Siggraph Asia 2011

A Personal Summary

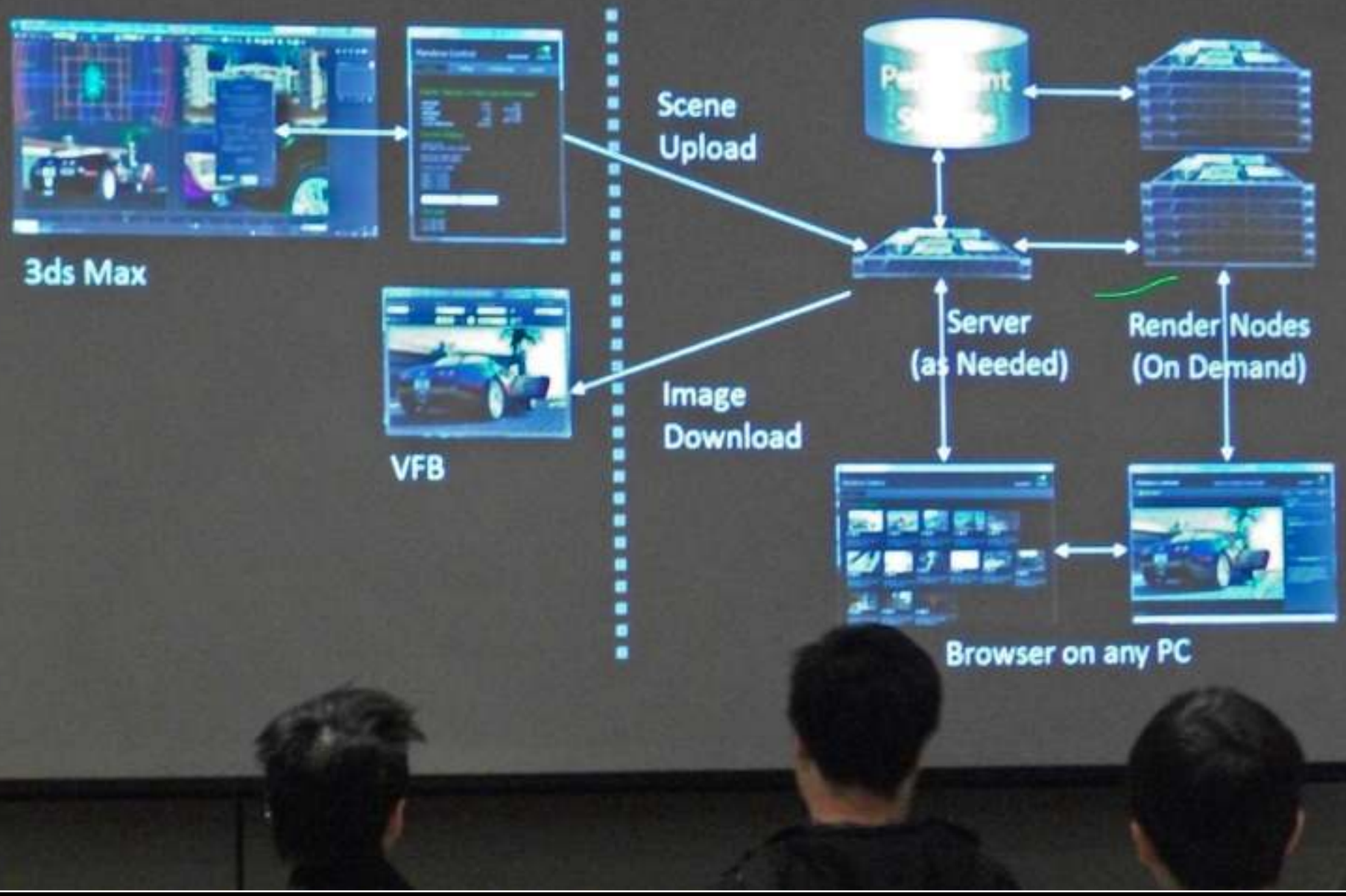
Paul Bourke
iVEC@UWA

Vendor briefing

nVidia cloud rendering

- Project Pandora, to be released in 2012.
- "Project Pandora is the joint-effort between Autodesk and NVIDIA to enable Autodesk 3ds Max users to tap into cloud-hosted Tesla GPUs to render time-consuming scenes and clips."
- Unlike 'batch' network rendering, where each machine renders one frame, Pandora coordinates the entire cluster to accelerate the current frame.
- Based upon iRay renderer. "Point and short" physical based renderer , few tweekable options.
- Render options
  - Local workstation: free once hardware is purchased, control, Moores law works against you as HW is less competitive over time.
  - Virtual renderfarm: pay as you go, needs IT technical support, version matching, success only known at end of job.
  - Remote third party render farm: no cost until use, scales with budget, new upload for each job.
  - Pandora: live view, no plugin-version-script complexities, only works with iRay, needs local 3DStudioMax to be running.
- Needs Amazon account. Pandora software, Flash capable browser.
- No upload costs, no licenses. 16 Pandora nodes cost $75/hour.
- Currently in private beta.

Pandora Components In Action



Cooky: A Cooperative Cooking Robot System

Yuta Sugiura, Anusha Withana, Teruki Shinohara, Masayasu Ogata, Daisuke Sakamoto, Masahiko Inami, Takeo Igarashi

What the!?

We propose a cooperative cooking robot system that operates with humans in an open environment. The system can cook a meal by pouring various ingredients into a boiling pot on an induction heating cooker and adjusting the heating strength according to a recipe that is developed by the user. Our contribution is in the design of the system incorporating robotic and human-specific elements in a shared workspace so as to achieve a cooperative rudimentary cooking capability. First, we provide a graphical user interface to display detailed cooking instructions to the user. Second, we use small mobile robots instead of built-in arms to save space, improve flexibility, and increase safety. Third, we use special cooking tools that are shared with the robot. We hope insights obtained in this study will be useful for the design of other household systems in the future.

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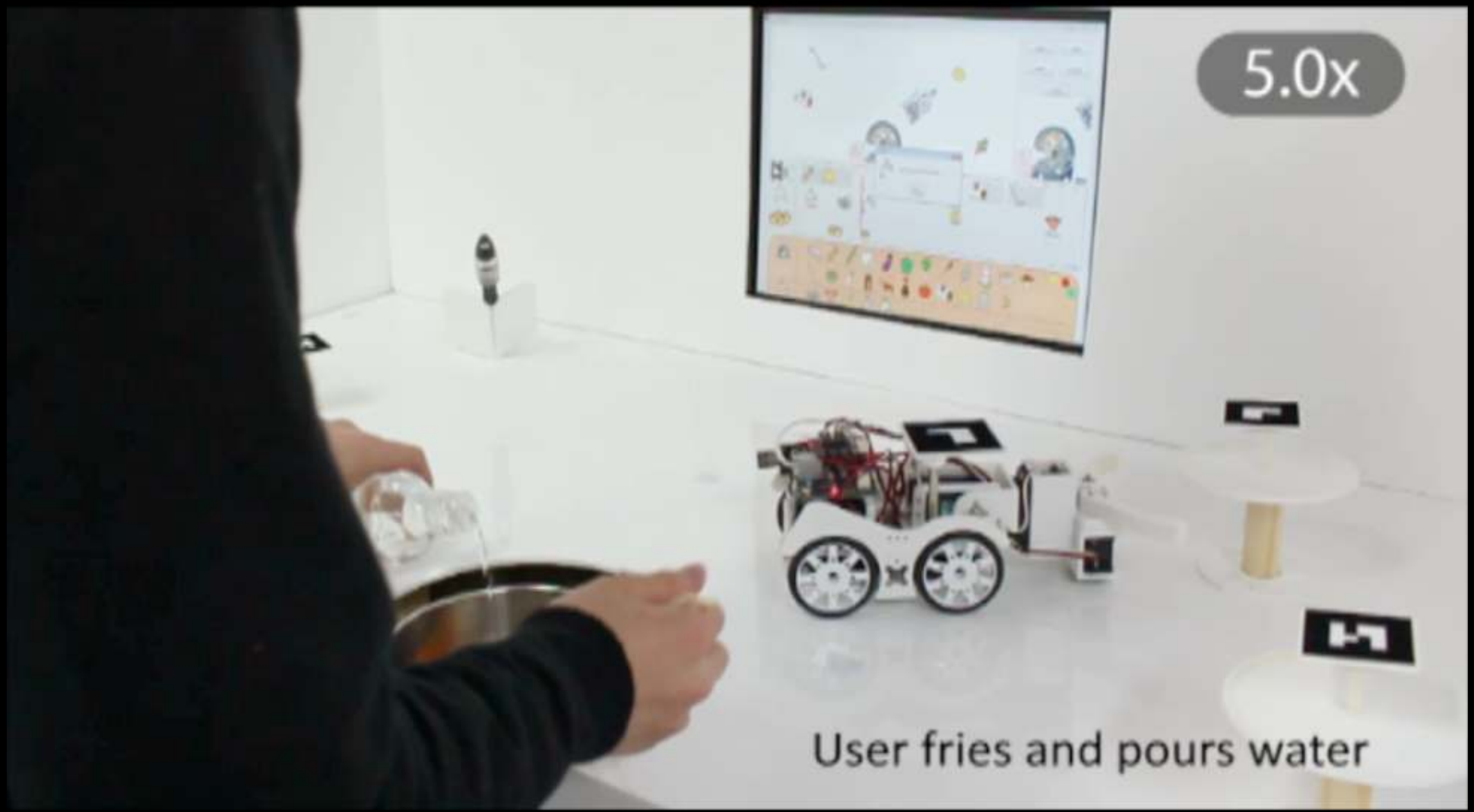
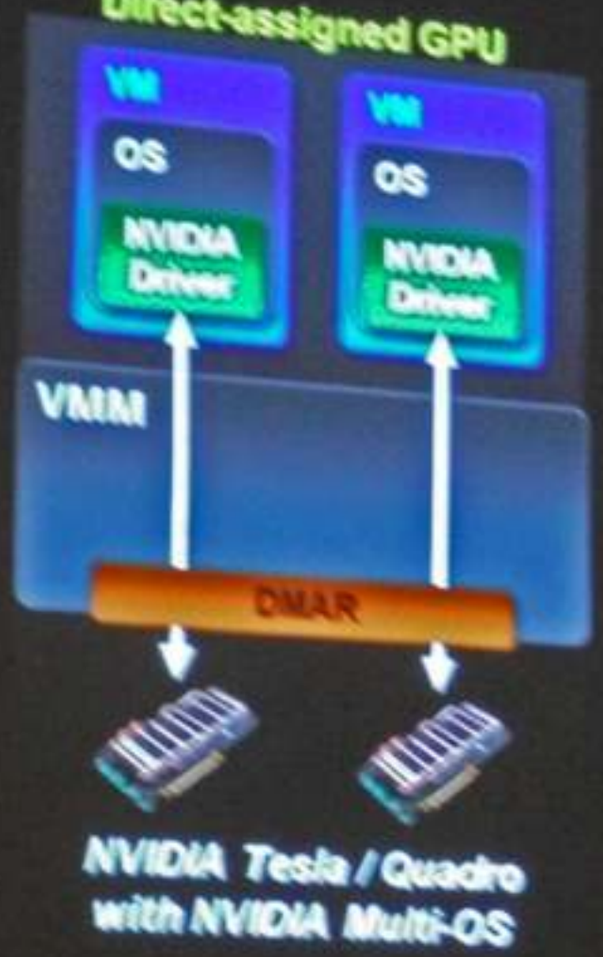

5.0x
User fries and pours water

nVidia virtualisation and “remoting”

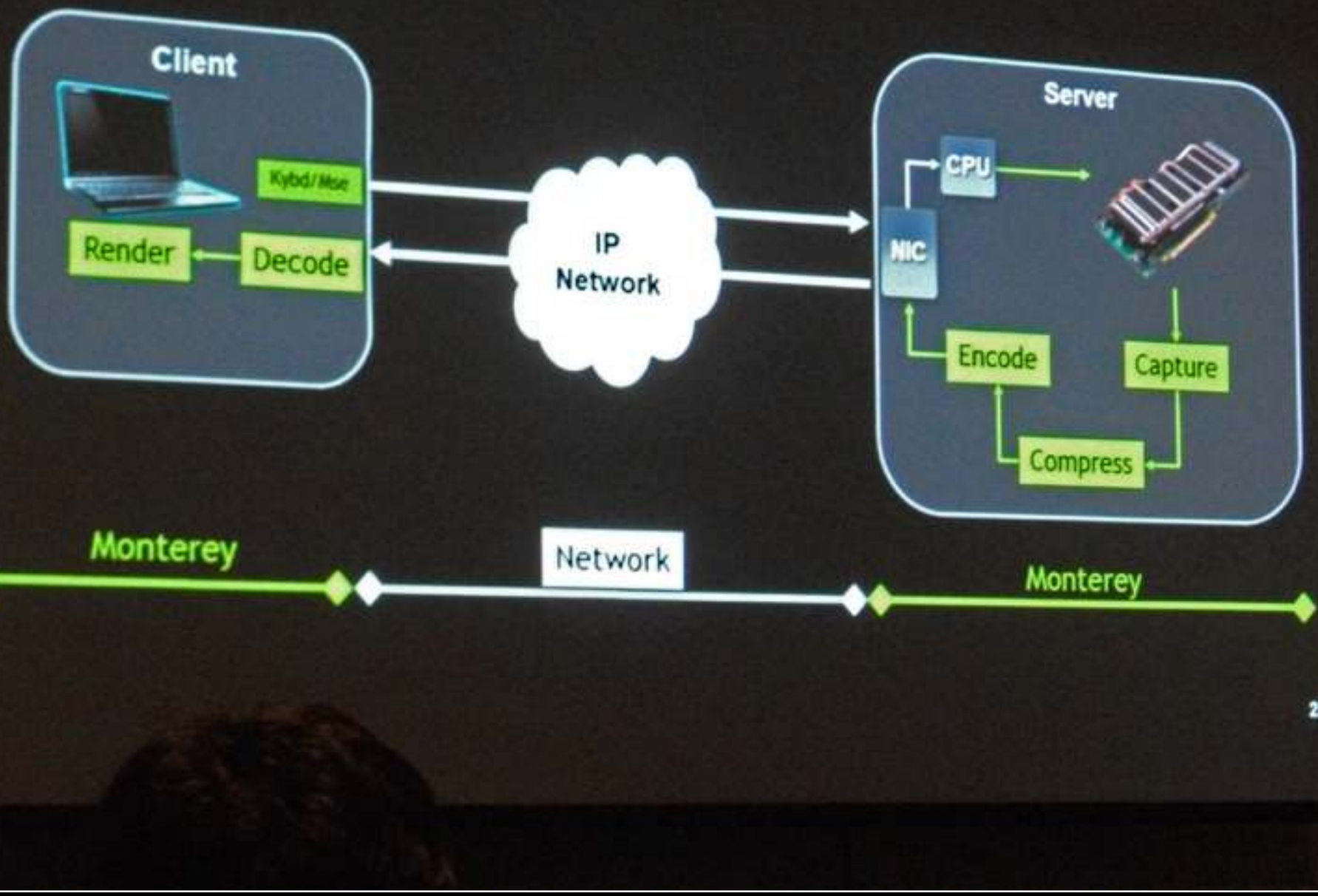
- Project Monterey (Quadro Virtual Graphics Technology): workstation class virtualisation.
- A driver modification allowing you to access remote graphics resources, Quadros.
- Single GPU per user, allows multiple OS (Windows + Linux) per workstation.
- Similar to Microsoft’s RemoteFX technology, but that was DX9 only.
- Supports CUDA, Dx, OGL.
- Does capture-compress-encode on GPU. Stream is H264 compressed, on the GPU.
- Current support for Tesla M2070-Q and Quadro 4000.
- “Remoting” getting pixels to remote machines.
  All about minimising latency, “just like local” response.

Workstation Virtualization



- One OS per GPU – baremetal performance
- All APIs supported - CUDA, DX, OGL, ...
- Shipping now with Quadro GPUs and Tesla M2070Q
  - Parallels Workstation 6 Extreme
  - Citrix XenServer 6
- Additional solutions in 2012
  - VMware ESXi in Q1'12
  - Xen open-source hypervisor "how to" whitepaper

Remoting Architecture



Life Twitter Live

Tai-Wei Kan, National Taiwan University

As the Internet becomes more and more popular and advanced, people want to know and share his/her status with friends at any time and any place. Because of this trend, all kinds of websites that provide social networking services, such as Twitter, become popular rapidly. As more and more social networking users demanding higher immediateness and interaction, using mobile device to send message or to tweet their status is still insufficient. Consequently, we start to integrate everyday commodities (coffee mug) with electronic sensors. These reformed commodities or furniture in the living space can communicate with computer through wireless channel, so that the system could know the current status of the user. With this configuration, the system would tweet what we are doing to Twitter website. For example, when we turn off the light at the living room and get ready to go to bed late at night, the system would send message such as "I am going to bed, good night" automatically because the light is obviously dimmed; or when the user holds his/her mug, the system would send message such as "so thirsty, let's have a cup of mocha".

Life Twitter Live

Tai-Wei Kan, National Taiwan University

As the Internet becomes more and more popular and advanced, people want to keep online and share his/her status with friends at any time and any place. Because of this trend, all kinds of websites that provide social networking services, such as Twitter, become very popular rapidly. However, as more and more social networking users demanding higher immediateness and interaction, using mobile device to send message or to tweet their status is still insufficient. Consequently, we start to integrate everyday commodities (such as coffee mug) with electronic sensors. These reformed commodities or furniture in the living space can communicate with computer through wireless channel, so that the system could know the current status of the user. With this configuration, the system would tweet what we are doing to Twitter website. For example, when we turn off the light at the living room and get ready to go to bed late at night, the system would send message such as "I am going to bed, good night" automatically because the light is obviously dimmed; or when the user holds his/her mug, the system would send message such as "so thirsty, let's have a cup of mocha".

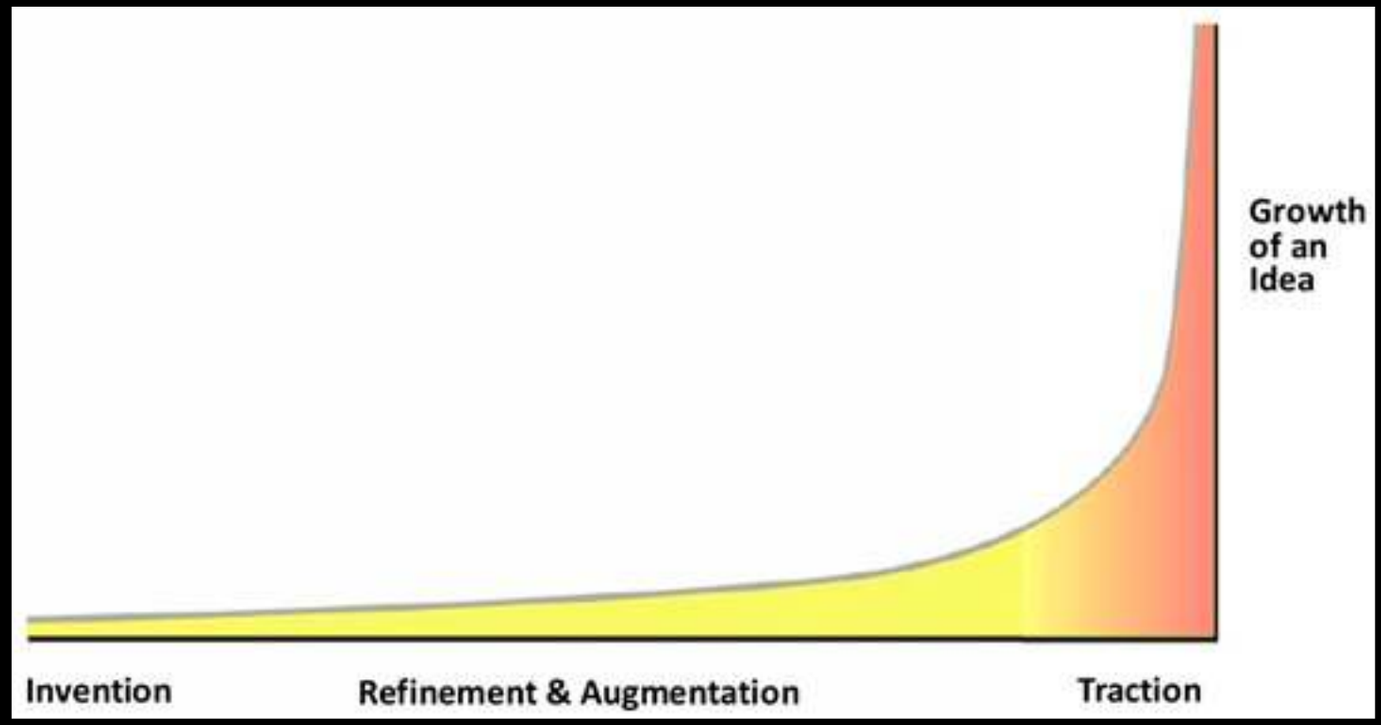
Keynote

Bill Buxton, MicroSoft research

- "More than what the eye sees, interaction and graphics".
- Bemoans the demise of "interaction" from Siggraph, compared number of graphics vs interaction papers.
- In a business sense it is harder to differentiate today in graphics, easier in interaction/input.
- Complained that time is not an equal partner in animation today, the frame is.
  Blames himself through their failing with Maya which started as a realtime animation system.

Long nose of innovation

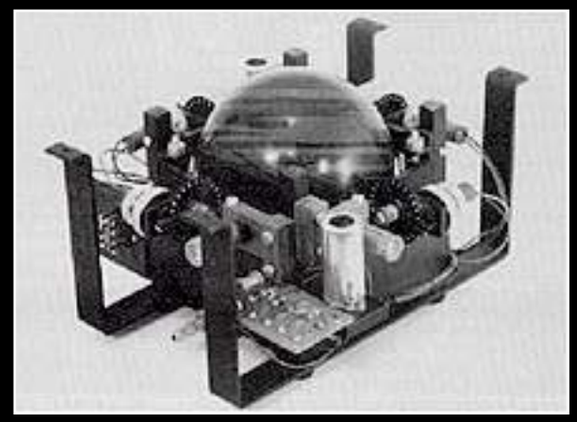
YouTube channel: wasbuxton



- The bulk of innovation is low-amplitude and takes place over a long period. Companies should focus on refining existing technologies as much as on creation.
  Introduced the term "long nose of innovation".

- Based upon research conducted by Butler Lampson which traced the history of a number of key technologies driving the telecommunications and information technology sectors. They found that "any technology that is going to have significant impact over the next 10 years is already at least 10 years old."

- Gave lots of examples
  - Mouse 1952
  - Sketchpad in 1963 (http://www.youtube.com/watch?v=57wj8diYpgY)
  - Multitouch in 1885

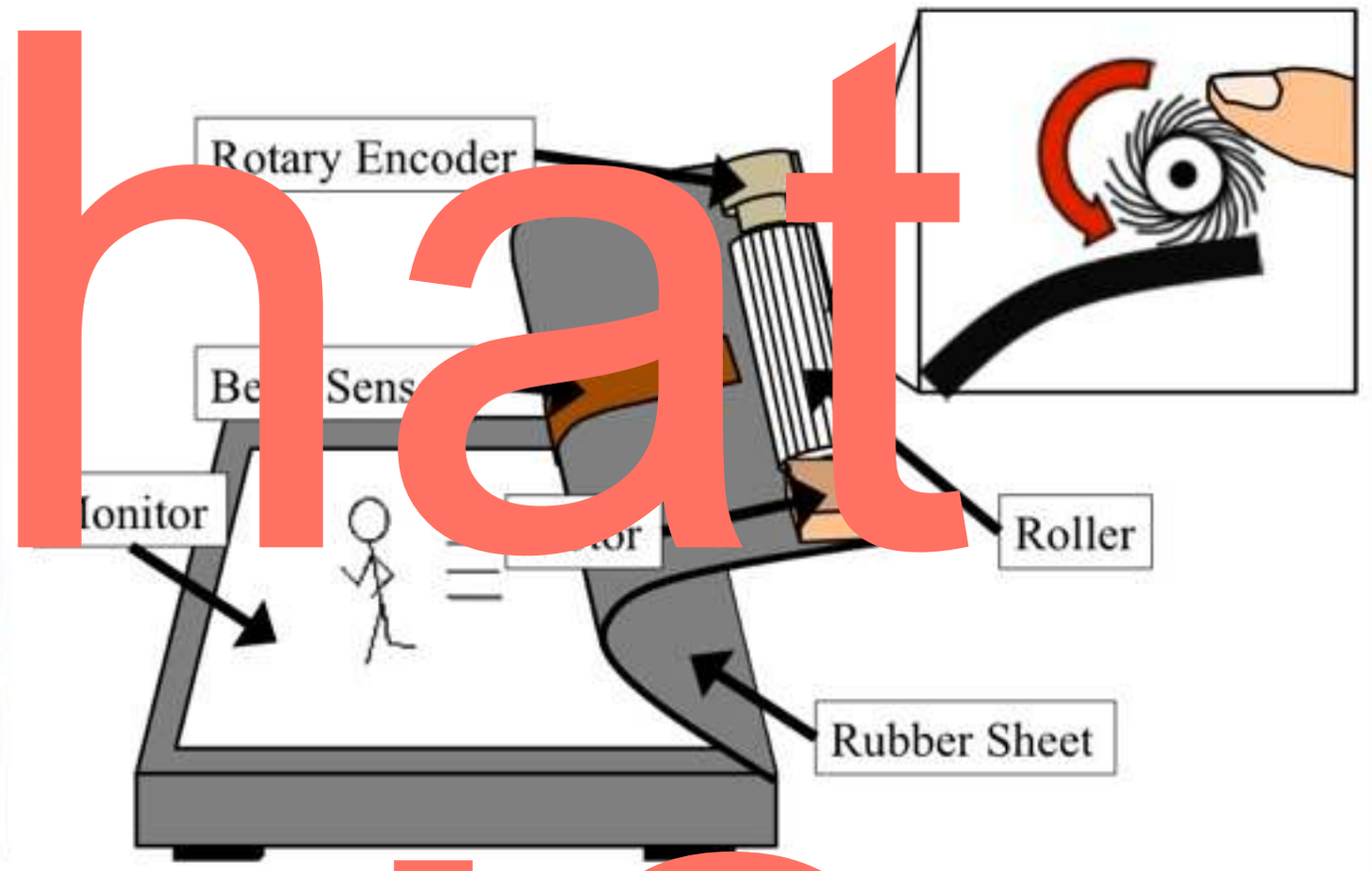


The best part!

- His PPT presentation refused to play movies!
- Spent 10 minutes trying to get movies to play!
- Justice, Karma, call it what you like but if he can't sort it out how does MS expect the average student presenter to work it out ...
- How many times has PPT ruined a presentation?

Paranga: A Book-shaped Device with Tactile Feedback

Hiroyuki Kidokoro, Kazuyuki Fujita, Masanori Ohwaki, Khoa Doba, Christopher Chung, Yuichi Itoh



What the!?

A flipbook is the one of ... features page-turning action that is familiar to us ... our life. It gives us no... only funny visual feedback that a written character l... ts as if ... oves, bu... so tact... nformat... when p... es of paper touch... r's thumb page by page. In recent e-reader devices s... n as iPa... we can al... see p... e-flipping a... ations ... hen users turn ... ges. E-book generally does not provide any tactile feelin... f paper ... reading a ... k.

In fact, feeling the sensat... of the ... l papers d... ng read... an e-bo... was reg... ed as importa... hing in previous studies.
In this study, we develop a novel book-shaped device "Paranga" to give users the tactile sensations of thumbing pages of real book on their thumb, even when they read an e-book on Paranga. When users perform to turn the pages of Paranga, it provides infinitely user's thumb with tactile sensations using roller with pieces of paper. In addition, we implemented two applications using Paranga: one is what improves e-reader's operations, and the other one is what augments flipbook's experiences.

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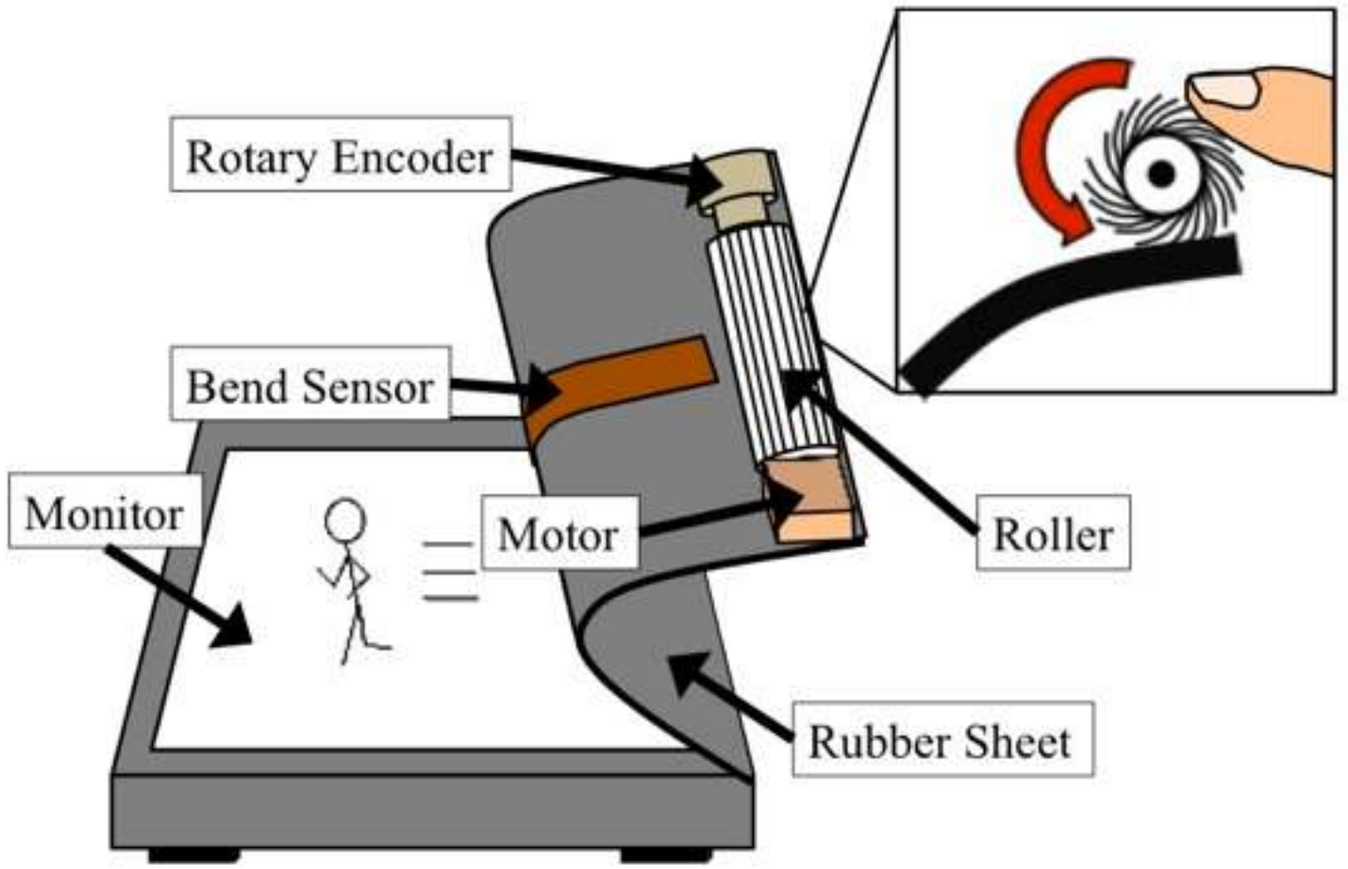


A flipbook is the one of plays featuring page-turning action that is familiar to us in our life. It gives us not only funny visual feedback that a written character looks as if it moves, but also tactile information when pieces of paper touch user's thumb page by page. In recent e-reader devices such as iPad, we can also see page-flipping animations when users turn pages. E-book generally does not provide any tactile feelings of paper in reading a book.

In fact, feeling the sensations of the real papers during reading an e-book was regarded as important thing in previous studies.
In this study, we develop a novel book-shaped device "Paranga" to give users the tactile sensations of thumbing pages of real book on their thumb, even when they read an e-book on Paranga. When users perform to turn the pages of Paranga, it provides infinitely user's thumb with tactile sensations using roller with pieces of paper. In addition, we implemented two applications using Paranga: one is what improves e-reader's operations, and the other one is what augments flipbook's experiences.

Posters

A Cartoon-Character Costume with Facial Expression

Yoshiki Oka† Tomoaki Kida Masanobu Yamamoto
Graduate School of Science & Technology, Niigata University
†e-mail:111f007j@mail.cc.niigata-u.ac.jp

Introduction

At a theme park or entertainment show, an actor wearing a cartoon-character costume entertains guests. Unfortunately, existing cartoon-character costumes have a fixed facial expression. The actor must convey an emotional expression by body actions, which usually forces the actor to have special skill and a great deal of training.

Our Approach

We propose a cartoon-character costume of which face can vary according to the emotion.

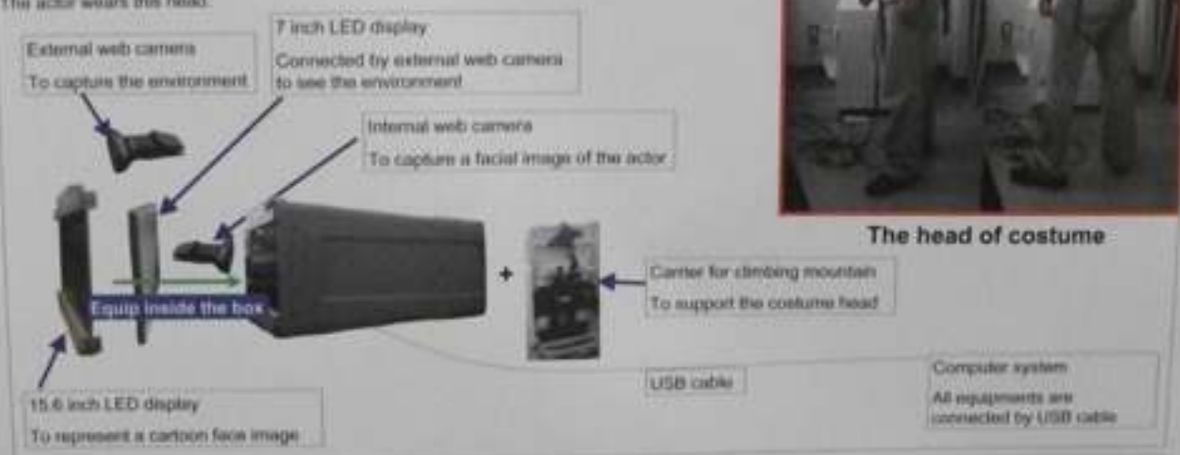
- Building a head of costume
- Developing a system for recognition and representation of facial expression

The head of costume

Building a head of costume

To represent a cartoon face, we build a head of the cartoon-character costume.

The actor wears this head.



Developing a system for recognition and representation of facial expression

Exploring the Effect of Tiling on Large Displays

Over the past several years tiled displays have slowly evolved from expensive blended-projection systems to Liquid Crystal Display (LCD) tiled displays. The LCD systems are typically cheaper to construct and maintain, but the bezels introduced at screen edges are often a common source of complaints. Our long term research goal is to settle the debate between the two technologies to see if there really is any perceivable benefit to one versus the other. The work outlined here presents the first in a series of comparative experiments.

The goal of this work was to show that navigation performance is equal (on average) in systems with or without seams, and, therefore, not impacted by the size or presence of display seams, be they physical or virtual (introduced by the software). We compared performance on a simple goal-directed navigation task in both im- mersive systems and discovered that no significant differences exist across systems, which validates our hypothesis that there is no disruption to the visual experience of the user when navigating a VE populated with physical or software seams. By comparing navigation to a target across seamed VE systems, it appears that seams have no significant impact on the time taken to complete a simple guided navigation and way-finding task. In fact, in some cases par- ticipants actually performed navigation tasks better with the presence of seams. Informal comments indicated that some users actually preferred the presence of seams as they helped to partition the scene and made navigation more manageable.

Papers

C1x6: A Stereoscopic Six-User Display for Co-located Collaboration in Shared Virtual Environments

Alexander Kulik, André Kunert, Stephan Beck, Roman Reichel, Roland Blach, Armin Zink, Bernd Froehlich

- Addresses the fundamental issue with (true) virtual reality displays: each viewer needs their own pair of view frustum. As such, all single pair view frustum stereoscopic displays are inherently single person experiences.
- Imagine a 3 segment wheel (RGB) DLP projector running at 60Hz. This gives three time segments at 120Hz (double rotation per 60Hz) or 6 time segments at 60Hz.
- Remove colour wheels.
- Do this three times, each projector has a R, G, or B filter added in light path.
- Replicate these 3 projectors twice, now have 6 channels (RGB in stereo) at 60Hz.
- .... the rest is synchronisation and locking of time segments to shutter glasses.
- Result is a system capable of producing 6 frustum pairs.

Art gallery and emerging technologies

The Octagon

Geoff Wyvill, Ross Phillips

The Octagon enables a number of users to work together to build a virtual sculpture. It was originally conceived as eight computer screens working as windows into an eight-sided room. But it has grown to accommodate a variable number of users.

It is also an experiment in user-interface design. Interaction is performed entirely by gestures using only click and drag operations. In the virtual room, tools are represented as 3D models and provide the context to turn these basic gestures into a useful set of building and coloring operations.

KUSUGURI: Visual Tactile Integration for Tickling

Masahiro Furukawa, Hiroyuki Kajimoto, Susumu Tachi

Tickling as physical contact plays an important role in close relationships. Whereas a mobile phone and video chat are commonly used for remote communication, remote tickling is seldom used for physical contact.

A tactile display where the tactile sensation is produced by a mechanical approach, however, tends to be larger and less portable. In this paper, we propose a remote tickling method using visual tactile integration that is easily achievable with the existing telecommunication infrastructure.

360-Degree Fog Projection Interactive Display

Asuka Yagi, Masataka Imura, Yoshihiro Kuroda, Osamu Oshiro

The aim of this research is to develop a fog display which enables observers to recognize a 3D shape of virtual objects. A fog display is one of immaterial display systems. Foregoing systems realized to project objects and images floating in mid-air. However, these systems provided only 2D images on a flat screen. We propose a novel fog display system consists of one cylindrical fog screen and multiple projectors, which brings motion parallax of the virtual object to observers. The concept of the proposed display is similar to 360-degrees viewable 3D displays which utilize projection of multiple images, such as Hitachi's Transpost and Sony's RayModeler. The advantage of the proposed fog display is that the proposed display enables direct touching operation to the virtual objects by observers' hands.

Image Courtesy Derek Gerstmann

Sweet home

Mayuko Kanazawa, Yokohama College of Art and Design

Art is not what you see, but is what you interact with. Good paintings make their viewers imaginative. As every artist has been expressing love in many ways, the authors introduce a novel way to express the shape of love in an interactive way using state-of-the-art computing technology. The viewers of the art will not see the picture, but will interact with the picture literally. The concept of the interactive art that the authors propose in this paper is that the viewer of the art feel as if he/she is inside the painting. You first find yourself moving in the acrylic painting as if it reflects you like a mirror. In the picture you interact with a family of Alpaca, who will present you with a gift. If you stare at yourself in the picture carefully you will see your face is slightly morphed to that of your child age. You are to bring a candle with you to lighten the picture. As you move the candle, the lighting in the picture changes. You can even blow out the candle, and every animated character disappear from the picture, though the gift from Alpaca family remains inside you.

Joyman

Julien Pettre ´∗ Orianne Siret Maud Marchal Jean-Baptiste de la Rivire Anatole Le ´cuyer

The Joyman is an interface dedicated to the navigation in virtual worlds. It is based on the metaphor of a ”human-scale joy-stick”. By leaning himself in the corresponding direction, the user controls his virtual locomotion. The Joyman exploits the human sense of balance as a modality for interacting with virtual worlds and provides an entertaining experience with an improved feeling of immersion. Compared to force-platforms (e.g., wii-fit) the Joy-man extends the possible range of motion. Based on a simple mechanical design, the device prevents users from falling: they can lean far beyond their normal limits and improve their sensations. Repealing forces assist the user to pilot the device by bringing user back to the vertical stand position. The Joyman interface meets the requirements of various virtual reality applications such as the exploration of virtual cities. It also extends to the scope of entertaining applications and video-games.

Final random comments

- Exhibition hall: seems like a 3D TV on every second stand.
- A number of 3D scanners, hand held and camera based, seems to be a maturing market.
- Surprising (perhaps) absence of autostereoscopic displays.
- vRay had a big presence: courses, exhibitor talks, and large stand in exhibition hall.
  Sat in on one of the talks, was impressed by quality, speed, and integration
  (3DStudioMax, Maya, Softimage, Rhino).
- Spoke to one of the organising committee, base (full registrants) numbers are increasing.
- Siggraph Asia be held in Singapore in 2012.
- Met the producer of "Sex and Zen in 3D" ...
  stereoscopic 4K cameras based upon
  beamsplitters and the Red Epic camera.

Questions - Comments?

Image Courtesy Derek Gerstmann

Conference DVDs will be online here ... for a short time.

http://local.ivec.uwa.edu.au/~pbourke/transient/SG11/