Research and Development at NIME and Demonstration of Some Tools

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Outline

- Introduction of NIME
- DVD/CD-ROM Educational Materials
- Virtual Reality Environment: TEELeX
- Outdoor Distance Education using IP-based
- Personal Research
  - Information Visualization
  - Multimodal Interfaces
  - System Software
- 3D stereoscopic view
Outline (continued)

- Demonstration
  - Instant Messaging/Chat
    - Windows Messenger/NetMeeting
  - Video Streaming
    - Windows Media Encoder
  - Simple Authoring
    - Windows Media Producer
  - Video Streaming with Chat
NIME

- National Institute of Multimedia Education
DVD/CD-ROM Educational Materials

- Languages
  - English
  - Chinese
  - Japanese
- Science
  - Physics
  - Astronomy
  - Information Science, etc.
- Counseling
- Science of Nursing
- Faculty Development
- etc.
Virtual Reality Environment: TEELeX

- **Demos**
  - Roller Coaster
  - Paradise

- **Experimental Applications**
  - Virtual Solar System
  - Saint-Savin Cathedral (3D walk-through)
  - Virtual English Class Room
  - Moon (3D walk-through)
Roller Coaster
Paradise

◆ Interaction
Virtual Solar System
Saint-Savin Cathedral

- Walk-through
Distance Education Between Outdoor and Indoor using IP-based Satellite Communication

◆ PC-based System
◆ IPv4 (Internet Protocol version 4)
  • Native IPv6 are going to be used
◆ 5 video streams
  • 1 video for conferencing
  • 4 video for panoramic camera (low frame rate)
◆ 2 voice streams
  • Conferencing
  • IP Telephone
◆ About 700kbps
Outdoor

- SCS Mobile Station
- Personal Computers
- Panoramic camera
Indoor

- Using TEELex as Surround Display
  - Not stereo scopic
Personal Research

- **System Software**
  - It3d: 3D toolkit library

- **Information Visualization**

- **Multimodal Interfaces**

- **Applications**
  - Reijin (music player / miraculous god in Japanese)
    - Immersive 3D music editing/playing system
  - Ougi (folding fan / secret in Japanese)
    - Immersive 3D programming system
Interactive Toolkit Library for 3D Applications: it3d

- Multimodal Input Device Support
  - Glove
  - Position/Orientation Tracker
  - Speech Recognition/Speech Synthesizer etc.

- 3D Widgets
  - 3D Button, Menu, Dial
  - Extrusion, Revolution of Solid etc.

- Gesture Recognition and Direct Manipulation Support
  - Simple Gesture Learning Tool
  - Drag and Drop in 3D
Immersive Music Editing and Playing: Reijin

Notes

Rests

Flat, Natural

Virtual Hand

Dial for tempo

Terminate Program (Exit)

File load

File save

Play/Stop

Part I Program Selection

Part I Tone Selection

Part II Program Selection

Part II Tone Selection

Play/Stop

File load
Reijin: Video

Direct Manipulation (Copy/Move)
Immersive Programming System: Ougi

- Immersive Programming System using Virtual Reality Technologies
  - Stereo scopic view, 3D visualization
  - Multimodal Interface
    - Sensor Glove, Feedback
- Supports a subset of Java Programming Language
  - Object-oriented programming
Ougi for a Dancing Programmer

- Programming in an Immersive Virtual Environment
  - When a programmer uses the system, the programmer appears to be dancing in the virtual environment
Ougi: Video

An Immersive Programming System
Multimodal Text Input

- For textual annotation in 3D space

- Input
  - Speech recognition
  - Virtual keyboard

- Editing
  - Hand direct manipulation
Stereo-scopic View Demo

◆ System
  - Personal Computer
  - LCD shutter glasses (consumer product)
  - Graphics card (consumer product)

  - CRT display
    - LCD display does not work

◆ Demonstration
Tea Break
Demonstrations

- Instant Messaging/Chat
- Video Streaming
- Simple Authoring

- Combination of Video Streaming/Conferencing and Chat
Instant Messaging/Chat

- **Chat**
  - E.g. NetMeeting
  - Room (chair control)

- **Instant Message**
  - E.g. Windows Messenger
  - Friend List (ad hoc list)
Chat

- Please send comments and questions using *Chat system* during this workshop
Video Streaming

- Windows Media Encoder
- Video input
- Screen capture
Simple Authoring

- Windows Media Producer
  - PowerPoint-based
  - Can synchronize Slides with Video/Audio

- PowerPoint 2002 (Office Xp) is required
Video Streaming/Conferencing with Instant Messaging or Chat

- Video streaming
  - Unidirectional
- Instant Messaging/Chat
  - Student can make a question during lecture
  - Another student can answer or discuss the question
- Lecturer can give an answer or adjust his/her lecture
- Some training is needed to read messages during a lecture
- Facilitator may be needed for active discussion
Summary

- I hope that USP and NIME can work together for further development
- Thank you!