

Thermal Interactive Media

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1. Introduction

The Thermal Interactive Media (TIM) display represents an engaging new form of tangible user interface that enables users to control the interaction and blending of multiple video streams through the physical mixing of water at different temperatures.

2. Setup

The TIM display consists of a horizontally mounted rear projection screen covered with a thin layer of water. Adjacent to the screen are two basins filled with water, one on each side of the display. One basin is filled with hot water, one with cold. Mounted above and pointing at the screen is a FLIR thermal imaging camera. Driving the whole system is a PC workstation generating two simultaneous video streams, one “hot”, and one “cold”.



Figure 1. *Thermal Interactive Media.*

3. Interaction

Users can choose to pour either hot or cold water onto the display, using the ladles found in either basin. Wherever the user pours in hot water, TIM displays the “hot” video stream. Wherever the user pours in cold water, TIM displays the “cold” video stream. In the regions in between, the two video streams mix and swirl together based upon the temperature of the water. By observing how the two video streams mix together, users can see real-world fluid dynamics in action and can watch in real-time as the thermal energy dissipates and distributes throughout the water. The experience is simultaneously magical, educational, entertaining, and relaxing. For an extra level of fun, users can don ChromaDepth glasses to augment the experience with a pseudo-stereoscopic effect. Regions of warm water colored red float above the screen and the cool regions of water colored blue punch holes deep into the surface.

4. Conclusions

TIM is a multi-sensory experience that combines beautiful visual elements; the soothing touch of water, and the bubbling sounds of flowing water combined with the gentle clacking sound of deer chasers.