

A Report on ArsTechnica's article on the DreamWalker

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Abstract—This is a report on the ArsTechnica article “Microsoft’s DreamWalker VR turns your daily commute into a totally different one”. It can be found [here](#).

I. INTRODUCTION

Virtual reality is often defined as a simulated environment in which the user can immerse oneself in and interact with to various degrees. There are different flavors of VR: namely, *wide-area virtual reality* where the user is fully-immersed in that simulated environment (such as a headset covering the user’s field of vision with its simulation), *augmented reality* where the user’s senses of the world are ‘augmented’ (such as the Google Glass) and *mixed reality* which is a hybrid of the two technologies.

Since the technology has recently matured, VR manufacturers have sought to push the limitations of consumer VR technology to increase its use. One such limitation is that users are currently unable to use VR headsets outdoors as the headsets rely on sensors placed around a room and are unable to alert the user on potential obstacles one may encounter outdoors such as a tree or pedestrians.

Microsoft’s answer to this issue is the *DreamWalker*, a virtual reality system prototype that allows users to be fully-immersed in a virtual world outdoors by guiding the users around real-world obstacles through the VR world - blurring the lines between virtual and augmented reality.



Fig. 1. *DreamWalker*; taken from Microsoft’s white-paper (pixelated!)

The author Samuel Axon attempts to bring this news to VR enthusiasts and ordinary consumers by highlighting the

idea behind *DreamWalker*, and discusses the feasibility of *DreamWalker* by comparing it to failed projects and past concerns such as *Google Glass* and *Pokémon Go*.

II. SUMMARY OF ARTICLE

The author opens the article by summarizing the findings of Microsoft’s white-paper on the *DreamWalker*, describing it as “a method for allowing people to safely navigate a route in real-world applications”. They then outline the features of *DreamWalker* that enable it to avoid obstacles. They then bring the reader’s attention to Microsoft Research’s technology called ‘Mise-Unseen’ which allows the *DreamWalker* to make ‘covert changes to the VR world’ when the user’s gaze is away. In the second half of the article, Simon discusses the feasibility and ramifications of *DreamWalker* by discussing its predecessor project *VRoamer* and augmented reality products like *Google Glass*, *Pokémon Go* and the upcoming Apple AR glasses. Simon concludes by stating that the “potential challenges and applications for VR in public will need further consideration.”

III. DREAMWALKER

DreamWalker is a suite of technologies developed by Jackie Yang, Christian Holz, Eyal Ofek and Andrew D. Wildson that allow a user to be fully immersed in a VR world while outdoors using tracking and obstacle avoidance systems to redirect users away from real obstacles. Microsoft Research’s paper on the *DreamWalker* divides the technology into roughly three parts:

- real-time tracking and positioning system
- obstacle detection system
- obstacle avoidance and rendering techniques

The *DreamWalker* is an intersection of many areas of research: in particular, wide-area augmented reality/virtual reality, obstacle detection and environmental construction, and redirected walking.

Wide-area virtual reality devices isolates the user from the surrounding world by fully enveloping the user’s senses (generally one’s field of vision) in the VR world. *DreamWalker* uses a wide-area-capable VR headset to fully-immerses a user.

The obstacle-detection system is capable of detecting static obstacles like trees and buildings, ad-hoc obstacles such as

trashcans and potholes and dynamic obstacles such as pedestrians and cars.

Finally, *DreamWalker* employs potential software solutions to redirected walking by ‘imperceptibly rotating the virtual scene.’ Alternatively, researchers at Microsoft have explored using visual distractions and obstacle reconstruction to further enhance redirected walking.

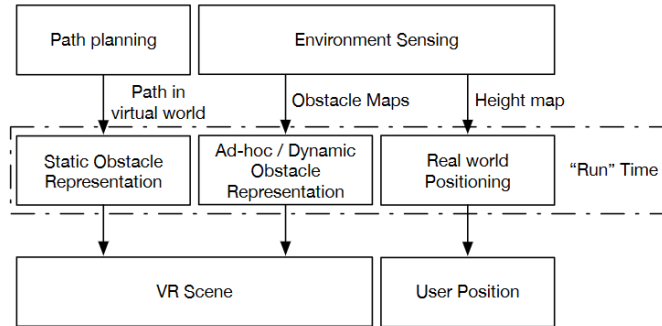


Fig. 2. Overview of *DreamWalker*

IV. ANALYSIS OF ARTICLE

A. Strengths

I find that the article does a good job at introducing and digesting a research paper on *DreamWalker* into information for the average reader - at least initially. It picks key points and quotes from Microsoft Research blog-post and paper on the *DreamWalker* that are relevant to describing its crux. The article contains several images of the *DreamWalker*, providing the reader something tangible.

Further on, Simon discusses the potential downsides of *DreamWalker* by comparing it to examples - allowing the reader to form an opinion of this tech via comparison. Finally, he links the blog-post and research paper for readers who wish to do a deeper reading of the subject.

B. Potential Weaknesses

A potential weakness I see with this article is its inherent inclination to not discuss *DreamWalker*'s potential benefits at the end - it appears that Simon was reluctant to discuss this due to past failures and concerns with similar projects like *Google Glass*. This gives the reader limited foresight into *DreamWalker*. Also, as an author who exclusively reviews Apple products (according to his bio), Simon may have possibly introduced bias in his reporting.

Some questions that Simon could have potentially discussed are:

- Are there differences between the *DreamWalker* and AR projects like *Google Glass*?
- Does he see the *DreamWalker* being widely adopted/accepted by consumers in the future?
- What are some applications of *DreamWalker* in fields benefiting from advances in imaging?
- Potential applications of *DreamWalker* to training professionals?

- Which industries/fields would benefit from using *DreamWalker*?

A possible reason why Simon did not ask these questions in his article is that he intended to keep the article grounded to simple factual reporting - and thus less-opinionated.

V. RELATED WORKS

I found articles written by *GeekWire* and *Venturebeat* dating to around the time *ArsTechnica*'s article was published. Both resort to a more objective reporting style similar to the *ArsTechnica* article. This is probably since these are the first publications on novel technology where reporting information is more important compared to opinion pieces. There are however minor differences between the three articles.

For instance, the *GeekWire* article adds a video giving readers a more tangible image of *DreamWalker* and discusses the methods the researchers used to test and demonstrate this technology. Alternatively, the *Venturebeat* article adds additional details about *DreamWalker* that provide the reader a much better and intuitive understanding of the technology.

VI. CONCLUSION

The *ArsTechnica* article is an informative piece on the *DreamWalker* that presents the key points of the technology to the reader. Although it neglects to ask questions that are potentially beneficial for the reader to reflect on, the article makes this novel tech more accessible to the average reader.

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