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TWiki Tip of the Day

SlideShowPlugin for presentations

Use the SlideShowPlugin to convert a topic with headings and bullets into a slideshow presentation. This ...

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RFID and Multi-Touch Table Project Blog

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Things to Remember

Dates

- **July 10** - *Due*: Poster draft
- **July 14** - *Due*: Poster
- **July 23** - *Due*: Research paper draft
- **July 24** - Demo practice session
- **July 25** - *Due*: Research paper
- **August 1** - Research Symposium

Things we need:

- Webcam with higher resolution and possibly Linux drivers
- New acrylic pane for the table top

Objectives

- Create a client for SparshUI
 - Must incorporate collaboration
 - Take advantage of the multi-touch
- How can real world objects and collaboration help us achieve a better human-computer interaction in a multi-touch environment?
- How does the project fit into Multi-Touch research?
- How is it enhanced collaboration?
- **The client**: A lego-type world interaction between users
- Recognition of finger movements

Individual/Team Work

Remember:

Project Milestones ([Word zip](#))

Order of creation:

1. Build Baseplate for one user
2. Implement networking

Baseplate Components:

- Paper due Friday 25 - Desiree & Cole
- Interface Tom - due for integration on Friday
- Baseplate itself (OpenGL) due for integration on Friday- Cole
- Sparsh Gesture integration Desiree - due for integration soon after Friday
 - Spin gesture - Satya Need spin in Java due for integration Friday rotate around X or around Y axis
 - Drag (done) move a block
 - Single touch (done) select a block for placement or moving or using UI controls
 - Multi-point drag with 2 fingers (done) panning baseplate, sends incremental coordinates

- Zoom with 2 fingers (done) for zooming - Cole add functions for this
- Collaboration - Prasad to give protocol Friday, then Cole/Tom will integrate soon after
- Accelerometer
- Create iPod Touch app - Tom will find app with accelerometer data
- Communication functions - Prasad
- QA & Testing - All of us

Team Ideas for Code

- Pieces store location on board:
 - Perspective-wise
 - Eg. Car w/ highlights program from OpenGL class

Individuals

Cole Anagnost:

- JOGL study & share knowledge with Thomas

Thomas Niedzielski:

- Piece design/implementation and interface implementation

Desiree Velazquez:

- Read *Sparsh photoviewer* class to compare with *SparshBaseplate* class
- Write in *SparshBaseplate* class
- Working on paper with Cole Finished with the paper (see open source section for download versions of it)
- Working with *SparshBaseplate* class (theoretically done)

Baseplate

Software/Libraries

- Java
- JOGL
- Eclipse Europa & Ganymede

Current Features

- Hidden menu panels on the sides of the window, callable at any time, containing:
 - block pool and color selector
 - menu options such as:
 - *New Baseplate*
 - *Toggle Color Scheme*
 - *Toggle Block Trasparency*
 - *Toggle Baseplate Trasparency*
 - *Exit Program*

Future Features

- Building in a same space/plane from different systems/terminals/machines
- Addition to the hidden menu panels:
 - Additional building pieces of complex shapes
 - More colors (like a color wheel) including patterns for the pieces
 - Additional menu options:
 - *Save*
 - *Open*
 - *Snapshot*
- User is able to choose their own color (eg. for shadow)
- Able to see where another user is moving his brick
- Ability to destroy a brick (eg. Undo button) be it the user's own, or another user's
- Prompt another user to allocate a block on a location specified (possibly shining?)

- Competition mode:
 - Time it takes to complete a puzzle/model
 - Model shown as a shadow (something like [this](#) from mySims)
 - Count of blocks used by each user
- Messages window (reminded me of [this one](#))

Code Parts

Baseplate class

- Based on *photoviewer* class

SparshBaseplate class

- Creates the frame where *Baseplate* and *InterfaceOverlay* will be shown
- Connects to the *GestureServer* to allow touch-based input
- Tells *Baseplate* or *interfaceOverlay* to do something according to where the touch has landed:
 - touch on tabs of panels: will do nothing, *InterfaceOverlay* will handle it internally
 - touch on a block from block pool: save which block is touched, for when second touch hits baseplate, tell *Baseplate* to add block
 - touch on page selector: will do nothing, *InterfaceOverlay* will handle it internally
 - touch on color selector: will do nothing, *InterfaceOverlay* will handle it internally
 - touch on *New Baseplate* button: tell *Baseplate* to create a new hashtable where the blocks are saved
 - touch on *Toggle Color Scheme* button: tell *Baseplate* to switch between solid color of when the block is created and color by user who created it

InterfaceOverlay class

- Creates the interface of the blocks and menu options

PieceTemplate class (abstract)

- Super class
- All blocks created inherit from this class (extends)

RectangularBlock class

- Includes:
 - 3 spot array of int to describe location
 - 3 spot array of int to describe dimension
 - 9 digit int groupID; each 3 digit chunk is a char giving R,G, and B value to the background color map which lets us tell which block is chosen. User may be added later as a 10th digit, or as its own userID.

Plate class

- Extends Piece

Open Source

- Main Research Project:
 - [Baseplate.zip](#): Presentation of our project idea
 - [baseplate_poster.zip](#): This is the one we sent to proofing, but with slightly blurrier text.
 - [BaseplateAbstract.doc](#): Baseplate Abstract for PWSE and Pam Shill
 - [BaseplatePaper_Final.doc](#): Baseplate Paper (final version) in word 03 format
 - [BaseplatePaper_Final.pdf](#): Baseplate Paper (final version) in PDF format
 - [BaseplateEclipse.zip](#): Baseplate's Eclipse Files, 6/30/1:32 PM
- C++ Programming Project:
 - [Project_Presentation.zip](#): The presentation in 07 & 03 format
 - [Potato_Chip_Puzzles.zip](#): The latest version of Potato Chip Puzzles
- [HClwikipedia.wmv](#): The video for HCI class

- Graphics Programming Project:
 - [DUCK_HUNT.ppt](#): The Presentation Version
 - [Duck_Hunt.zip](#): OpenGL Project Presentation

PDF Research Papers Online

- [Enhancing Multi-user Interaction with Multi-touch Tabletop Displays using Hand Tracking](#) (Right-Click Download)
- [Multi-Touch Systems that I Have Known and Loved](#) (more like a time line to reach multi-touch)
- [MERL Diamond Touch](#):
 - [Gesture Registration, Relaxation, and Re-use for Multi-Point Direct-Touch Surfaces](#) (Right-Click Download)
 - * [DTLens: Multi-user Tabletop Spatial Data Exploration](#) (Right-Click Download)
 - [Model Spaces: Spatial Multiplexing to Mediate Direct-Touch Input on Large Displays](#) (Right-Click Download)
- [Precise Selection Techniques for Multi-Touch Screens](#) (Right-Click Download)
- [Multi-Touch Sensing through Frustrated Total Internal Reflection](#) (Right-Click Download)
- [Tactile Gesture Recognition for People with Disabilities](#) (Right-Click Download)
- [Specifying Gestures by Example](#) (Right-Click Download)
- [Low-Cost Multi-Touch Sensing through Frustrated Total Internal Reflection](#) (Right-Click Download)
- * [Direct-Touch vs. Mouse Input for Tabletop Displays](#)
- * [Going Deeper: a Taxonomy of 3D on the Tabletop](#)
- [The bar of soap: a grasp recognition system implemented in a multi-functional handheld device](#) (Right-Click Download) (Buxton)
- [Manual and cognitive benefits of two-handed input: an experimental study](#)
- [The design of a GUI paradigm based on tablets, two-hands, and transparency](#)

Links outside

- [Twiki Project Description](#)
- [Battlespace Project Site](#)
- [reactable media](#)

Brainstorming Forum

[DesireeVelazquez](#) - 25 Jul 2008 - 10:25

replace it in your version:

Multi-touch is a human-computer interaction technique that allows users to interact with a system without the conventional input devices, such as a mouse or keyboard. Typical multi-touch systems consist of a touch screen (table, wall, etc.) or touchpad, as well as software and hardware that can recognize multiple simultaneous touch points, contrary to standard touch screens, such as computer touchpads or ATM machines, which generally recognize only one touch point at a time.

[ThomasNiedzielski](#) - 17 Jun 2008 - 09:41

Hey guys, I have the game "Bontago" Dr. Gilbert was talking about. Unfortunately, It's 22.7 M when zipped, so I'll just give you the website where you can download it yourself:
http://www.digipen.edu/main/Gallery_Games_2002#Bont.C3.A3go Be sure to check out the rest of Digipen's stuff if you're looking for fun little games. They have some really good student projects, and most of them are free for download. I especially like Toblo, Scavenger Hunt, and Narbacular Drop (by the maker of Portal before she was hired by Valve!)

[RamanahallyPrasad - 11 Jun 2008 - 15:30](#)

Yea FTIR based systems was pioneered by Jeff han. This became famous when he gave a presentation at TED conference. As you can see the main advantage is its low cost. Other true multi touch systems are very expensive [the capacitive one which we got is like close 5k \$]. The bezel has its own limitations. The Diamond touch table uses an electrode based technology. That's expensive and also it's not good at recognising multiple touches from the same user. But it can detect who is touching.

[RamanahallyPrasad - 11 Jun 2008 - 15:12](#)

Hey folks 😊 good to see that you guys have accumulated a lot of research papers. If you want I can give you more papers that I had seen on multitouch. To organise papers you can use a software called Jabref. So do we have any ideas yet. I remember last week we brainstormed about using iTouch (iPod touch) as an input device for rotating stuff, we also have a new hardware [a 15 inch multi touch display with i-phone like responsiveness, I have set up the drivers. Mostly I will be doing tomorrow morning.] . What else did we discuss last week ?? That's why it's better to document :).

[ColeAnagnost - 08 Jun 2008 - 23:18](#)

% INCLUDE {"page" } %

[ThomasNiedzielski - 06 Jun 2008 - 11:47](#)

Check this research paper out: <http://portal.acm.org/citation.cfm?doid=1095034.1095054>

[DesireeVelazquez - 05 Jun 2008 - 23:15](#)

I'm happy with how it looks like right now, but if it gets too big then I'll transfer this "forum" to another location like in my blog.

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