Telepresence through The AV1 Robot.

In our society today, we can connect with the world around us faster than ever. We don't even have to be present physically. We are in many ways able to be many places at once. It's seems like a new form of multitasking is evolving and with technology making society a lot more effective, new anticipations for us humans arise. Therefore, I would like to explore telepresence for my written exam for Software Studies. For the assignment I'm focusing my perspective on the digital artifact The AV1 Robot. This piece of software is developed by a Norwegian startup consisting of entrepreneurs and developers, Karen Dolva, Matias Doyle and Marius Aabel in 2015. The goal was to develop technology, that could help reduce loneliness.

The artifact is targeted for children and adults with long-term illnesses, for example leukemia or other cancers, that are unable to participate in the everyday life, like school or work. This is not only problematic educationally, but also a big issue socially and even physically for oneself. Studies show that there's 29% increased chance of suffering from a stroke if an individual is lonely. Furthermore; social isolation and loneliness is an increasing problem in our generation, so this topic seems more relevant than ever in a social-media era. [1]

The telepresence robot has been a success for especially children, who are unable to attend school. The AV1 is placed in the classroom and the child can follow along at home via an app. The robot has several functionalities, like speakers, LED lights and a 360-degree camera, that will signal the surroundings in the classroom about the individual's presence, whether being passive or interacting with classmates. [2]

I will be addressing and discussing the experience of telepresence and in addition, analyzing the software of the AV1 Robot and furthermore its possible aid for people struggling with social isolation or loneliness. Lastly, I will be discussing the outcome and consequences of living in a "Real-Time Stream Society". My assignment will be interdisciplinary, touching upon psychology within the studies of software.

Telepresence was first described by Marvin Minsky - an American Cognitive Scientist- in 1980, stating:
"Telepresence emphasizes the importance of high quality sensory feedback and suggests future instruments that

[1] http://heart.bmj.com/content/102/13/1009

[2] https://www.noisolation.com/uk/av1/

will feel and work so much like our own hands that we won't notice any significant difference." The focus is to implement the sensations that humans can feel. Therefore, the link – that is software - between human and the present moment, in the end feels invisible. That was the argument for Minsky and his *"remote-controlled robot economy".*[3] The perspective is to adapt human cognition to improve the machine intelligence. Fast forward 40 years later, and one could argue, that this quote is still thinking futuristic for an average software-user today. Platforms such Skype and Messenger are ever-changing our perception of staying connected amongst others, but minding a digital artifact like the AV1 Robot is under three years old, and quite costly; renting stakes at 1416 Danish kroner every month. Minsky's vision still seems a bit out of reach for the general public. But, then what frameworks are established when it comes to telepresence today?

In 2018 the term telepresence has spread over a range of definitions and artifacts, from human androids to video-conferencing. Therefore, encapsulating the notion of telepresence can be a challenging task. When defining telepresence, the essence evolves around the feeling of actually "being there". Excellent telepresence should have the ability to create some sort of illusion. Of which can seem like a rather vague definition. When addressing telepresence, the focus is often being put on the experience the user perceives, and the psychology and human cognition plays a big role in this part.

Thus, different approaches to telepresence have arisen; both technological and psychological[4]. My focus will be on the technological approaches because there have been many explanations of what factors determines "telepresence". I will critically reflect upon the two articles *"Musings of Telepresence and Virtual Reality"* (1992) by Thomas B. Sheridan and "*A Quantitative Measure of Telepresence"* (1995) by Schloerb D.W. These articles share different viewpoints in defining and theorizing telepresence and that's why I find it important to include both in my assignment. Sheridan's article is focusing on the user's lacking attention of her actual environment when interacting with telepresence-systems. The sense of presence can be determined by different dependent and independent variables and measures. The fidelity of sensory feedback is key, when determining what is "good telepresence", whereas Schloerb's argument states that a telepresence system is not scalable. Either it's telepresence or it not[5]. The telepresence is according to Schloerb divided into subjective and objective presence. The subjective presence is about the user's probable perception of being in a remote environment, the objective presence is on the other hand the probability of completing a task successfully. The important aspect here is that the articles are not contradicting but can be seen as an extension of each other. Also, to be noticed in these articles is that Schloerb uses empirical data both psychological tests and mathematical equations for his theory,

[3] https://spectrum.ieee.org/robotics/artificial-intelligence/telepresence-a-manifesto

[4] http://journals.sagepub.com/doi/pdf/10.1518/001872098779591386

[5] Ibid.

whereas Sheridan proposes a hypothesis, but doesn't back it up with empirical research, but applies isomorphisms to emphasize his argument. The articles are useful tools, when relating it to my chosen digital artefact. These academic articles can cast a light on why exactly this communication tool, the AV1 Robot, gained so much success and attention around the globe. How can it be that this telepresence robot is proclaimed not to create artificial companionship and reduce the struggle of social isolation and loneliness[6]? This will be my reflective approach throughout my assignment. Of course, there could be countless possibilities for this, but telepresence is the key link I see when connecting human and machine and thus creating an experience.

In our course in Software Studies we have read David Berry's "Real-time Streams", that discusses the digital transformation in relation to humanity, which I will use in my exam paper. This article is relevant, because the AV1 Robot is a device, that only can stream in real-time. No record or rewind. This aspect is important for my paper, because this function suggests a shortening of our "nowness"[7]. What happens when the individual's presence, is represented through a robot primarily? Berry reflects upon the computational abilities that are required when defining our life. Humans are a part of "data-streams", we constantly must keep up with, that it results in "Riparian-publicity": We are so connected, that we become disconnected from our world. The AV1 robot is new software that gives us the ability to be present, in a way that a young child probably doesn't fully understand technically. It appears like magic, that the user is "another place" immediately if wanted. Furthermore, the user didn't have the freedom of chosen it's features, it's picked for us. This piece of software has been designed for the user, but not by her. Our health suddenly relies on something we can't grasp the materiality of. Therefore, we create metaphors for the "stream", so we simplify the complex software that goes into this. The robot looks like it has a face, the slogan is "*AV1 – the child's eyes, ears and voice. (…) when you can't participate in school, AV1 will be there for you"*. The software is meant to fit the user's needs, but the software itself is not a friend, that cares for the sick child, which wording in the slogan seem to imply. This could lead to making up a fake image of a situation when our possible abilities are defined through mechanisms and not ourselves. This is an interesting topic, I would like to investigate further.

[6] https://www.noisolation.com/uk/av1/

[7] file:///C:/Users/nannanormark/Downloads/epdf.tips_the-philosophy-of-software-code-and-mediation-in-t.pdf

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