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Published in:

Proceedings of the 5th International Conference on Methods and Techniques in Behavioral Research

2005

[Link to publication](#)

Citation for published version (APA):

Magnusson, C., Rasmus-Gröhn, K., Davies, R., Johansson, G., Eriksson, J., Klercker af, J., & Wallergård, M. (2005). Virtual reality technology: A tool for behavioural studies involving disabled people. In *Proceedings of the 5th International Conference on Methods and Techniques in Behavioral Research*

Total number of authors:

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Virtual Reality Technology: A Tool For Behavioral Studies Involving Disabled People

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During the last decade, due to increased computer capacity and development of the game industry, small and inexpensive Virtual Reality systems have been made available and the usage and application of virtual environments for simulation and visualization has dramatically expanded.

A virtual environment can simultaneously affect several senses such as sight, hearing and perception of touch (haptics). This technology also has the ability to offer the user not only a role as a passive observer but as an active participator performing a variety of tasks in the environment. The user communicates with the computer system using different devices tracking for instance the movement and the position of the hand, the head or the eye. The realism of the virtual environment can be chosen by varying the wealth of details when adding colors, patterns, textures, lighting and behaviors in the model.

Within a recently founded centre – RE-FLEX (www.re.ex.lth.se/re.ex) at Lund University, diverse multidisciplinary projects using Virtual Reality technology are carried out. The department of Design Sciences is one of the key members of the centre and our research group is involved in several projects using virtual environments in the field of rehabilitation and habilitation. In this research field virtual reality is used as a tool for:

Planning and design with active participation of the disabled people using their tacit knowledge.

- Training and rehabilitation.
- Assisting in the activities of daily living.
- Diagnosis and treatment.
- Experiencing different environments and activities difficult to access due to the disability.

We are currently mainly working with people with visual impairments and various cognitive disabilities (for example those resulting from brain injury). We are studying the use of virtual reality in the rehabilitation process and developing methods for involvement of disabled users early in a design process of public environments as transport systems. Both haptic and visual interfaces are used.

Paper presented at *Measuring Behavior 2005*, 5th International Conference on Methods and Techniques in Behavioral Research, 30 August - 2 September 2005, Wageningen, The Netherlands.

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