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Distributed Scalable Interaction Paradigm for Multi-User Interaction Across Tiled Multi-Displays

Tech ID: 25032 / UC Case 2011-489-0

BRIEF DESCRIPTION

The technology is a method for multiple users to interact simultaneously with multiple tiled displays.Under this technology, multiple users are allowed to interact with a tiled display with a distributed registration technique.It features easy scalability across different applications, modalities and users and user interactions involve hand gestures or are laser-based.

FULL DESCRIPTION

This technology is the first distributed paradigm for multiple users to interact simultaneously with multiple tiled displays, coming from traditional displays (like projectors) or mobile devices (like pico-projectors in cell phones). This paradigm allows easy scalability across different applications, interaction modalities, displays and users. The novelty of the design lies in its distributed nature allowing well-compartmented, application independent, and application specific modules. This enables adapting to different applications and interaction modalities easily by changing a few application specific modules.

The easy exchange of data between multiple users using multiple-projector displays is a potentially very useful tool in a collaborative setting.Recent advancements have eased implementation and maintenance of such tiled multiple projector displays, but a suitable interaction paradigm that can be scaled to multiple users for large numbers of display modules is still not available.

Most work in the human-computer interaction domain is difficult to scale to multiple interaction modalities, applications, users and displays. Central to this problem is the fact that almost all earlier works in the domain of interaction with tiled displays have explored application specific centralized algorithms and architectures which inherently cannot scale with respect to the number of users and displays due to critical dependency on a single server. Further, scalability to multiple applications and interaction modalities demand careful algorithm design to compartmentalize the application/interface specific modules from the application/interface independent ones and has not been explored before.

This technology is the first scalable interaction paradigm for rear-projected tiled displays that can scale with multiple projectors, users, applications and even interaction modalities.

SUGGESTED USES

» Collaborative interactions among multiple users on tiled projection displays

ADVANTAGES

» Scalable to multiple users, displays, applications and interactions
» Distributed registration technique that is more accurate and efficient than prior methods

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OTHER INFORMATION

CATEGORIZED AS

» **Communications**
  » Internet
  » Networking
  » Optical
  » Wireless
» **Computer**
  » Hardware
  » Software
» **Engineering**
  » Engineering
» **Imaging**
  » 3D/Immersive

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,872,799	10/28/2014	2011-489
Patent Cooperation Treaty	Published Application	2014/062197	04/24/2014	2011-489

RELATED CASES

2011-489-0

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RELATED MATERIALS

» A Scalable Distributed Paradigm for Multi-User Interaction with Tiled Rear Projection Display Walls P. Roman, M. Lazarov, A. Majumder, IEEE Transactions on Visualization and Computer Graphics, 2010. (http://www.ics.uci.edu/~majumder/docs/VIS10.pdf) - 10/11/2009

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS
▷ A Projector With Enhanced Resolution Via Optical Pixel Sharing
▷ Video Frame Synchronization for A Federation of Projector Using Camera Feedback

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