Thesis Project Portfolio

Guidelines to Responsible Virtual Reality Development

(Technical Report)

Exploring Industry Applications to Ethical and Responsible VR Development

(STS Research Paper)

An Undergraduate Thesis

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Kevin Michael Moritz

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Department of Computer Science

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Sociotechnical Synthesis

The virtual reality (VR) industry has undergone rapid growth to wide-ranging consumer availability. However, the revolutionary nature of VR carries with it significant ethical concerns, the resolution of which are being outpaced by the speed of the industry's expansion into the daily life of consumers. To combat this trend, the technical portion of this portfolio contains an ethically minded software development lifecycle for VR developers, incorporating both VR-specific ethical concerns obtained from research and the typical steps of VR development. It is designed for VR developers to ensure that their applications are ethically designed. In comparison, the STS portion deliverable is a paper which focuses on a series of ethical concerns in other industries, and researches how these concerns may be applicable to ethical development in virtual reality. Further, it provides insight on how to meet these ethical challenges, and preemptively combat future ones.

VR development is particularly expensive and time-consuming among subfields of software development. Software developers generally want to develop applications with ethics and inclusion in mind, but costs and stress mean that ethical concerns often go overlooked. With this in mind, the deliverable of this project not only addresses what ethical concerns VR developers need to be on the lookout for, but when they should be combatted within a typical software development lifecycle for minimizing additional time and cost to design ethical applications.

As a new industry, the field of VR has not had enough time for unique ethical concerns to be identified through negative impacts on users. Via the STS theory of technological momentum, should VR technology become entrenched within society, and it later be discovered that the technology proves detrimental to users, it will be near impossible to effect positive change to VR

technology industry-wide. Furthermore, via the ethics of care theory, there is a moral imperative to care for users of VR. Under both theories, and using the Documentary Research method, the STS portion of this portfolio explores ethical concerns from other industries, identifies how they are likely to impact VR development, and offers suggestions to prevent their importation into VR with the expectation that ethical issues from industries with the largest share of VR programs related to them will have the highest chance of manifesting themselves.

Taken together, the results of both projects will provide the framework for VR developers to create VR experiences while taking into account the most pressing ethical issues facing VR today, and identifying possible future sources of ethical conflict. Hopefully, this paper will serve as both corrective guidance for the VR industry now, and future-proof the industry against the most likely sources of it causing harm, letting VR change the world while doing no harm.