University of the Ryukyus

Centers for Rehab Services
A Partner of UPMC Health System

The Use of Virtual Reality for Persons with Balance Disorders

University of Pittsburgh

Supported by the National Institute on Deafness and Other Communication Disorders

The Use of Virtual Reality for Persons with Balance Disorders

- The use of virtual reality with persons with vestibular disorders is a relatively new concept
- Persons with vestibular disorders often complain of having difficulty maintaining their balance when exposed to complex visual scenes

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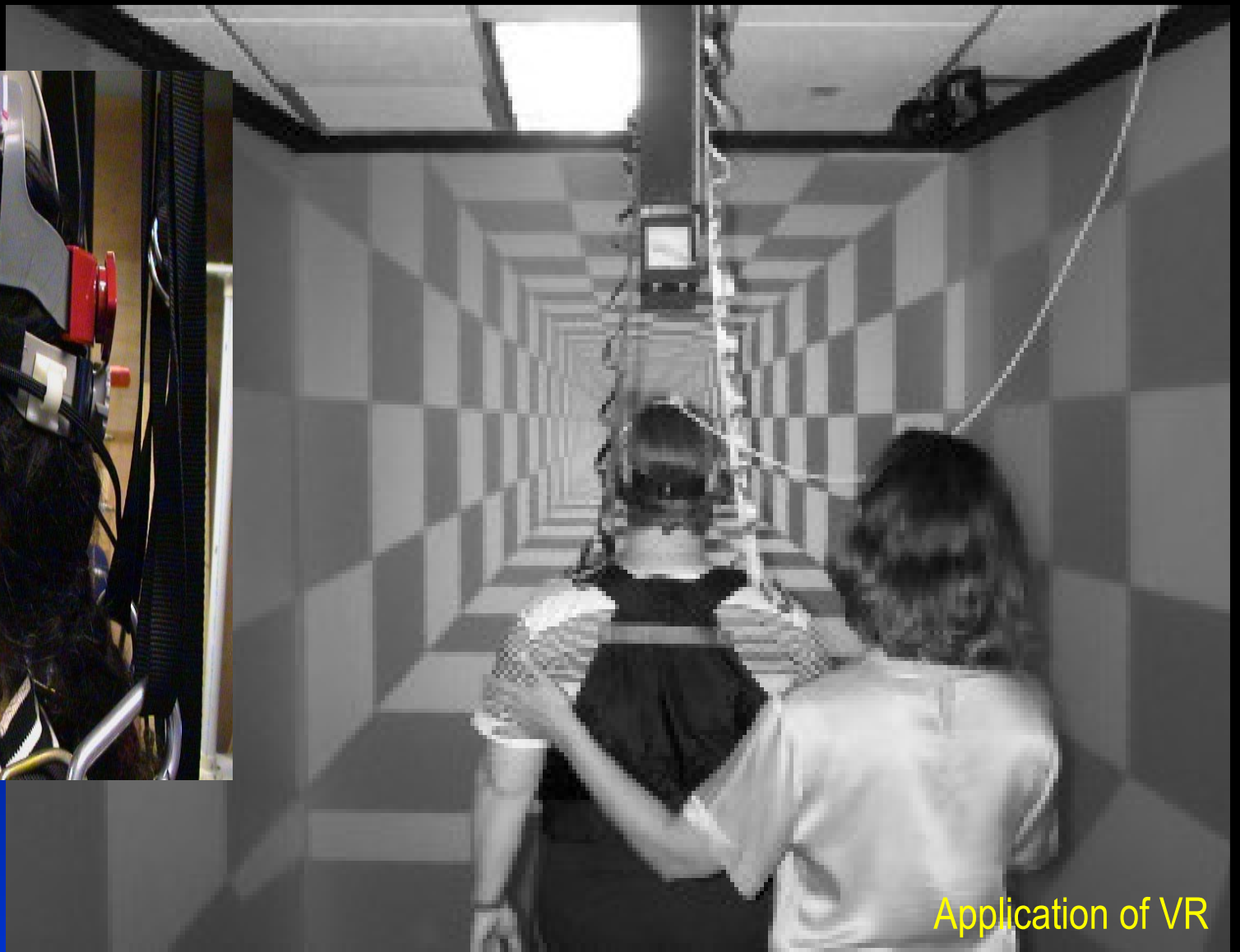
The Use of Virtual Reality for Persons with Balance Disorders



Application of VR

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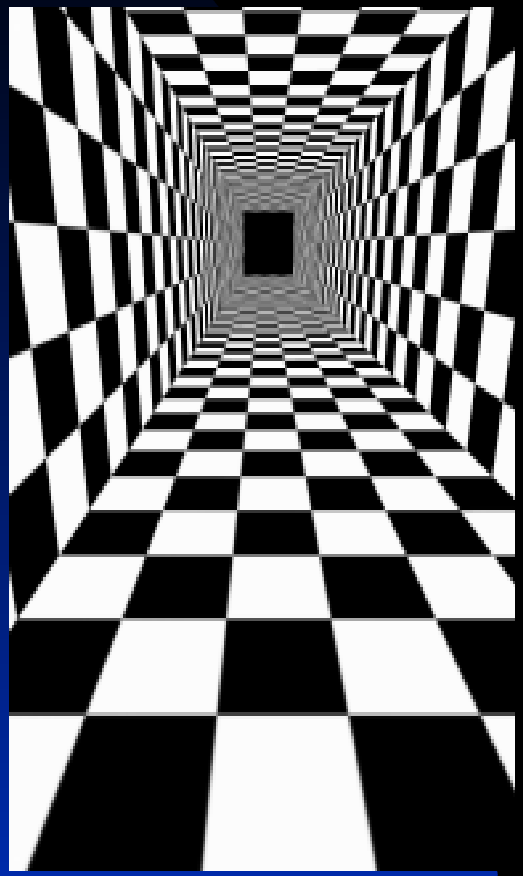
The Use of Virtual Reality for Persons with Balance Disorders



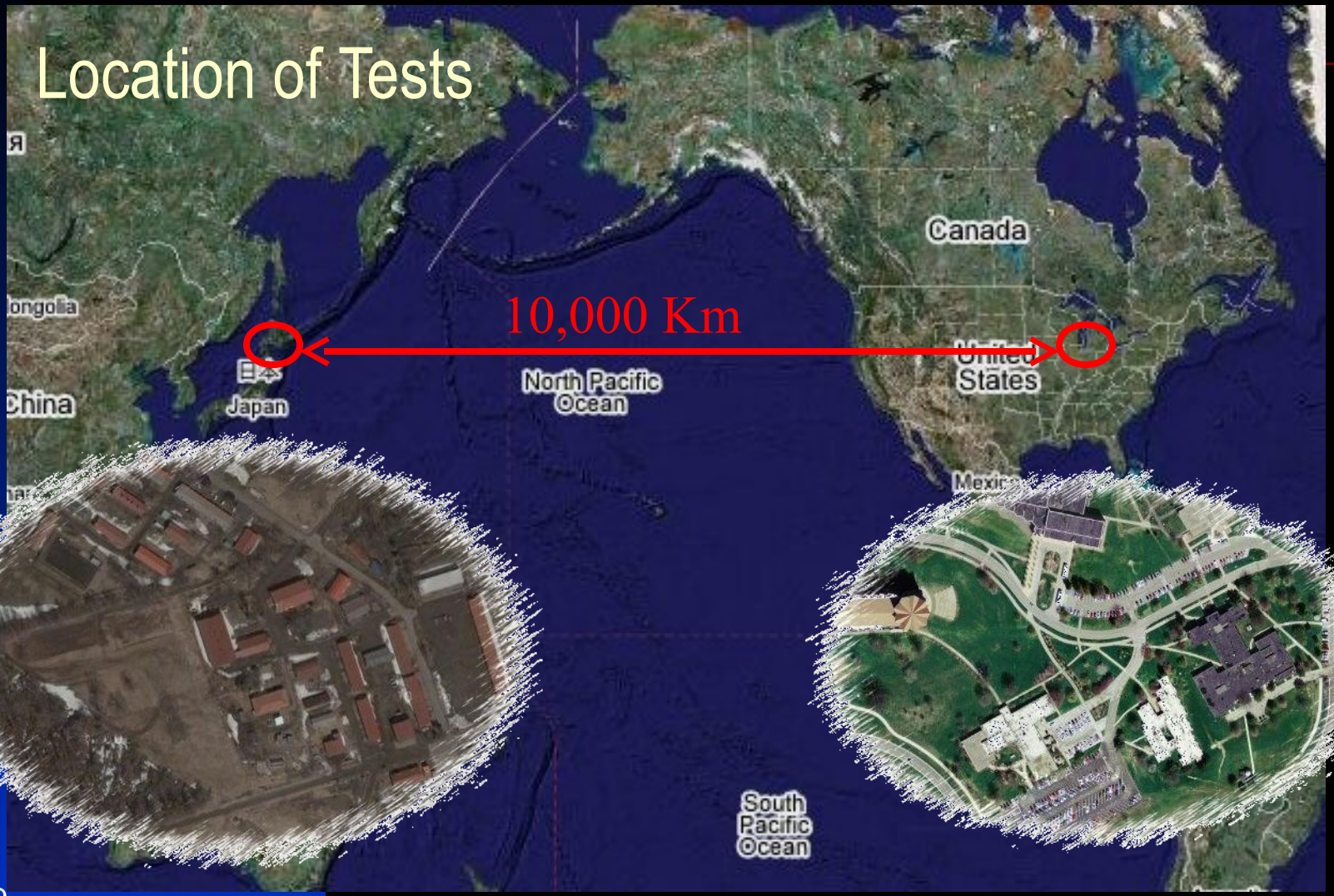
Application of VR

Use of Virtual Reality for Teleoperation of Autonomous Vehicles

2007 National Conferences on Undergraduate Research
April 12-14, 2007

University of the Ryukyus

Use of Virtual Reality for Teleoperation of Autonomous Vehicles



Use of Virtual Reality for Teleoperation of Autonomous Vehicles

Visualization Test

- Tests visualization of vehicle in VR environment
- Test route was planed (See picture)
- Vehicle was driven by an onboard operator

Use of Virtual Reality for Teleoperation of Autonomous Vehicles

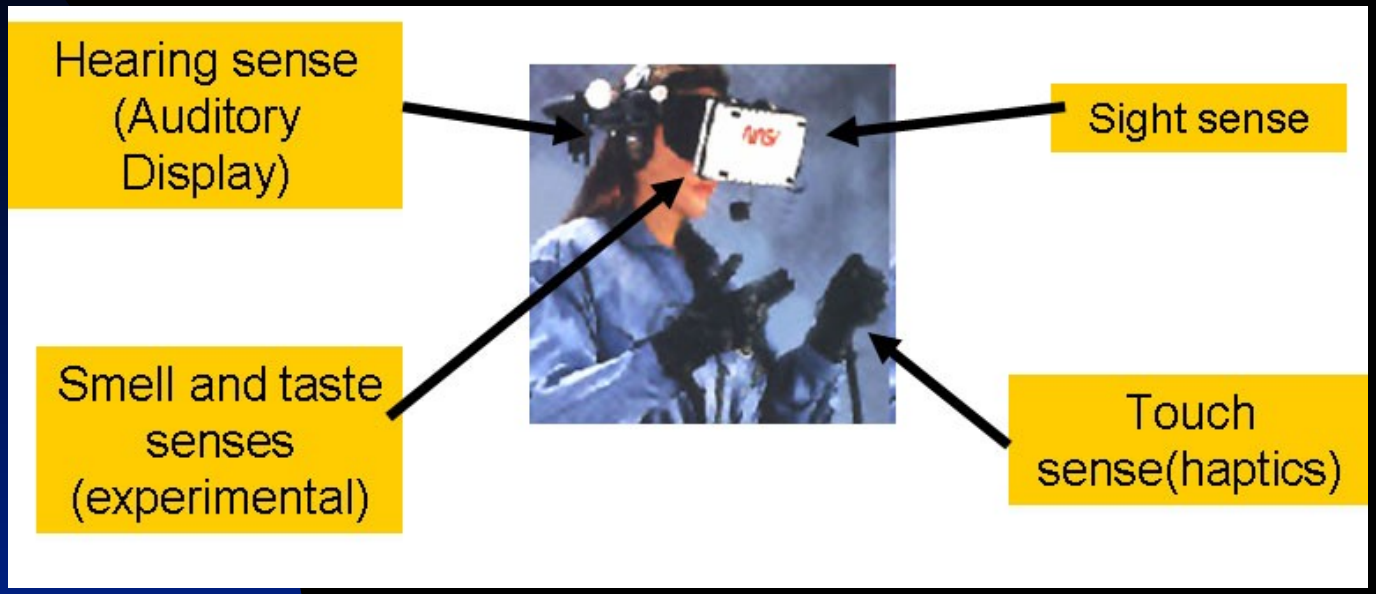
Results from test

- Communication protocol is working
- Location of the vehicle is visually correct
- Stereo-vision model is working

Teleoperation on power lines

Figure 15.9: The "Hot-Line Telerobot System" from Kyushu ELectric Power Co. A teleoperated robot repairs a high-voltage power line (left). The operator's interface to the system (right). (Courtesy of Blake Hannaford with permission of MIT Press. Reprinted from K. Goldberg, *The Robot in the Garden*, Cambridge, MA: The MIT Press, 2000.)

Virtual Reality Learning Objects of Molecular Structures



A fully-immersive virtual reality system

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Virtual Reality Learning Objects of Molecular Structures

We have developed many 3D graphical models of molecular structures, which can be used in molecular biology, biochemistry and related courses. i.e. a virtual molecule of DNA that has been used for our studies