Interactive Mediated Reality

Raphael Grasset, Jean-Dominique Gascuel
{raphael.grasset|jean-dominique.gascuel}@imag.fr

Dieter Schmalstieg
schmalstieg@ims.tuwien.ac.at

More informations at: http://www-artis.imag.fr/Members/Raphael.Grasset/RECHERCHE/ARPM/ARPM.html (or with google: keywords 'interactive mediated reality')

Introduction

Mediated reality tries to modify our vision of reality with a visual filter implemented as a hardware or software system. Virtual objects can be added, real objects can be altered or removed.

We demonstrate a new prototype based on a video see-through HMD for dynamically changing our vision of reality.

A Mediated Reality Pipeline

Virtual Studio Prototype

We introduce the concept of a Virtual Studio, based on an artistic concept: support, matter, medium, and tools.

Functionnalities: Paint, Grab, Glue

A High Quality Setup

Tracking System: Northern Digital Optotrak 3020

Video see-through HMD

A Low Cost Home Setup

Tools palette

Calibrated brushes

Paper painting

Fabric, household tools

Turntable support

Tracking arm

Three Types of Painting

We decompose object modification on different levels of application:

Pixel Level
Modify color of surface depending on pre-acquired knowledge:

On the fly brush color acquisition from texture.

Patch Level
Modify color of semantic element, adding label on it, grab real label.

Matter Level
Adding predefined virtual elements, or create them interactively with 3D creation matter tools.

Results

Applications

Architecture

Cosmetic

Game

Design, Packaging

First Users Evaluation

Pros
Handheld palette
Grab real color, texture
Familiar environment

Cons
Stylus too heavy
Unstable tracking
Difficult depth perception
Sometimes misregistration

Some user results:

Focus of this work

Some user results:

Focus of this work

Some user results:

Focus of this work

Some user results:

Focus of this work

Some user results:

Focus of this work

Some user results:

Focus of this work

Some user results:

Focus of this work

Some user results:

Focus of this work

Some user results:

Focus of this work

Some user results:

Focus of this work

Some user results:

Focus of this work

Some user results:

Focus of this work

Some user results: