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AUGMENTED REALITY IN HEALTHCARE WILL BE REVOLUTIONARY

Augmented reality is one of the most promising digital technologies at present – look at the success of Pokémon Go – and it has the potential to change healthcare and everyday medicine completely for physicians and patients alike.

By now, it is official: Pokémon Go conquered the world. TechCrunch reported that on the day when the game was launched, it immediately surpassed the daily time usage of Facebook, SnapChat or Twitter by the average iOS user on mobile phones. Tom Curry, a man living in New Zealand quit his job to become a full-time Pokémon hunter. In Central Park, herds of Pokémon Go players almost caused a stampede as they tried to capture a rare type of the imagined animal.

Rafael Grossmann, the first surgeon who performed an operation with the help of Google Glass, told me that Pokémon Go represents the ultimate gamification of an “activity” app, and that he does not think the inventors of the game such as Nintendo expected nor planned this effect in people.

The response is augmented reality (AR) and the rising interest of people in its use. Pokémon Go is made with exactly this technology: the device (in this case your phone) transmits a live or indirect view of a physical, real-world environment which is augmented by computer-generated sensory input such as sound, video, graphics or GPS data. In the future, augmented reality could be a built-in feature in a glass, headset or digital contact lens.

Augmented reality differs from its most known “relative”, virtual reality (VR) since the latter creates a 3D world completely detaching the user from reality. There are two respects in which AR is unique: users do not lose touch with reality and it puts information into eyesight as fast as possible. These distinctive features enable AR to become a driving force in the future of medicine.

At the moment, there are certain hindrances to overcome but Grossmann thinks that AR and VR will be very common in healthcare within the next 3-5 years. According to Grossmann, the biggest obstacles are related to education, cultural change and acceptance, but the technical obstacles are absolutely temporal and not an issue at all, and cost-related barriers will also disappear in the future.[1]

So, there are the best examples of augmented reality in medicine.

1) Augmented reality can save lives through showing defibrillators nearby

What would you do if a person next to you collapsed suddenly? All kinds of thoughts would rush through your head, and no matter whether you would think of calling an ambulance, a doctor or your mom for help, you would definitely reach for your phone.

And I suggest you to consider downloading the Layar reality browser combined with AED4EU app to your phone next to the basic emergency numbers so the next time you get into a similar situation, you will be able to help more.

AED4EU was created by Lucien Engelen from the Radboud University Nijmegen Medical Centre, The Netherlands. Its users can add places where automated external defibrillators or AEDs are located and this database can be accessed through this new application. Moreover, with the Layar browser, you can project the exact location of the nearest AEDs on the screen of your phone and it would take a minute to find them and help those in need. So augmented reality brings crucial pieces of information to those in need or danger. [2]

2) Google Glass might help new mothers struggling with breastfeeding

It is a matter of fact that Google Glass has the potential to revolutionize healthcare, but to be honest I would have never thought of the possibility of helping new mothers with breastfeeding through this technology.

In 2014, the Melbourne office of an innovation company called Small World conducted a Google Glass trial with the Australian Breastfeeding Association that effectively allowed their telephone counsellors to see through the eyes of mothers while they breastfed at home. Through such a way struggling mothers could get expert help at any time of the day and they did not even have to put down the baby from their arms. By sharing the patient's perspective, consultations get to a new level.

3) Nurses can find veins easier with augmented reality

The start-up company AccuVein is using AR technology to make both nurses' and patients' lives easier. AccuVein's marketing specialist, Vinny Luciano said 40% of IVs (intravenous injections) miss the vein on the first stick, with the numbers getting worse for children and the elderly. AccuVein uses augmented reality by using a handheld scanner that projects over skin and shows nurses and doctors where veins are in the patients' bodies. Luciano estimates that it's been used on more than 10 million patients, making finding a vein on the first stick 3.5x more likely. Such technologies could assist healthcare professionals and extend their skills.

4) Augmented reality can assist surgeons in the OR

Doctors and even patients are aware of the fact that when it comes to surgery, precision is of prime importance. Now, AR can help surgeons become more efficient at surgeries. Whether they are conducting a minimally invasive procedure or locating a tumor in liver, AR healthcare apps can help save lives and treat patients seamlessly.

Medsights Tech developed a software to test the feasibility of using augmented reality to create accurate 3-dimensional reconstructions of tumors. The complex image reconstructing technology basically empowers surgeons with x-ray views – without any radiation exposure, in real time.

The earlier mentioned Grossmann, who was part of the team performing the first live operation using medical VR, told me that HoloAnatomy, which is using HoloLens to display real data-anatomical models, is a wonderful and rather intuitive use of AR having obvious advantages over traditional methods.[4]

5) Google's digital contact lens can transform how we look at the world

The age of digital contact lenses and retinal implants are upon us and they have great potential in transforming healthcare. Retinal implants might give vision back to those who lost it or grant humans supervision augmenting what we can do. Digital contact lenses could transform both how we look at the world while also revolutionizing diabetes care. Google aims to produce digital, multi-sensor contact lens which will be able to measure blood sugar levels. On the other hand, diabetes care constitutes rather a

side feature, while more importantly digital contact lenses will be able to augment reality – for example to turn the page of an e-book by blinking an eye. [3]

Although current devices such as Microsoft HoloLens are far from the “perfect” experience, but there is no reason to believe that we will not get there soon. Thus, the most effective way to get used to this future trend, if we start to educate ourselves and our children.

Parents often complain that their kids are just sitting in front of some screens not learning anything about their environment and themselves, but I do not agree. Minecraft also enhances creativity, develops the way children see the world around them – but in a different way as LEGO. I think that from here, it is only one leap before we reach LEGO with AR where the advantages of building something in the real world might be combined with virtual imagination. This way, our kids would be able to know what real is real, but would also be ready to exploit the opportunities AR can provide us with.

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