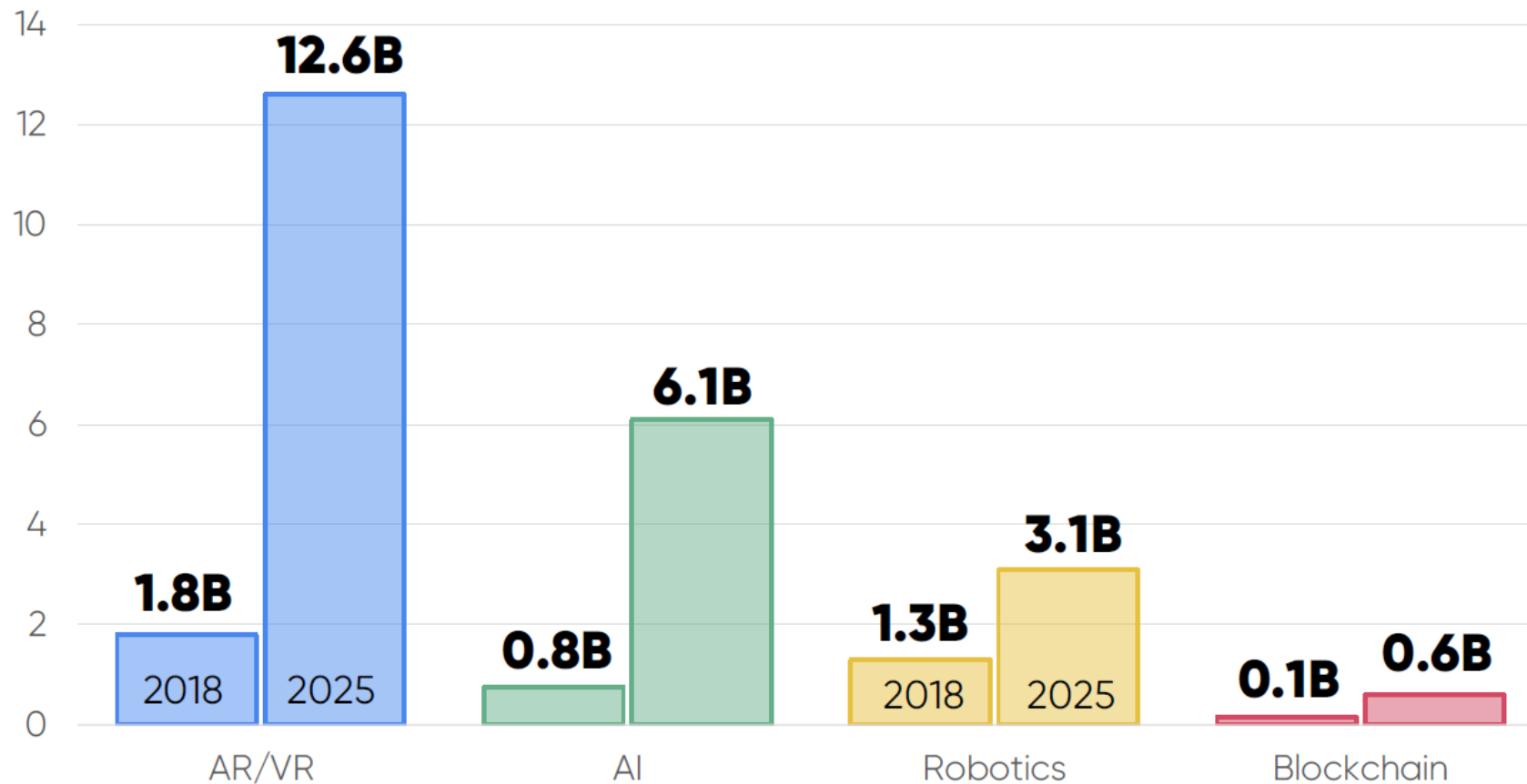
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PUBLISHED IN NATURE BIOTECHNOLOGY 2014

AR/VR Will Dominate Advanced EdTech Spending

Advanced Education Technology Expenditure 2018-2025, USD Billions



Source: HolonIQ, Smart Estimates™ January 2019

Healthcare Use Cases

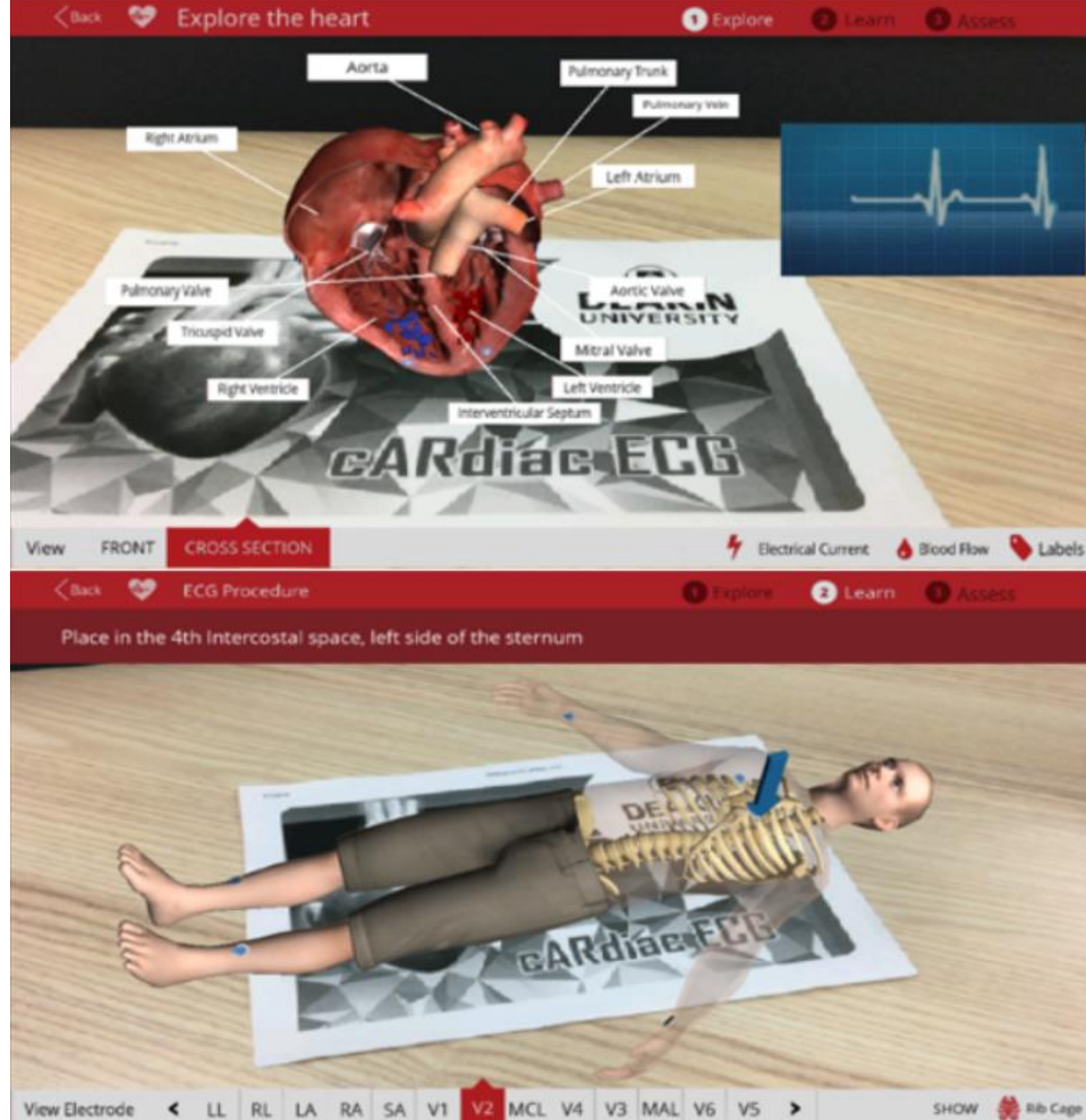
Examples VR Learning

Cardiac ECG

- **Deakin University School of Medicine** - An AR module developed for the School of Medicine as part of a larger Deakin AR Project.
- This module has **3 modes: Explore, Learn and Assess.**
- The Explore and Learn modes showcase a **realistic heart model with Electrocardiograms** matching various scenarios of the beating heart.
- While the **Assess mode** enables students to take on **quizzes** and **submit their results to their lecturers.**



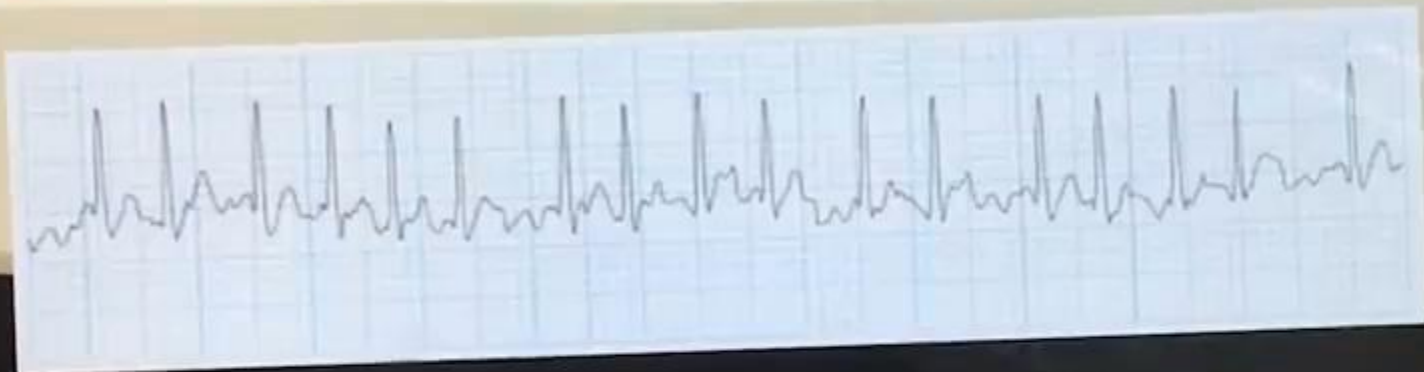
Delete this text







Which Arrhythmia corresponds best to this ECG rhythm strip:



A

Sinus
tachycardia

B

Ventricular
tachycardia

C

Atrial
fibrillation

D

Ventricular
fibrillation



Incorporating cARdiac ECG into the teaching on ECG helped me to learn this material in a new way



cARdiac ECG contributed to my understanding in a way that would not have been possible by attending a lecture or reading a textbook



I would like similar applications to be implemented into other topics/ teaching



cARdiac ECG was easy to use and understand



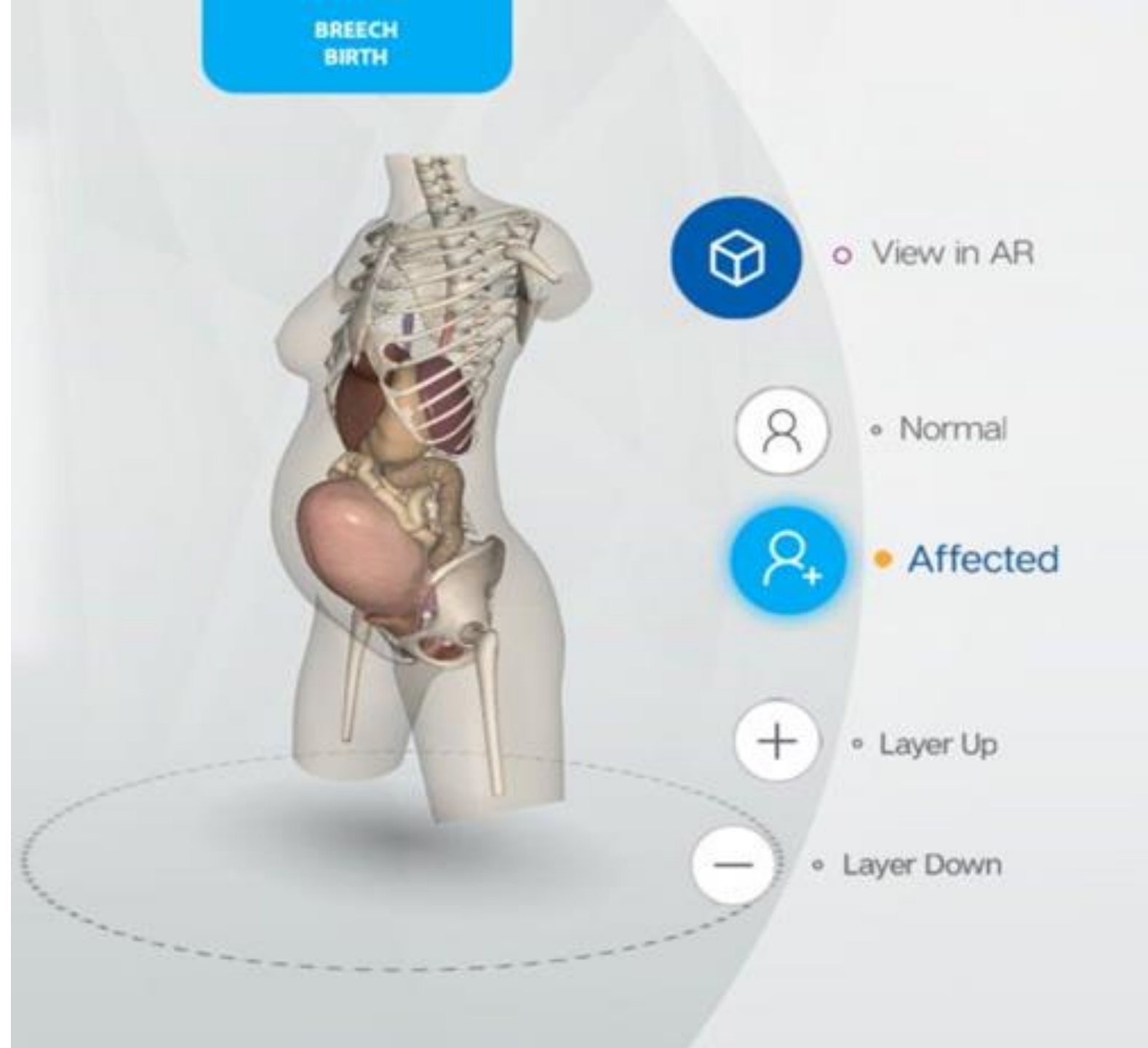
I found the cARdiac ECG app motivated me to learn more about the ECG



I would like to use cARdiac ECG again

NHS

- Mobile Applications for the National Health Service in United Kingdom



TENSION
PNEUMOTHORAX

Skin

Skeleton

Nerves

Lymphatics

Digestive System

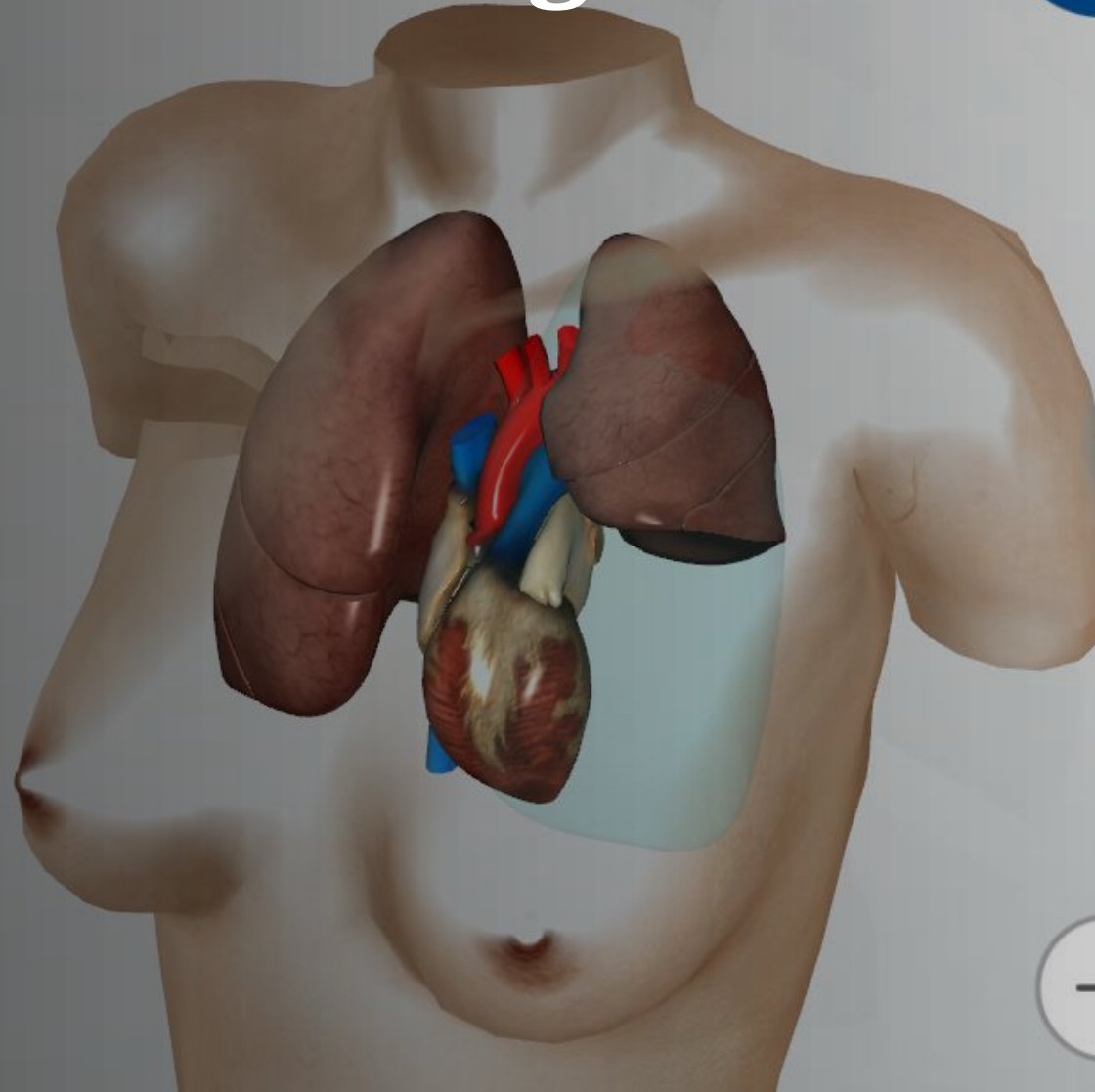
Reproductive

Cardiopulmonary

Layer 1

Layer 2

NHS – Chest Emergencies



○ View in AR



○ Normal



● Affected



○ Layer Up



○ Layer Down



Tension
pneumothorax

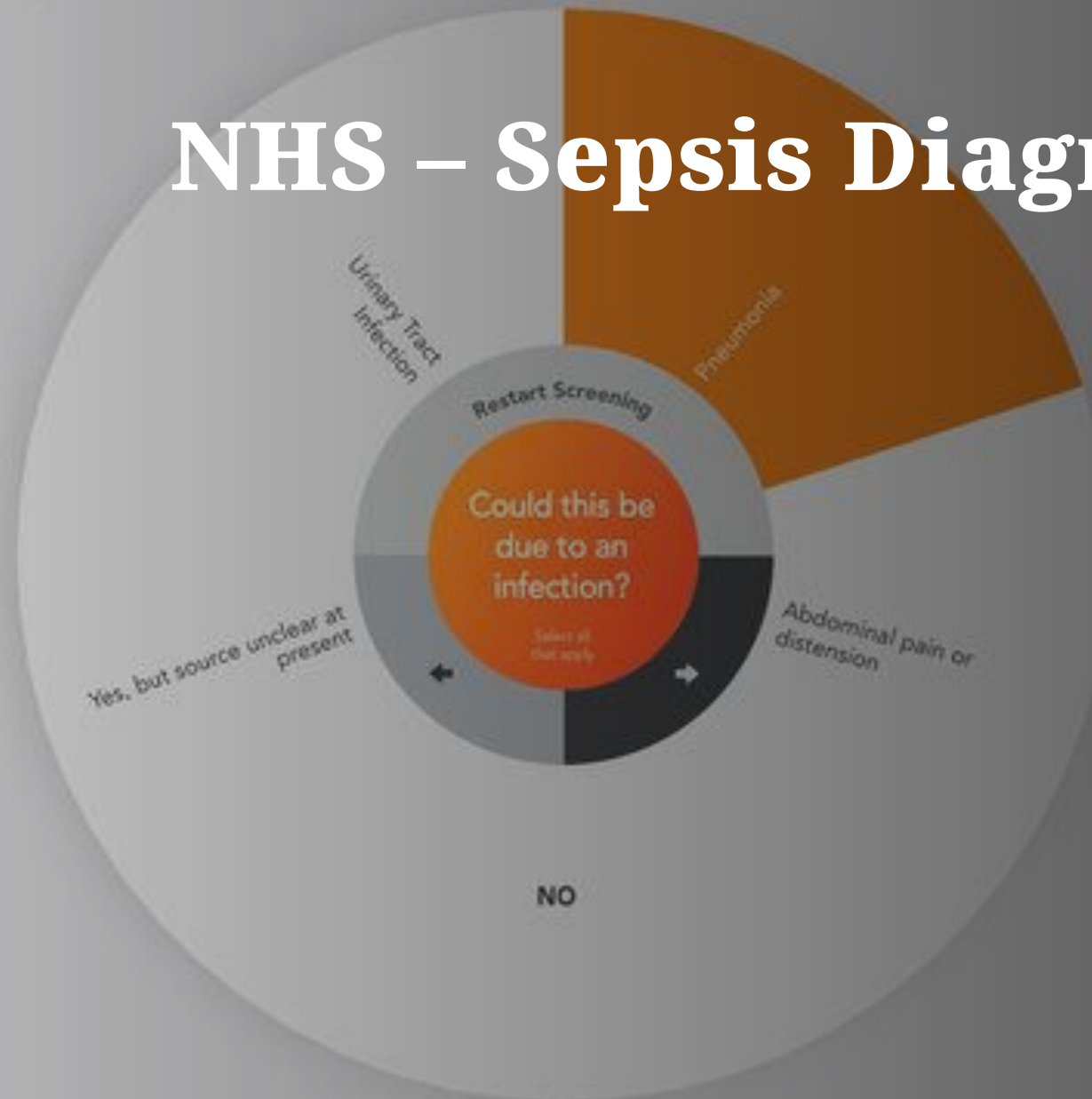
Cardiac
tamponade



Chest Emergencies

Pneumothorax

NHS – Sepsis Diagnosis



Layers

Skin

Skeleton

Abdominal Organs

Reproductive Organs

Amnion

Foetus

Breech

BREECH
BIRTH

NHS – Obs Sim



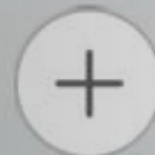
View in AR



• Normal



• Affected



• Layer Up



• Layer Down





Perineal Tear

Breech Birth

Shoulder Dystocia

Babeş-Bolyai University Create A Virtual Reality Application To Assess And Modify Cognitive Biases

- EON Reality, Inc., the world leader in Augmented and Virtual Reality based knowledge transfer for industry and education, and the Department of Clinical Psychology and Psychotherapy from Babeş-Bolyai University, in Cluj-Napoca, Romania, released **application of a Virtual Reality based application for the assessment and modification of cognitive biases for promoting mental health**, as part of the joint project “**VR-Mind Regulation.**”
- Researchers and psychologists have regarded **cognitive bias modification (CBM) interventions as a promising new approach in the treatment of mental health problems.**
- CBM interventions work by **changing the automatic ways in which patients with depression, anxiety and other psychological problems**, process the information coming from the environment.
- However, most of the **CBM procedures up until now do not accurately approximate the real-world, are not interactive**, and do not immerse the patients in the experience. These features reduce the efficacy of the intervention as well as the motivation of the patients to practice with these new treatments.



“The integration between **immersive virtual-reality** and the advances in clinical cognitive sciences will change the future of how **mental health treatments are delivered, making them more efficacious/effective, more accessible and more appealing to the patients.**” said **Prof. Daniel David, Ph. D.,** coordinator of the **UBB STAR Institute.** “After it has been tested, we expect to have **this application used by patients that have the required technology at home to use it as a tool**, part of their treatment, under the guidance of a psychotherapist, monitoring their progress. We also expect that **many research groups working on CBM to switch from computer-based applications, to immersive, VR-based ones**, such as the application we are developing in the “**VR-Mind Regulation**” project.”

VR application target all three types of biases, attention, memory and interpretation, both for measurement and treatment.

- To overcome these limitations, EON Reality and Babeş-Bolyai University's (UBB) STAR Institute have teamed up to develop a **new Virtual Reality (VR) application that can deliver CBM interventions in an immersive environment using an ecological and interactive interface**, delivered via the latest generation of VR headsets.
- The VR application target all **three types of biases, attention, memory and interpretation, both for measurement and treatment.**
- Mental health treatment delivered through **Virtual Reality makes treatment more accessible and more appealing to patients**
- The application integrates **gamification and customization features**, which will increase the adherence of the patients and their satisfaction with the intervention protocol.
- The application is also **developed to keep a close record of user's behavior**, which will make it a powerful research tool.

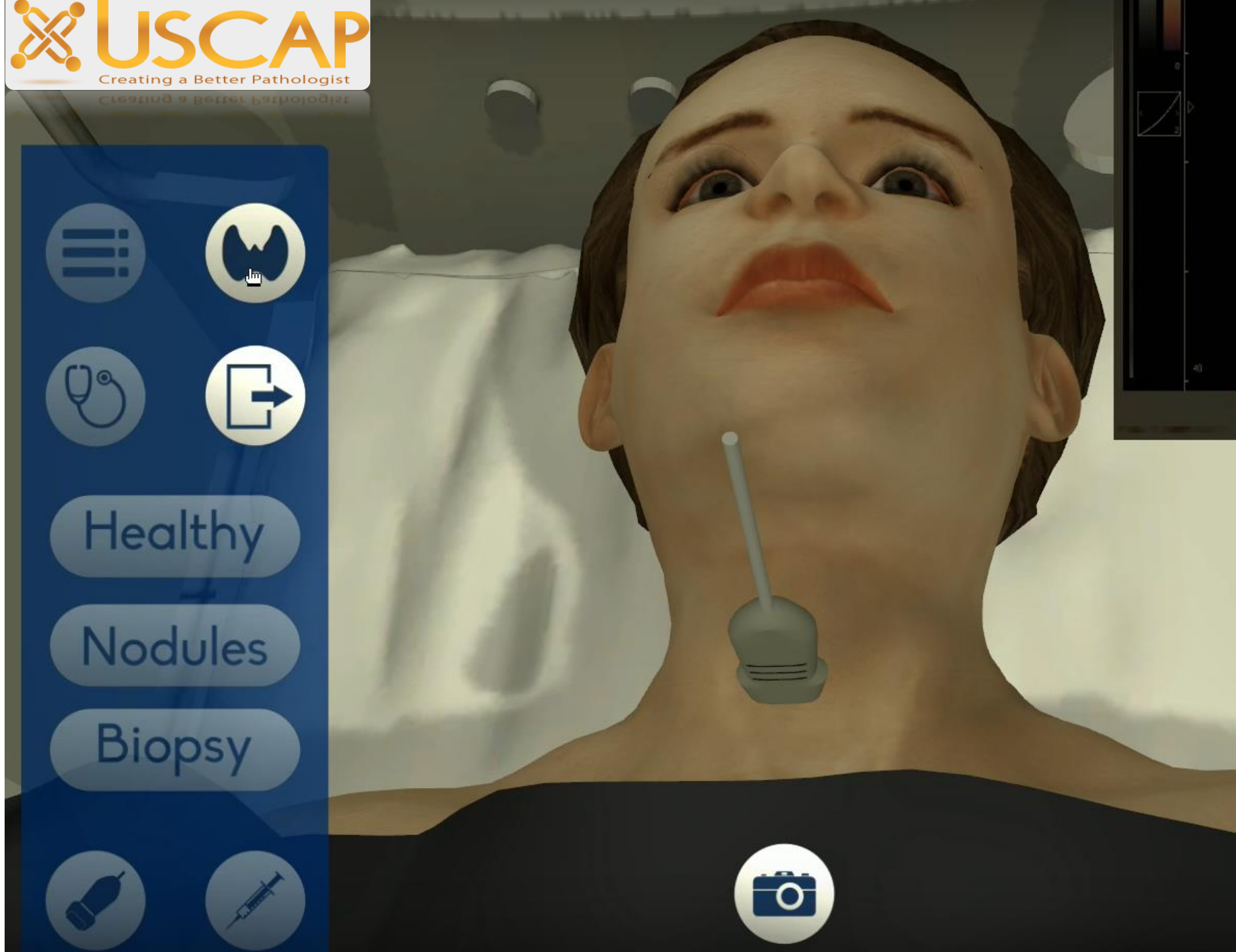


“The collaboration between Babeş-Bolyai University and EON Reality is extremely powerful as it combines the deep subject-matter expertise of the Department of Clinical Psychology and Psychotherapy and the advanced capabilities of EON Reality in Augmented and Virtual Reality applications and platform development and implementation. We are delighted to make together Virtual Reality have a positive impact in psychotherapy.” said Mats Johansson, President of EON Reality.

Examples VR Healthcare Simulators

USCAP

- Mobile application for the US and Canadian Academy of Pathologists
- They teaches first year medical students how to **conduct a thyroid biopsy**.



USCAP – Thyroid Biopsy Simulation



Healthy

Nodules

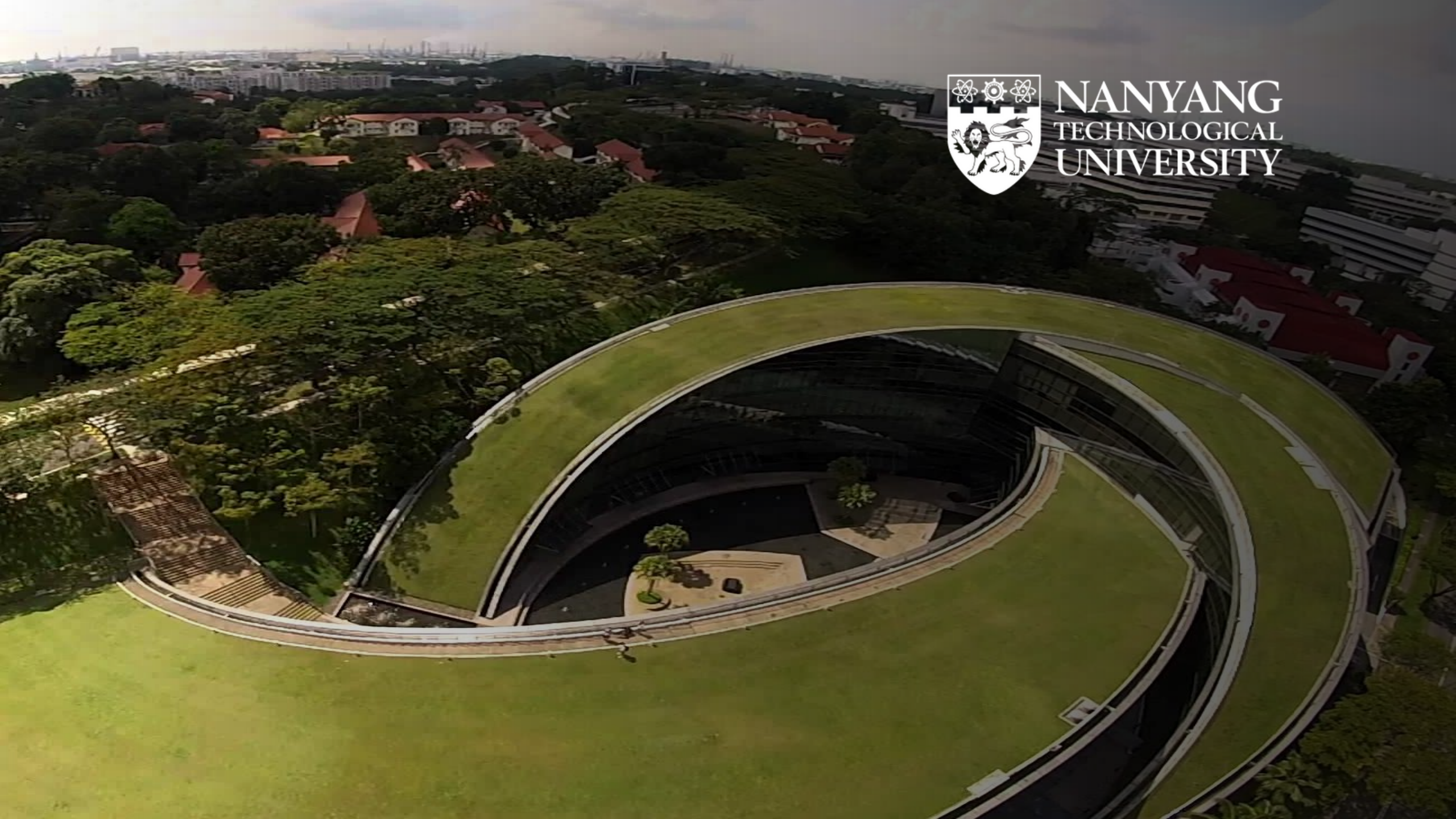
Biopsy




Examples VR Lab



NANYANG
TECHNOLOGICAL
UNIVERSITY



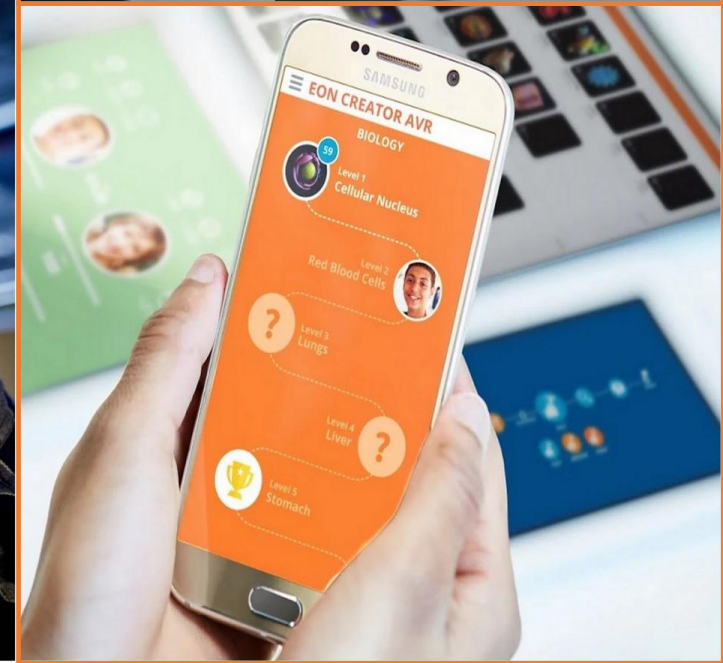
AVR For Healthcare

In 2015 NTU launched a 5 year, **\$75 million** project in TEL (Technology Enhanced Learning) to further enhance its strength in the face of global competition. Read more [here](#). 

In 2017 EON Reality was selected to provide the needed **AR/VR infrastructure** – including a scalable software platform, a wide range of AR/VR systems and more.

The use of AR and VR in education enables a “**flipped classroom**” solution for millennial generation:

- **On campus**; Virtual Labs for Engineering, Physics, Social Sciences and more
- **Off campus**; students experiencing AVR contents on their own devices





Examples AVR Pharmaceutical Production Training & MRO

Free Cam

Lesson Plan

PRE-PRODUCTION

SMURF Lesson Steps

4. Flow Check

Enter the PU-1203 flowrate setpoint

5. Prime Completion

Check if the feed is clear of air

Stop pump PU-1203

Close valve PU-1401/HV-002

Loosen Collection Syringe Tube from valve PU-1401/HV-002 using a 9/16" Spanner (Medium size)

Remove the Collection Syringe Tube from valve PU-1401/HV-002

Environment List

Component Name	
Feed Bottle Access Door	
Feed Bottle	
PU-1203 Access Door	
PU-1203/HV-001 Valve	
PU-1203/HV-003 Needle Valve	
PU-1203/HV-004 Valve	
PU-1203/HV-005	

Vive User 1

Check if the feed is clear of air

Virtual Trainer

Virtual Trainer to train its employees on complex modular manufacturing equipment where minimizing downtime is an absolute must.

Check if the feed is clear of air

Example AVR Patient Care Communication



AVR- Patient Care Communication

EON Reality developed an AVR application for the Neural Pathways Discovery Performance Unit in Singapore, to help visitors visualize their medical vision for combatting Amyotrophic Lateral Sclerosis (ALS).

The Virtual simulation begins with a healthy person and shows the progression of ALS as they take ill.

Users are also able to see how GSK proposes to stop the disease in the future.

The disease may cause astrocytes to release toxins which in turn cause motor neurons to degenerate. It may also develop harmful proteins within the muscle, thus causing the axon to disconnect from the muscle. All this leads to loss of impulses sent to the muscle fibers. When muscles do not receive the messages that they require to function, they begin to atrophy.

Click to see how GSK
medication can help
MEDICINE
VISION



Amyotrophic Lateral Sclerosis

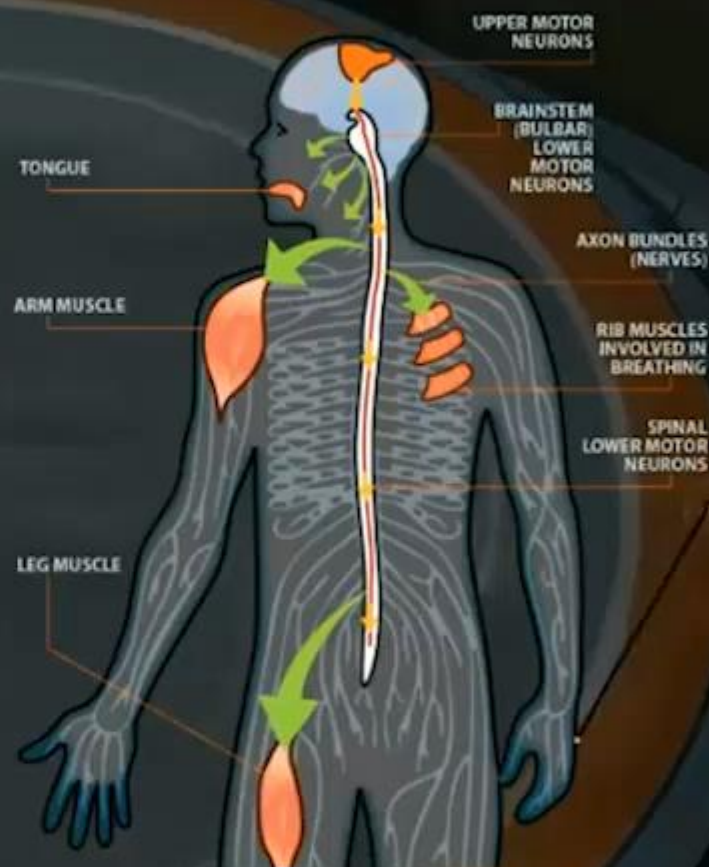
Lou Gehrig's or "Motor Neuron Disease"



- **Neurodegenerative** disease resulting in death within 3-5 years of diagnosis
- Characterized by:
 - Upper and lower **motor neuron** loss
 - Progressive **paralysis**

- **Adult** onset - early to mid-50s
- Incidence same as Multiple Sclerosis
i.e. 2 out of 100,000 people develop ALS each year
- 5% of Cases are familial

- Only one FDA-approved drug: **Riluzole**
 - minimal improvement in quality of life
 - extends life by only 3 months
- Disappointing clinical trial results



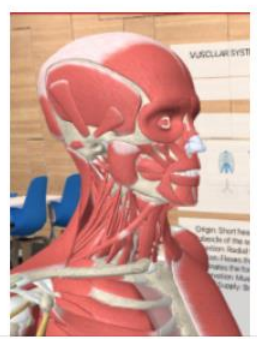


<https://account.avrplatform.com/Home/IndexV2>

Medical Vault

All Categories Search Products Search

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- Education
- Medical
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- Science
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Products by Medical



Ophthalmology Simulation
Irvine
★★★★★

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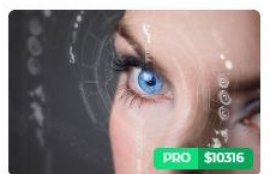
Aneurysm Sealing System
Training
Irvine
★★★★★

Add to Order



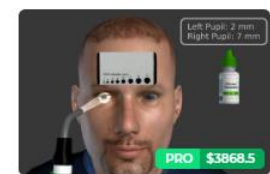
AR Ophthalmology Simulation
Irvine
★★★★★

Add to Order



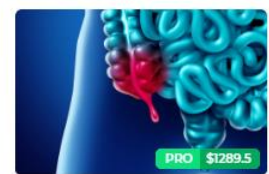
4K Ophthalmology Simulation
Irvine
★★★★★

Add to Order



AR Ophthalmology Simulation
(Software)
Irvine
★★★★★

Add to Order



Appendicitis - Patient
Education
Duncanville
★★★★★

Add to Order



Thyroid Biopsy Simulation
Irvine
★★★★★

Add to Order



Pupil Examination
Irvine
★★★★★

Add to Order

Most Viewed



Ophthalmology
Simulation
Irvine
★★★★★



College Basketball
360
Irvine
★★★★★



Football Quarterback
Challenge
Irvine
★★★★★



Hockey Locker Room
Experience
Irvine
★★★★★



Qatar Geologic
Research
Irvine
★★★★★



Appendicitis - Patient
Education
Duncanville
★★★★★

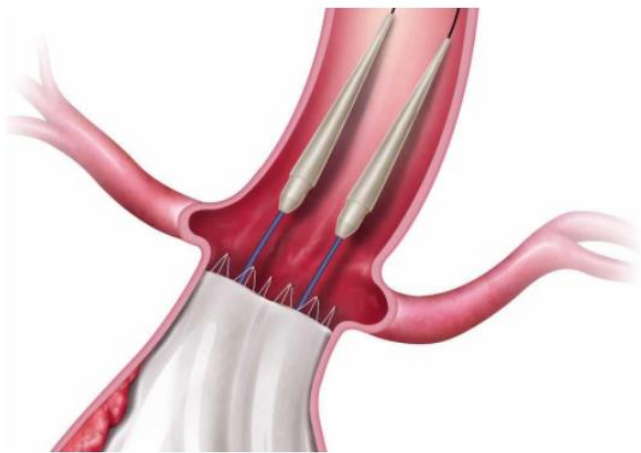


IoT AR Industrial
Lighting Controller
Irvine
★★★★★



Spectrometry -
Ibench

Back



Aneurysm Sealing System Training

by Irvine



\$1289.5

Add to Order

Demo tour

Details

An interactive augmented reality application aimed at doctors, customers, patients education and marketing, demonstrating the Aneurysm Sealing System on EON Mobile.

Device



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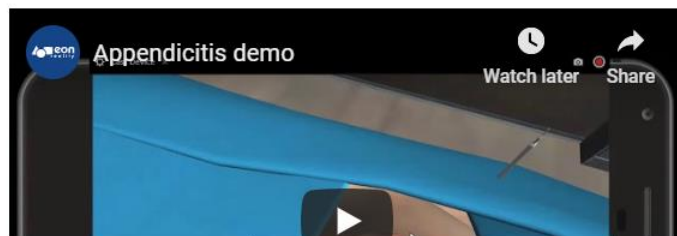
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Appendicitis - Patient Education

by Duncanville



\$ 1289.5

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Details

Surgeons were are looking for a method of improving communications with patients, both pre and post op. The first procedure they wanted to try was an appendectomy. This is a proof of concept to illustrate the stages of appendicitis.

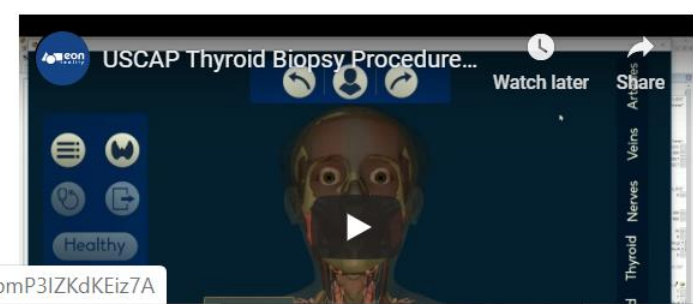
Device



Back



Video Preview



Thyroid Biopsy Simulation

by Irvine



\$3535.81

Add to Order

Demo tour

Details

A simulation created for use as part of s regular educational training curriculum. This application is designed to simulate the process of extracting a tissue sample from a patient's thyroid in a safe, interactive learning environment. Students get to familiarize themselves with the procedure, by actually performing it. Alternate modes, also display various parts of the head and neck anatomy as reference and teaching modules for students in the lab.

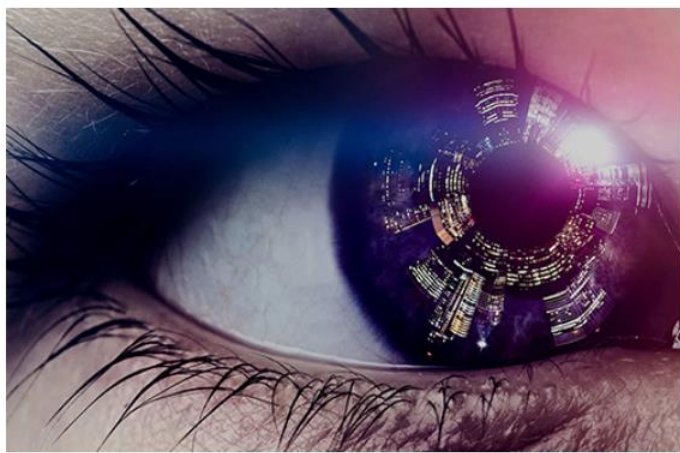
Device



Share Product



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Pupil Examination

by Irvine



\$10316

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Demo tour

Details

The advanced pupil examination simulator is a valuable learning tool. It can be used by learners in all health care areas and at all levels of training, and educators can use the assessment mode to test skill acquisition

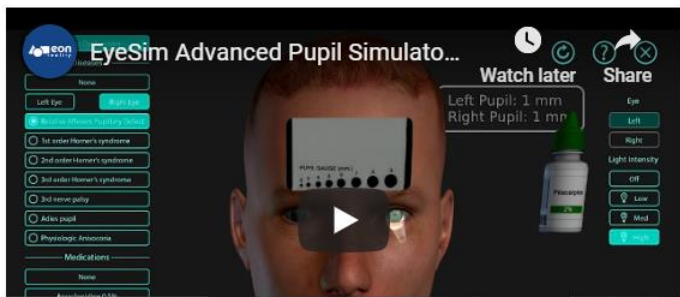
Device



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Video Preview



Back



Virtual Anatomy Disection



by Irvine

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\$1289.5
Estimate value

By providing expandable and dissectable versions of the human body in virtual reality, the AVR suite of Virtual Anatomy modules allows users to investigate many of the different systems and organs that comprise the body. These models can then be viewed in parts or as a whole to understand how everything fits and works together under the skin, all without needing a volunteer.

Device



Taxes/VAT calculated at checkout



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Sepsis Diagnosis Training

by Manchester



\$ 1289.5

Add to Order

Details

This series of medical applications takes users through various emergencies for each of the human body's systems. Whether it's delivering a baby or identifying cardiac arrest, these quick modules give an interactive and easily understandable lesson for some of life's most important moments.

Device



Mobile

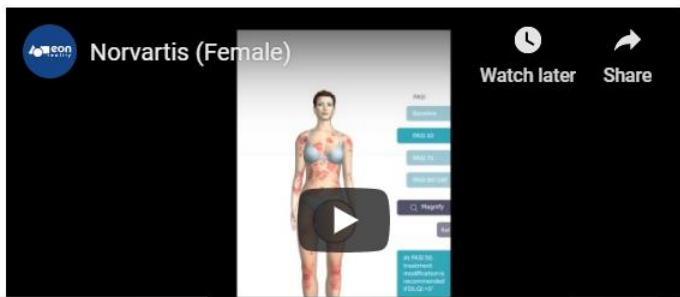
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Video Preview



Psoriasis Patient Education

by Manchester



\$1289.5

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Demo tour

Details

This project was two Interactive Mirror applications that demonstrated the benefits of a pharmaceutical product on psoriasis patients. It was demonstrated at an event in Amsterdam.

Device



Interactive Mirror

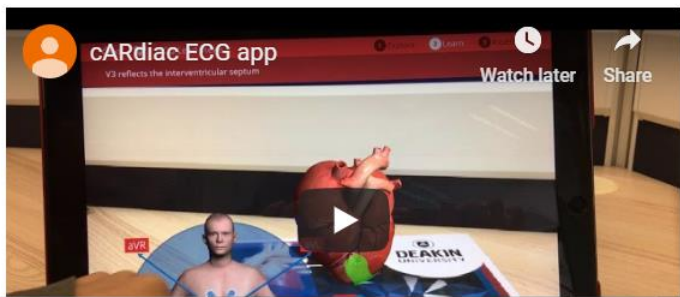
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Video Preview



AR Cardiac ECG

by Singapore



\$1289.5

Add to Order

Demo tour

Details

An AR module developed for a School of Medicine. This module has 3 modes: Explore, Learn and Assess. The Explore and Learn modes showcase a realistic heart model with Electrocardiograms matching various scenarios of the beating heart. While the Assess mode enables students to take on quizzes and submit their results to their lecturers.

Device



Share Product



Back



Video Preview



Human Anatomy AR

by Singapore



\$1289.5

Add to Order

Demo tour

Details

By providing expandable and dissectable versions of the human body in virtual reality, the AVR suite of Virtual Anatomy modules allows users to investigate many of the different systems and organs that comprise the body. These models can then be viewed in parts or as a whole to understand how everything fits and works together under the skin, all without needing a volunteer.

Device



Icube

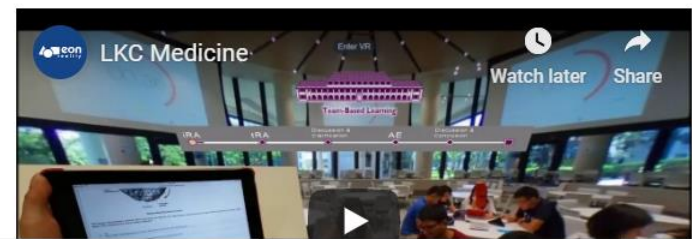
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VR Medical School Orientation

by Singapore



\$ 1289.5

Add to Order

Details

A virtual orientation for students attending a SCHOOL of MEDICINE. The virtual experience includes 360 videos and images of the campus grounds. The experience also conveys the student's daily activities within the campus.

Device



Back

VR Aquarium Experience for BT-300

by Singapore



\$ 1289.5

Add to Order

Details

An augmented reality app developed in conjunction with the launch of the EPSON BT-300 AR Glasses

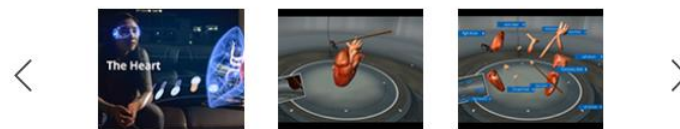
Device



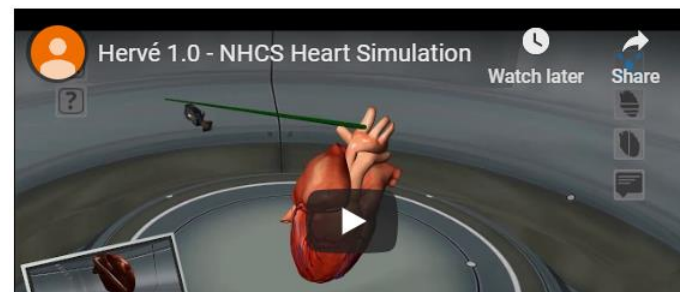
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Video Preview



VR Heart Simualtion

by Singapore



\$3868.5

Add to Order

Demo tour

Details

The simulation features the external view, explode view, 3 short axis views and 3 long axis views of the heart.

Device

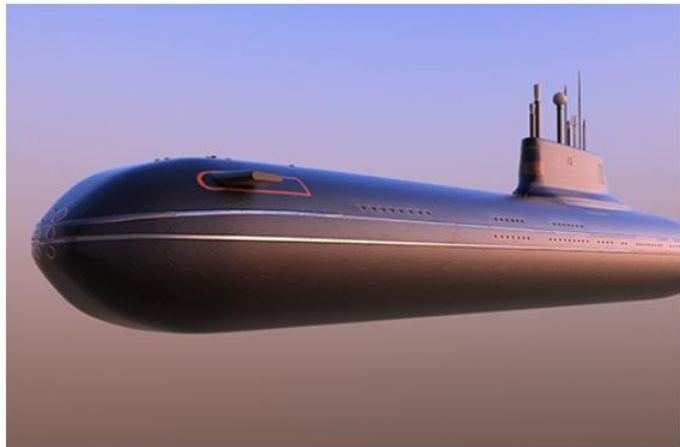


Ibench Mobile

Share Product



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Unreal Submarine

by Laval



\$1289.5

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Demo tour

Details

This application has been designed in order to train people to safety emergency situation. This particular environment increase stress feeling.

Device



Oculus

Share Product



Similar

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Video Preview



VR Heart Education

by Laval



\$1289.5

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Demo tour

Details

This app is a virtual reality application that shows how the human heart works. Here you can display a cut of the heart to see what's inside, start and pause animation to understand how the blood flows through the heart, display labels to learn the parts name and finally you can test your knowledge through a quiz and several questions.

Device



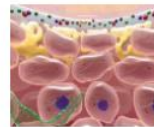
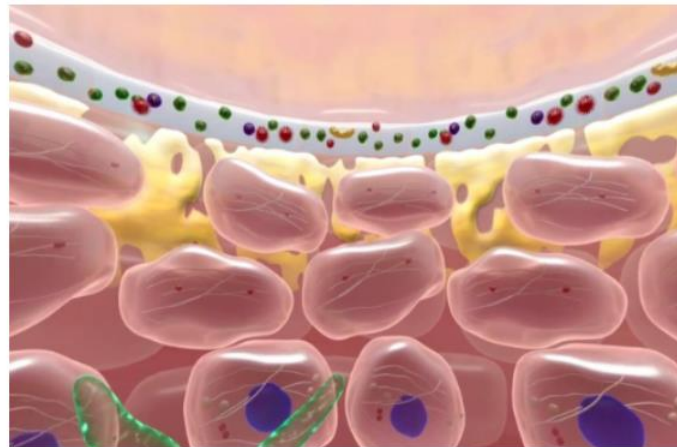
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360 VR Animal Hygeine Application

by Laval



\$ 1289.5

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Details

This VR application is an immersive 360 degree video experience in the dog's skin barrier ecosystem. At a cellular level you will discover how shampoo soothes sensitive skin.

Device



Mobile

Similar

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VR CPR Training

by Laval



\$1289.5

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Demo tour

Details

Everyone should be able to learn about CPR and other basic life saving techniques when they want, from wherever they want. With the VR CPR application, you will be immersed in multiple 360 degree, 3D environments where they will be responsible for rescuing both children and adults, as individuals or as part of a team. By using this app, you will become the rescuer checking for responsiveness, using an AED, checking a pulse, performing compressions, and providing rescue breaths.

Device



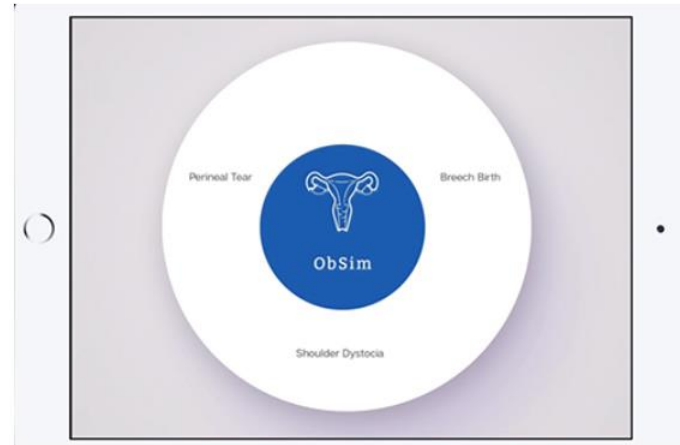
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Video Preview



VR Obstetrician Application

by Manchester



\$1289.5

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Demo tour

Details

This series of medical applications takes users through various emergencies for each of the human body's systems. Whether it's delivering a baby or identifying cardiac arrest, these quick modules give an interactive and easily understandable lesson for some of life's most important moments.

Device



Mobile

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VR Chest Emergencies Training

by Manchester



\$1289.5

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Demo tour

Details

This series of medical applications takes users through various emergencies for each of the human body's systems. Whether it's delivering a baby or identifying cardiac arrest, these quick modules give an interactive and easily understandable lesson for some of life's most important moments.

Device



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Nursing & Health care sector Lessons

Operating theater Orientation

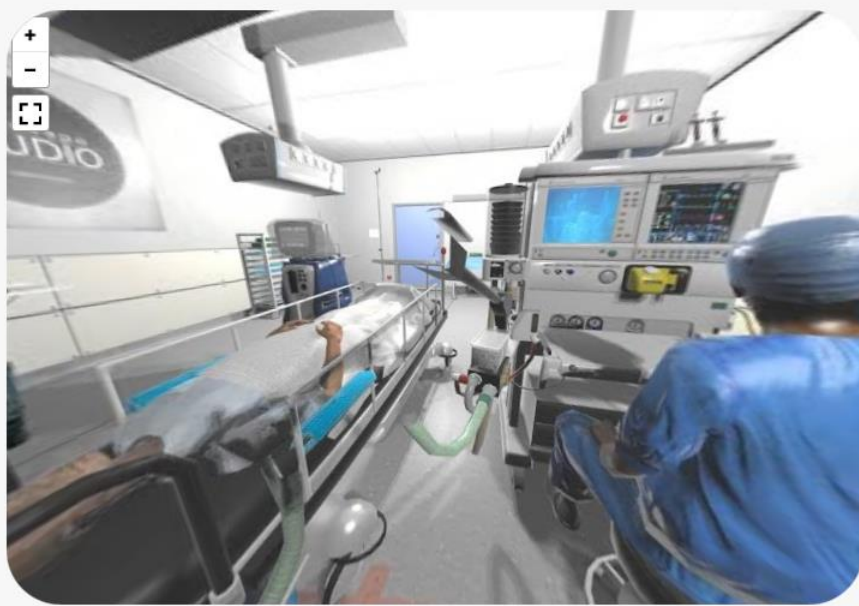
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CATEGORY

Medical

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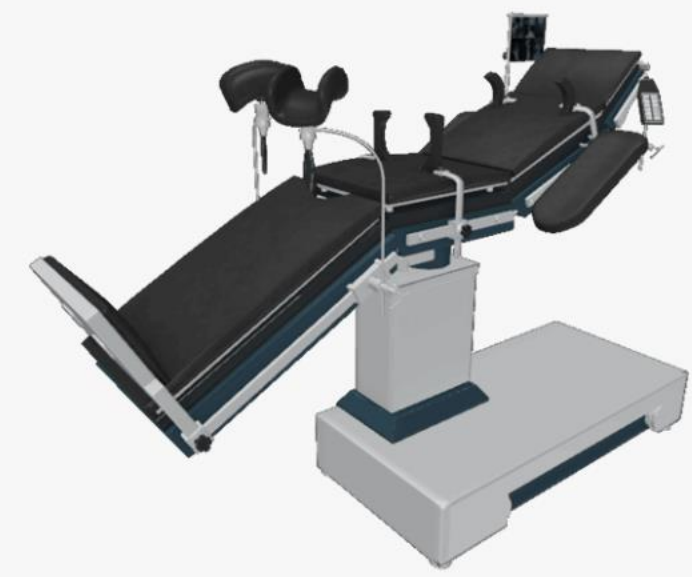
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How to Operate a Surgical chair

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- PLAY LESSON
- LAUNCH IN VR

CATEGORY

Medical



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How to operate a Medical ultrasound system

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 LAUNCH IN VR

CATEGORY

Medical



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to
Lesson

Pain removal with Anesthesia

...

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CATEGORY

Medical



Link to Lesson

How to operate a Dental chair

...

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 PLAY LESSON

 LAUNCH IN VR

CATEGORY

Medical



Link to Lesson

How to Save Lives Defibrillator



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PLAY LESSON

LAUNCH IN VR

CATEGORY

Medical



How to operate Intravenous drip stand



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CATEGORY

Medical



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The Top Ten Medical instruments explained

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CATEGORY

Medical



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Medicine Health Sciences Lessons

Why hearing loss occurs



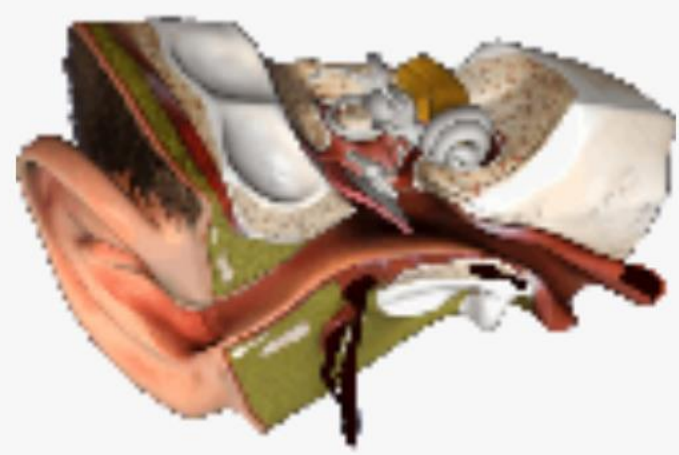
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CATEGORY

Miscellaneous



Link to Lesson

Cataract lens surgery



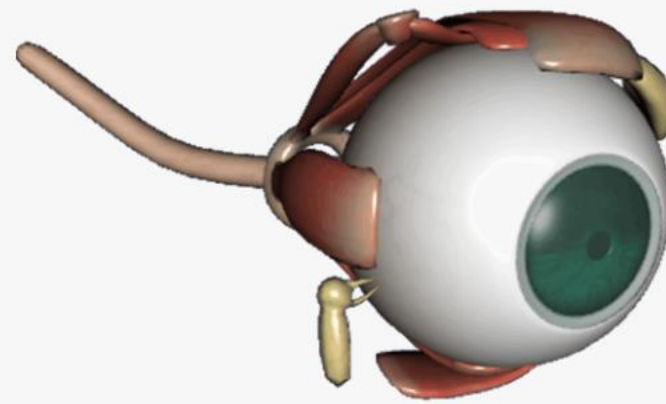
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CATEGORY

Medical



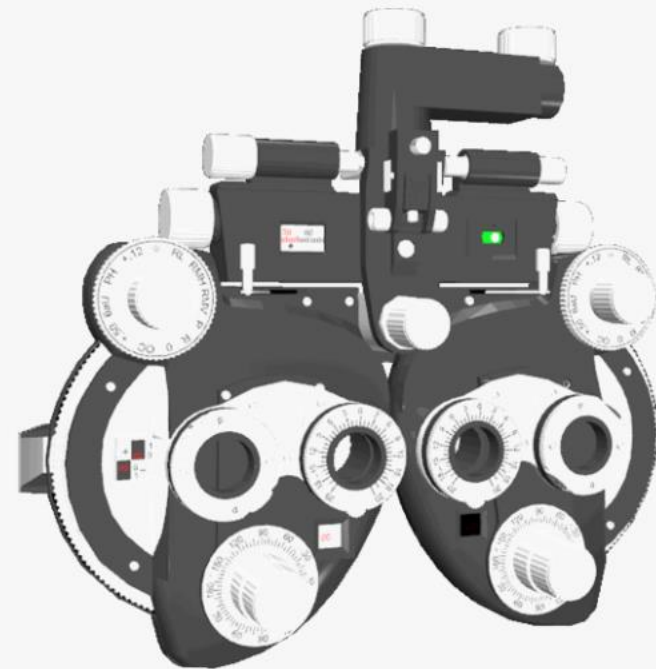
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Conducting an Eye Exam Phoropter

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Medical

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How to Reduce Hair Loss



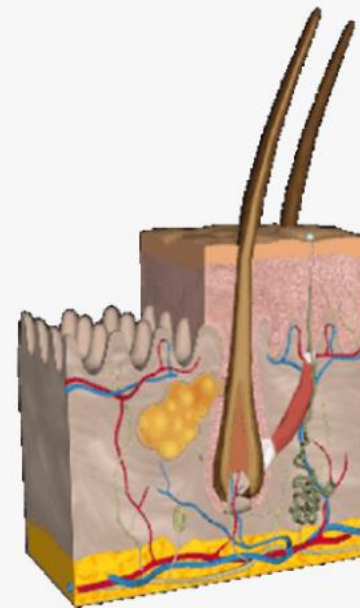
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Medical



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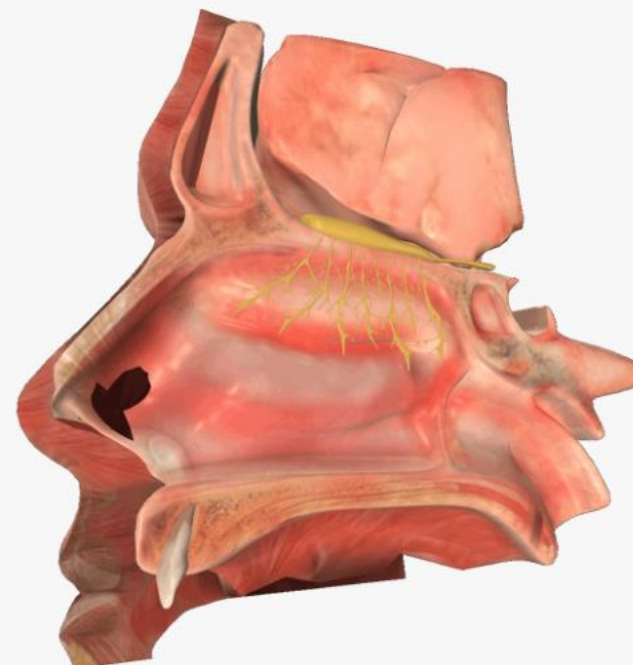
What Causes Sinus Problems?

...

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CATEGORY

Medical

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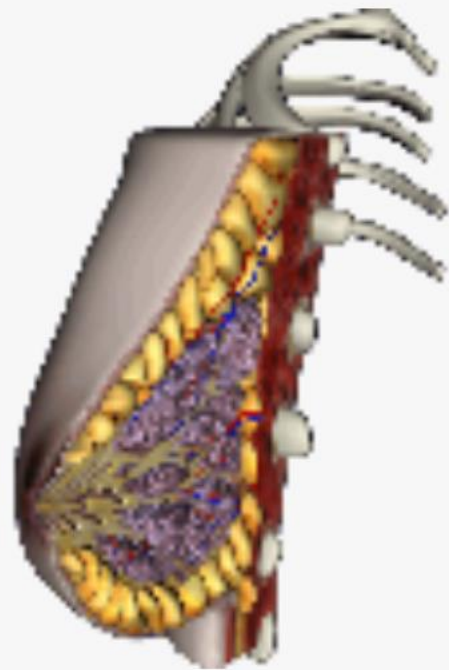
Breast cancer symptoms

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CATEGORY

Miscellaneous



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Prostate Cancer Treatment Procedure



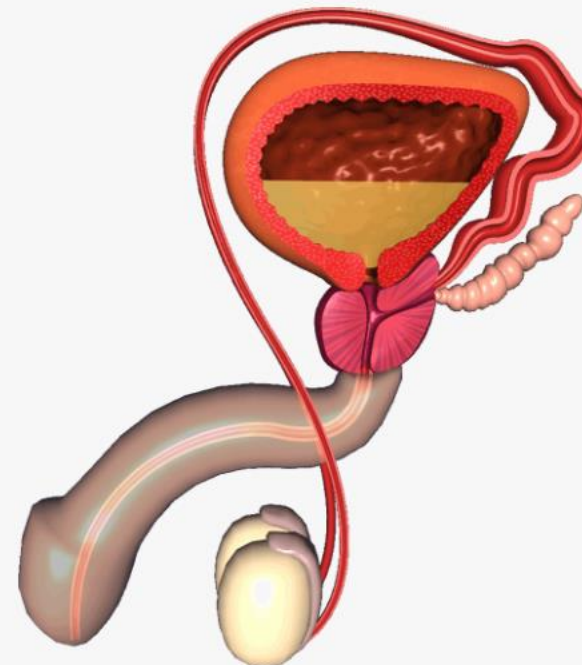
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Medical



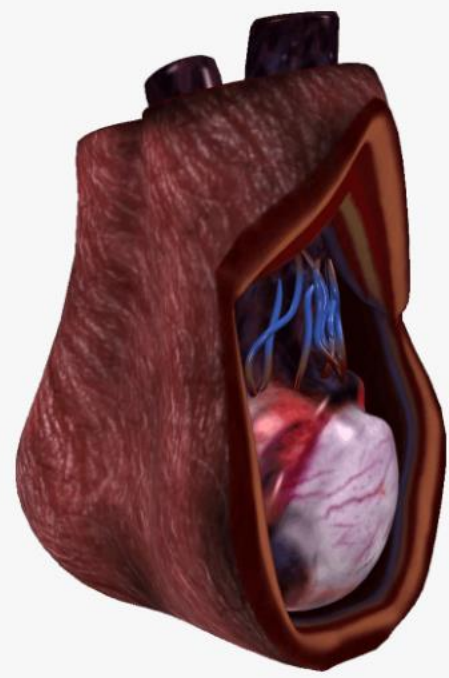
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Testicular Cancer Treatment

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Medical



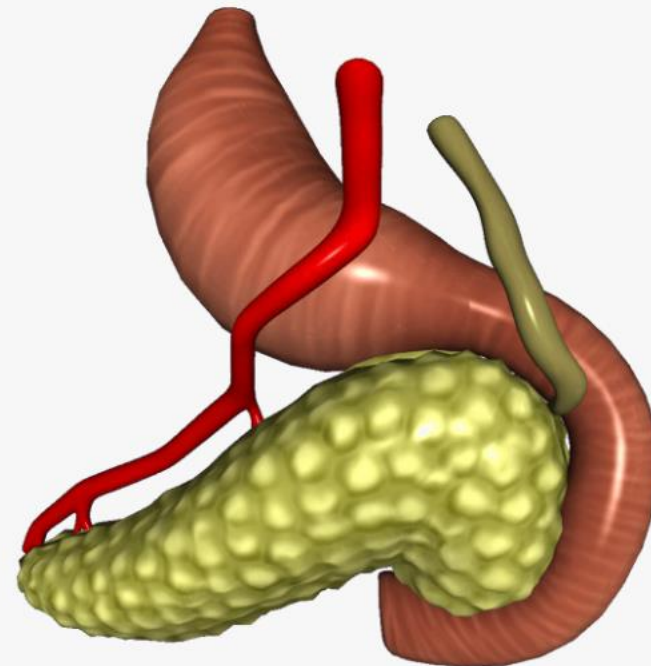
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Why Steve Jobs Died

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Medical

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Knee replacement Surgery

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Hemorrhoids Treatment



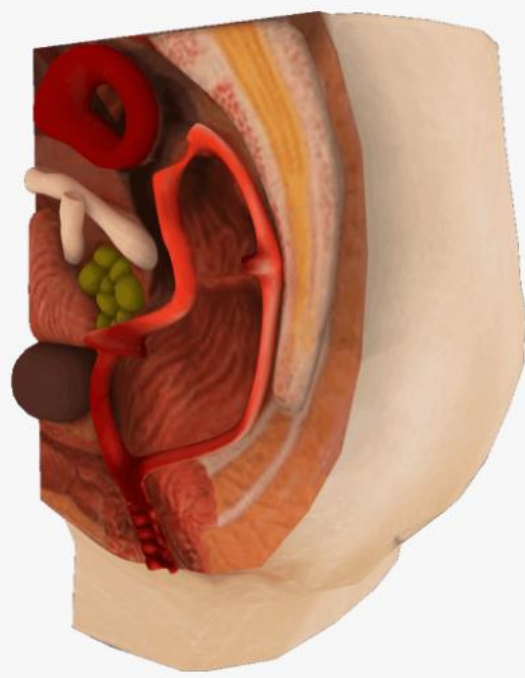
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Coronary artery disease



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CATEGORY

Miscellaneous



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The leading cause of osteoporosis ...

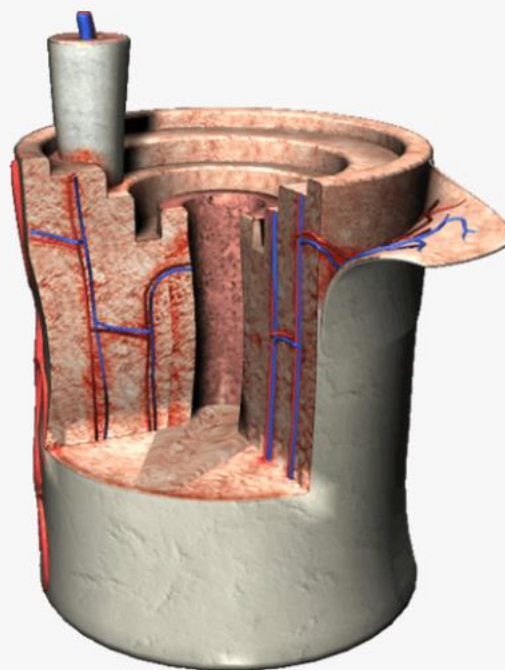
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Medical



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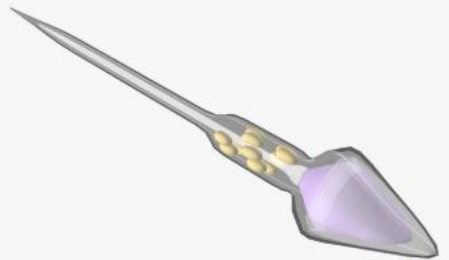
Sex of the offspring is determined by the sperm



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CATEGORY

Biology and Medical 

Link to Lesson

Is Fetus a Baby?



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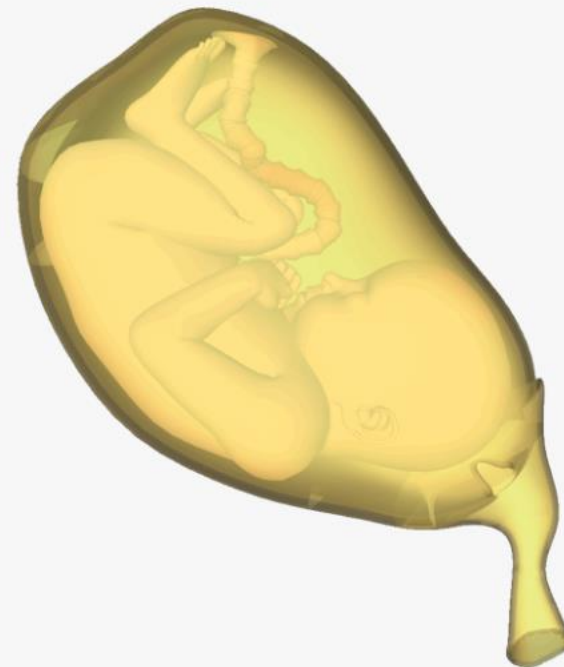
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CATEGORY

Miscellaneous

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99+



20

Microbiology Lessons

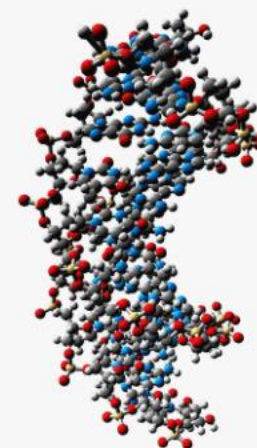
DNA: The Secret of Life



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CATEGORY

Biology and Medical

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Myelin sheath - Neuron of fat-containing cells

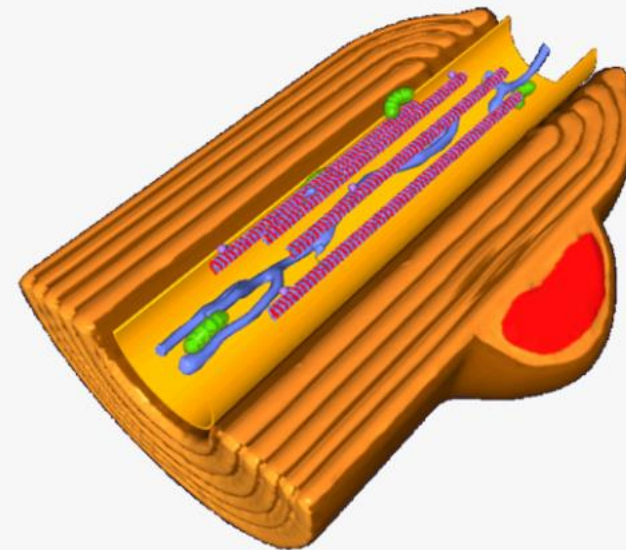
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CATEGORY

Biology



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How a Neuron works



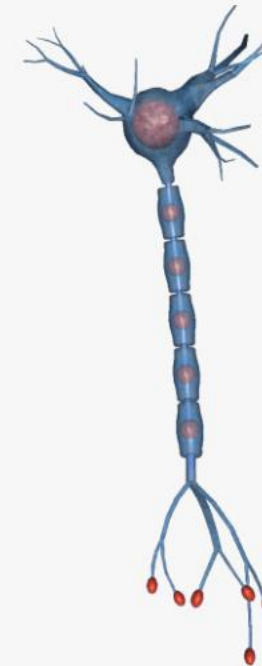
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CATEGORY

Biology



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The deadly Ebola virus



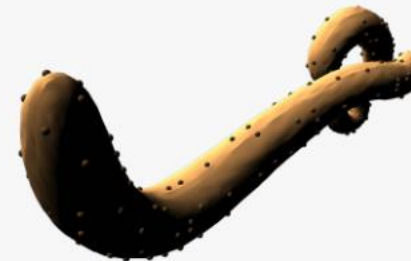
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CATEGORY

Medical



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Lassa virus viral hemorrhagic fever

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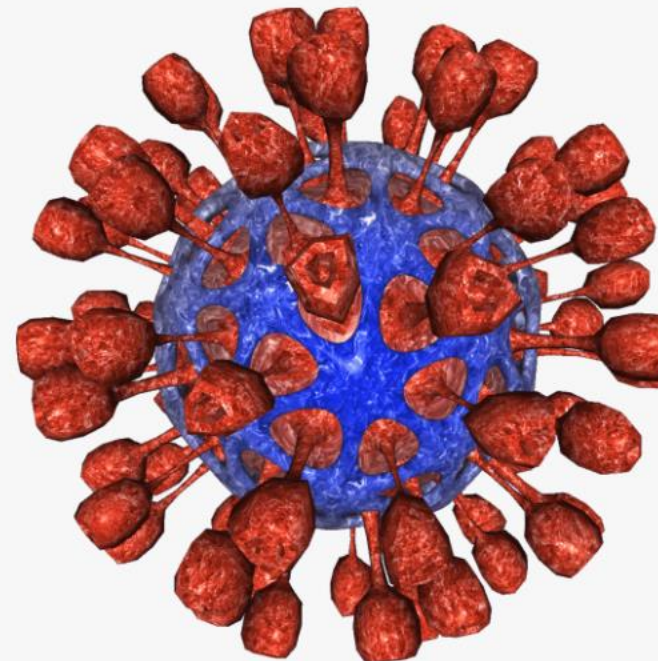
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Biology and Medical



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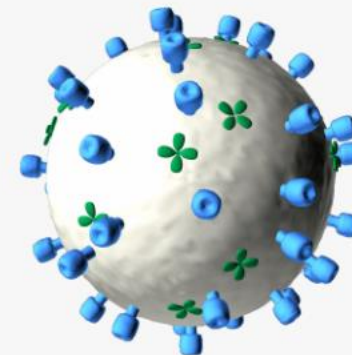
Influenza virus symptoms



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Medical

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MRT SCANNER MRI



SIEMENS MRI MEDICAL SCANNER MAGNETOM TERRA



SIEMENS HEALTHINEERS MAGNETOM VIDA 3T MRI SCANNER



MEDICAL EQUIPMENT PACK



AQUILION ONE GENESIS CT SCANNER



LOW POLY HOSPITAL SET - MEDICAL EQUIPMENTS



CT MASK



MEDICAL - MRI SCANNER

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LEICA DM MICROSCOPE



MICROSCOPE - PBR ASSET



NEURONS



CANCER CELLS 3D MODEL



DIGITAL MICROSCOPE



PORTABLE LCD DIGITAL MICROSCOPE



SCI-FI MICROSCOPE



MICROSCOPE OPMI PENTERO 900 CARL ZEISS



MICROSCOPE ALTAMI

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operation room

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HOSPITAL RECOVERY ROOM



MEDICAL PATIENT ROOM



MEDICAL EQUIPMENT PACK



HOSPITAL ROOM



OPERATION ROOM



PATIENT ROOM



LOW POLY HOSPITAL SET - MEDICAL EQUIPMENTS



MEDICAL ANESTHESIA MACHINE



MILITARY MEDICAL OPERATING BED - MLT - PBR GAME READY

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ambulance

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AMBULANCE BOX TRUCK RIGGED C4D



MEDIC 3D MODEL



TOON VEHICLES



AMBULANCE VEHICLE - LOW POLY



AMBULANCE METRO



MERCEDES SPRINTER AMBULANCE

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STOMATOLOGIC
EQUIPMENT



EPPENDORF -
CENTRIFUGE 5425



MEDICAL EQUIPMENT
PACK



VARIAN EDGE
RADIOSURGERY
SYSTEM SCANNER



LOW POLY HOSPITAL
SET - MEDICAL
EQUIPMENTS



LAB EQUIPMENT SET 2

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Microbiology

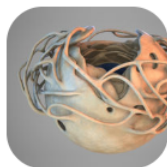
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LOW POLY HUMAN
ANATOMY MODEL

TARDIGRADE



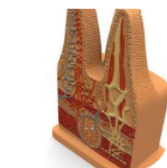
MEDICAL FLASK

FEMALE CIRCULATORY
SYSTEM

CELL NUCLEUS

MEDICINE
MICROSCOPE

MICROSCOPE

MICROBIOLOGY
DIGESTIVE VILLILABORATORY
EQUIPMENTS[Link
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Chemistry

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FLAMMABLE WARNING
SIGN



BIDON PLASTIC
BOTTLE1



LABORATORY
CHEMISTRY



CHEMISTRY SET 3D
MODEL



LAB BUNSEN BURNER
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CHEMISTRY SET



LEICA DM
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HAZMAT SUIT
CHERNOBYL



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ASSET



LAB EQUIPMENT SET 2

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HAZMAT SUIT
CHERNOBYL
LIQUIDATOR



INTERNAL ORGANS
COLLECTION



LEICA DM
MICROSCOPE



FOETUS SKELETON



NEURON



ANGLER FISH RIGGED



BIOLOGICAL MATERIAL
PACK 1



BUBO CAPENSIS OWL



HUMAN MALE
ANATOMY MODEL

Link
to
Lesson

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ALL CATEGORIES

cancer

Free Assets

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Paid Assets

-  VARIAN TRUEBEAM RADIOT...
-  CANCER CELLS 3D MODEL
-  VARIAN EDGE RADIOSURGE...
-  NEURONS
-  CANCER CELLS
-  LUNG CANCER CELL
-  CANCER
-  CANCER CELL
-  CANCER GROWTH LOW POLY...
-  CERVICAL CANCER DYSPLA...
-  CARTOON CRAB
-  VICTORIAN ERA PIPE TOB...

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ALL CATEGORIES


"heart attack"


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- 


RIGGED AND ANIMATED LO...
- 


HUMAN HEART MODEL
- 


3D MODEL RUSSIAN ATTAC...
- 


PETLYAKOV PE-2
- 


NORTHROP GRUMMAN B-2 S...
- 


STAR WARS NU-CLASS ATT...
- 

BREGUET 14
- 

ANCIENT WAR ATTACK AND...
- 

JUNKERS JU 52
- 

PETLYAKOV PE-2
- 

RUSSIAN ATTACK HELICOP...
- 

USA SEA WOLF ATTACK NU...

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ALL CATEGORIES


brain


Free Assets


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Paid Assets


- 


HUMAN BRAIN WITH 4K TE...
- 


BRAIN
- 


LOW POLY BRAIN
- 


XRAY BRAIN ANATOMY WIT...
- 


HUMAN BRAIN
- 


INTERNAL ORGANS COLLEC...
- 

DENDRITE NEURON NERVE ...
- 

HUMAN BRAIN
- 

BRAIN MEDICALLY ACCURA...
- 

BRAIN LOW POLY V2
- 

DETAILED HUMAN BRAIN S...
- 

HUMAN BRAIN

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ALL CATEGORIES


alzheimer

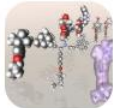
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- 


BRAIN NEURONS 3D MODEL
- 


NEURON HUMAN ANATOMY
- 


COLLECTION OF ALZHEIME...
- 

NEURON HUMAN ANATOMY M...
- 

NEURON HUMAN ANATOMY M...
- 

DETAILED NEURON 3D MODEL
- 

NEURON HUMAN ANATOMY M...
- 

FPSO ALVHEIM OFFSHORE ...
- 

FPSO JOTUN A OFFSHORE ...

Next

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ALL CATEGORIES

ulcer

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ANATOMY - DIGESTIVE
GA...



ANATOMY - HUMAN
INTEST...



ANATOMY - HUMAN
GASTRO...



HELICOBACTER PYLORI
BA...

Next

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to
Lesson

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ALL CATEGORIES

DNA

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Paid Assets

-  DNA 3D MODEL
-  LEICA DM MICROSCOPE
-  DNA DOUBLE HELIX 3D MO...
-  DNA STRAND WITH HIGH D...
-  HUMAN CELL VISUALIZATION
-  DNA DOUBLE HELIX
-  ANIMATED DNA MODEL
-  GLASS DNA LAMP
-  SIMPLE DNA STRAND
-  LED DNA LAMP
-  DNA HELIX
-  LABORATORY MICROSCOPE

Link to Lesson

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ALL CATEGORIES

HIV

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Paid Assets



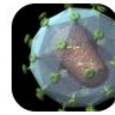
COLLECTION VIRUS



HIV CELL



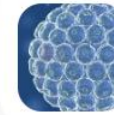
HIV VIRUS



HIV VIRUS



AIDS RIBBON



VIRUS 04



AIDS VIRUS



HUMAN POWERED VEHICLES...



SKODA OCTAVIA 2017



SD KFZ 251 3 IV AUSF A...



SAMSUNG GALAXY S4 WHITE



SAMSUNG GALAXY S4 BLACK

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ALL CATEGORIES

malaria

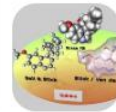
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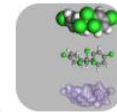
Paid Assets



MOSQUITO CARTOON



QUININE MOLECULE



DDT -
DICHLORODIPHENYL...



MALASIA

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ALL CATEGORIES ▼

gene |

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HUMAN CELL
VISUALIZATION



COLLECTION VIRUS



CORT GENE SIMMONS
BASS



GUITAR - GENE
SIMMONS...



MOLECULE GLUCOSE



CORT GENE SIMMONS
AXE ...



MICROSCOPE B



MOLECULE SUCROSE



MISEN DEMEURE
MIROIR G...



ARTIFICIAL
INSEMINATIO...



DNA MOLECULE

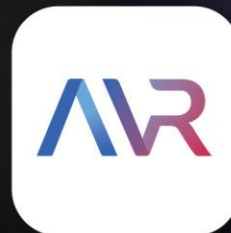


CHROMOSOME



- How do we get **training to the residents fast enough** this is where the role of VR and AR comes in.
- There's a wealth of literature out there that shows **experiential training outcomes far exceed learning through a textbook**
- The **healthcare sector has long entered an era of constant reskilling and upskilling.**
- This is where I think **VR and AR** can play a crucial role to **plug the gaps to improve medical training and assessment.**
- And the beauty of it all, is **that you can do and redo in countless iterations at zero patient risk.**
- **By the time a surgeon or resident is actually at the operating table, the patient and their family can rest easy knowing they are in safe hands.**

VIRTUAL REALITY
(encapsulated environment)



AUGMENTED REALITY
(digital content overlaid on real world)





Thank You