Caecilia Charbonier's presentation on Immersive Technologies in Medicine and Entertainment

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The presentation started with an overview mentioning of the two applications that was going to be talked about today: virtual reality in medicine, and entertainment, with specific focus regarding movement (such as with infrared technology). A brief mention of a non-profit that is involved in the capture of motion, called Artanim, and the wide-applications that their data/research goes into, such as medicine, production, education, etc. One of the examples that was given regarding the uses of being able to monitor/simulate physical movement, is in the production of sports/activewear, allowing for better adaptation to certain physical activities and ranges of motion. Additionally, analyzing stress on joints and muscle groups obviously provides a clear benefit for medical practices. The presentation continued with a compare and contrast of the terms Virtual Reality and Augmented Reality, where augmented is closer to the real words, adding information to the visuals, but the user can exist within both the virtual and the real at the same time and is not cut off from reality. With discussion of both however, involves the wearable technology that most people are familiar with when talking about AR or VR: goggles. These goggles that utilize motion and rotational tracking is a big part of how VR and AR function. They're all about positional tracking. There are lots of applications of VR/AR technology in medicine, such as education, diagnosis, planning of surgeries, training for procedures, treatment, rehabilitation, etc. An example of a company that does this is ArthroVR, for diagnosis and surgical planning. Models of the patient are generated and the models can simulate the patient's physiology, allowing for planning, or education purposes. Features include visualization of medical images such as MRI or CT scans, as well as 3D joints. There are also indications that AR can assist real-time with surgery by providing information and remove the need for a navigation screen, acting as a type of "x-ray vision" for the surgeon (see, HoloMed). Additionally, the immersive nature of VR can be helpful in rehabilitation, and have seen extensive research in cases of treating patients diagnosed with PSTD. The presentation closed with an examination of the entertainment purposes of VR/AR, and more cinematic as well as interactive (locomotive) elements.

Overall, I enjoyed the presentation. I'm a really big fan of utilizing VR/AR technology in medical fields, and hope that one day the technology becomes impressive enough to do what we've always imagined them to be able to do. During high-school (I guess before the concept of VR/AR was as developed as they are now), I used to read a lot of research regarding PTSD and simulations in order to provide treatment. I'm happy to see that this is now a developing field that fully utilizes the new technology in innovative ways to help people.

I have no questions at this time.

Notes

- Virtual reality and the applications of it in medicine and entertainment, specifically regarding movement, with usage of IR.

- Non-profit that is involved in capture of motion/movement -> Artanim, and its wide range of applications (medicine, virtual reality, production, education).

- For instance, there's an application where you are able to better create clothing made for movement/certain physical activities (sports).

- Analyzing stress on joints and muscle groups for medical applications.

- Discussion of virtual reality vs augmented reality. Where augmented is closer to the real world, it adds information, but the user can exist with both the virtual and the real at the same time, and is not cut off entirely from reality, though restricted/altered in some way.

- Rotational tracking is a big part of both VR and AR. Utilizing a servo, allowing you to orient vision. The technology is an IMU, and is part of positional tracking technology.

- Application of VR/AR in medicine -> divides into categories such as education purposes, diagnosis, planning, training, treatment, rehabilitation, etc.

- Example -> ArthroVR for diagnosis and surgical planning. Models of anatomy and simulation of patient physiology, allowing for planning, diagnosis or education. Features include visualization of medica images (like MRI or CT scans) as well as 3D joints.

- AR can assist in the operating room by overlapping the view of the patient with 3D models and additional information.

- HoloMed -> one of the interesting features is that it serves a sort of "x-ray vision." A type of AR tool that assists surgery at each step. The AR allows for removal of the navigation screen, allowing for more freedom of movement and accuracy. The application on sports as well as physical rehabilitation is extremely helpful.

- VR can also provide use in cases that involve helping patients forget about the clinical context and assists in motivating rehabilitation.

- VR -> applications in therapy (PTSD, phobias, etc.)

- Applications in AR, of course are popular. I.e: Pokemon Go, and VR in games like Job Simulator, etc...

- There could be a need for locomotion systems/devices in order to better simulate movement, or even yet, large scale VR platforms (i.e: the Void).

- Applications in virtual/augmented films -> Dreamscape.