Round Table IMPA
Multidisciplinary Workshop on Interactive Media and Natural Interfaces

Introduction

The Multidisciplinary Workshop on Interactive Media and Natural Interfaces took place at the VISGRAF Laboratory during the period of October and November of 2008.

The main goals of this workshop was to investigate new technologies for capture, processing, exhibition and interaction with audio-visual data, as well as to develop experiments in the context of emerging applications in this area.

This website provides an overview of the process and the results of the projects created in the workshop.

Workshop

The workshop focused on topics related with recent advances in tangible interfaces, multitouch inteaction, computer graphics, image processing, sound synthesis and new authoring environments. The experiments where developed for the i.Table, an interactive table built at the VISGRAF Laboratory for development of natural interfaces. The software development environment used the open source platform ReacTIVision of the Music Technology Group from the Universitat Pompeu Fabra, Barcelona.

ReacTIVision

The reacTIVision platform is based on a computer vision framework the supports both tangible and multitouch interface development. It consists of a vision engine for tracking of fiducial markers,and the TUIO protocol for communicating with client applications. This development environment is complemented by a simulator an a library for various programming languages.

Topics   Topics studied in the workshop emcompass the fundamentals and recent advances in:

_ tangible interfaces
_ multitouch interaction
_ graphics
_ image processing
_ sound synthesis
_ authoring environments

Applications   Workshop participants will create ineractive programs exploiting applications in:

_ computer music
_ animation
_ games
_ education
_ digital photography and video

Projects   The workshop participants created several projects for the i.Table
exploiting natural interfaces in the context of applications for areas
such as digital photography, computational music, games, education,
animation and video.

COLLECTABLE (By André Maximo and Maria Paula Saba)

The collecTavble is a practical implementation of a media organization software using
tabletop tangible interfaces, iTable for short. By exploring the natural movements of of
a person trying to organize his media, i.e. music discs, video tapes, photographs and
textbooks, we present a system to investigate this interaction in a digital environment
focused on music. We developed both software and hardware to provide a better media
organization experience. Our implementation is based on the Apple's iTunes(TM) software,
and introduces a tool for mining media data through a multi-dimensional chart.

In this work we explore the relation between digital and physical worlds by connecting
tangible objects, called fiducials, with digital music albums. In addition, we use these
fiducials to create different user profiles, allowing multiple users in the same iTable. We also
discuss how to expose information scattered in n-dimensions by using Cartesian graphics
displayed on a multi-dimensional chart, called M-Cube.

FOCO (By Joana Passi and Ricardo Castañeda Marin)

FOCO is a system designed to facilitate the access to extensive and diverse digital collection of photos. A ReacTable and fiducials are used to create quicker and easier means of search and interact within the digital archive. The actual system is composed mainly by three fiducials: index, historial and storage. The index fiducial allows the user to visualize all the tags or key words that are used to classify every photo in the collection. This visualization permits multitouch manipulation of the key words to search photos of the user interest. Once a search is performed the user can visualize and manipulate the results as desired by zooming, translating or emphasizing to get specific information of the photos like data, local and summary among others. The history fiducial is used to visualize all the searches performed in a session. The user can go from one search to another visualizing the results. The storage fiducial is used here to save any of these photos as desired.

From a general point of view, the main funcionality of FOCO was designed to be used with a large multitouch table in public places like musseums etc, rather than with a pesornal one, without beign this exclusive. The system can be easily adapted to work with any other media like for example music and video collections. To ensure portability,FOCO was programmed in JAVA/Processing using MySql to administrate the database of the collection to be used.

FLATLAND (By Fernando Ribeiro and Rodolfo Lima)
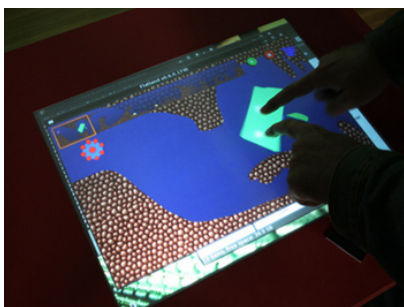
Flatland is a classic platform game involving 2D physics simulation. The player must help a rotating wheel in its quest to reach a flag at the end of a irregular terrain full of mountains and valleys. At his disposal, he has several tools that allow him to create ramps, ropes, solids and other intricate objects based on the first three. The player literally "paves the way" throughout the terrain, avoiding the wheel to get stuck during its journey.

It's a very addictive game, with an infinite number of solutions possible. The player uses his fingers to draw mechanical elements on screen, using a tangible "selector" to choose which kind of element is being drawn. Ropes can even be cut along the way, allowing a multitude of techniques to be employed.

REACTOONS (By Alexandra Alves and Patrik Matos)
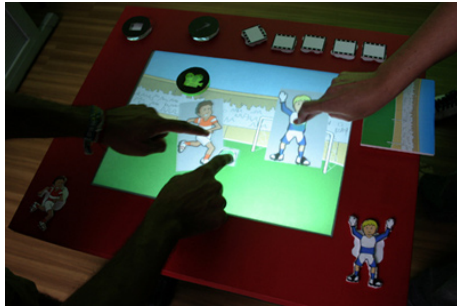
Reactoons is a computer aplication for collaborative creation of stories for children. With a library of objects, children can manipulate Cenes and characters in a multi-touch table and create a story that the imagination can think of. The library is a collection of real and tangible objects (toys), which are recognized by the table and associated with virtual objects. The library works as a kit of toys that can be expanded adding more objects. So, also increas the possibilities of creating stories. The stories are recorded on tangible cards, which can be linked to other cards. So the stories can be edited or associated with others recorded stories.

The aplications is intended to be used initially in teaching (in a school environment) to create stories directed to a specific theme. With an intuitive interface, children show their points of views on the subject, develop their creativity, develop the hability of work in group and has contact with basics of animation. they also recover the relationship between the real with the virtual through his toys.

DISCOTABLE (By Erick Passos and Nina Paim)
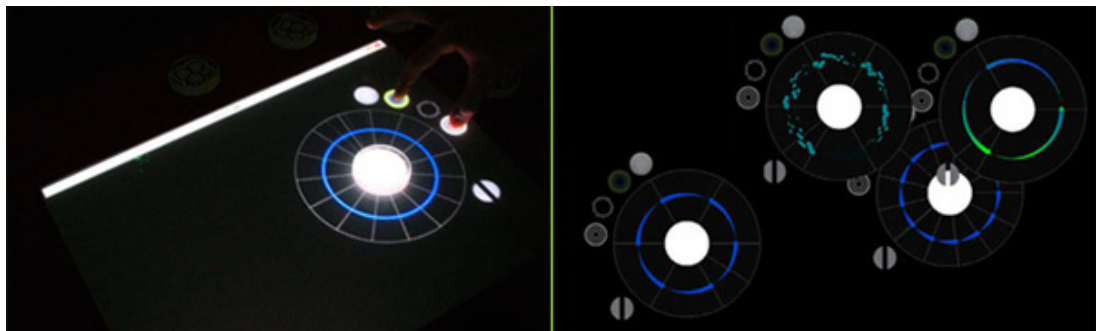
Discotable is an interface project for electronic music performance, whose goal is to be as organic and natural as possible, with an intuitive visual representation of sounds produced.

A limited number of sonic signs, played in a looped fashion, can generate many kinds of compositions. The origin of these signs are small acrillic discs, which are the tangibles elements in the table. Each sound loop is graphically represented by a colored circular shape. Each loop can be further subdivided by rotating the disc clockwise or counter-clockwise, and can be edited effect, volume and pitch) by drawing directly with the fingers over it.

Discotable has a simple interface which allows improvisation and is suitable for live performances.The musician interacts directly with the table, and because of its multitouch properties, it can be used by more than one musician at the same time.

REACTBAR (By Felipe Moura e Luisa Fosco)

The idea of Reactbar is to use multitouch interaction and tangible interface for entertainment in public spaces, exploring the concept of social networking. It has a simple and intuitive interface, in a fun use experience. It promotes a real interaction among users, starting it in a virtual way.

The user receives a glass coaster, which will be the tangible element for the interaction. On the i.Table, it is possible to access service options, like drink selection and bill checking. The user can, also, see and edit his profile - including his mood, represented by a color under the coaster - and interact with other people through a map.

This interaction is restricted to mark other people, offer them a drink or send them short messages - it is just a good excuse to meet personally, in real life.