

New resource will help to guide innovations in virtual reality locomotion

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Experts in virtual reality locomotion have developed a new resource that analyzes all the different possibilities of locomotion currently available.

Moving around in a [virtual reality world](#) can be very different to walking or employing a vehicle in the [real world](#) and new approaches and techniques are continually being developed to meet the challenges of different applications.

Called Locomotion Vault, the project was developed by researchers at the Universities of Birmingham, Copenhagen, and Microsoft Research. It aims to provide a central, freely-available resource to analyze the numerous [locomotion](#) techniques currently available.

The aim is to make it easier for developers to make informed decisions about the appropriate technique for their application and researchers to study which methods are best. By cataloging available techniques in the Locomotion Vault, the project will also give creators and designers a head-start on identifying gaps where future investigation might be necessary. The [database](#) is an interactive

resource, so it can be expanded through contributions from researchers and practitioners.

Researcher Massimiliano Di Luca, of the University of Birmingham, said: "Locomotion is an essential part of virtual reality environments, but there are many challenges. A fundamental question, for example, is whether there should be a unique 'best' approach, or instead whether the tactics and methods used should be selected according to the application being designed or the idiosyncrasies of the available hardware. Locomotion Vault will help developers with these decisions."

The database also aims to address vital questions of accessibility and inclusivity. Both of these attributes were assessed in relation to each technique included in the Vault.

Co-researcher, Mar Gonzalez-Franco, of Microsoft Research, said: "As new and existing technologies progress and become a more regular part of our lives, new challenges and opportunities around accessibility and inclusivity will present themselves. Virtual [reality](#) is a great example. We need to consider how VR can be designed to accommodate the variety of capabilities represented by those who want to use it."

The research team are presenting Locomotion Vault this week at the online Conference on Human Factors in Computing Systems (CHI 2021).

"This is an area of constant and rapid innovation," says co-author Hasti Seifi, of the University of Copenhagen. "Locomotion Vault is designed to help researchers tackle the challenges they face right now, but also to help support future discoveries in this exciting field."

More information: Massimiliano Di Luca et al, Locomotion Vault: the Extra Mile in Analyzing VR Locomotion Techniques, *Proceedings of the 2021 CHI Conference on Human Factors in Computing*

Systems (2021). [DOI: 10.1145/3411764.3445319](https://doi.org/10.1145/3411764.3445319)

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