

UNIVERSITÉ DE GENÈVE

Communication Multimédia SES 4406 CR

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MSc Kate Wac

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About your projects

Some guidelines for presentations

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Your presentations on 8th of June

number	name	person	email	topic
1	fachinetti devleey caccione chambardon	daga julian cedric daniels	dfachinetti@hotmail.fr jdevleey@hotmail.com sympyry@hotmail.com daniels@fortissana.ch	MM in an interactive museum
2	xie xiang pushkina zweimer	jing yan anastasia cedric	xiejing@etu.unige.ch xiangyan@yahoo.com pushkin1@etu.unige.ch cedric@fhnw.ch	MM on move - mobile MM
3	muller saxoyat krut bommer	wanda gwendoline glenn igor	wanda_mulle@gmail.com gwendoline@saxoyat.com glenn@fortissana.ch bommer@etu.unige.ch	brain-computer interface for communication and control
4	kashaf gyger henrid tomacca	marwan ahmed stephane david	thoumoussia@unet.ch ahmed.gyger@unet.ch henrid@etu.unige.ch tomacc1@etu.unige.ch	have fun with MM gaming
5	cabej von segesser chuk mukendi	anda ludwig ludovic noelle	cabej@etu.unige.ch vonsegesser@etu.unige.ch chuk@etu.unige.ch mukendi@etu.unige.ch	MM in medicine
6	ros garcia cocolet chicacini	alexandra theo italien jerome	rospar@etu.unige.ch aebert@etu.unige.ch cocolet@etu.unige.ch chicacini@etu.unige.ch	MM blogging

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Our seminar & Your presentations

- 1st June – last seminar – to evaluate ME
- 8th June 2005 – 12:00 (!) – 16:00 to evaluate YOU
- NO report on the topic, just presentation
- We will **SAMPLE** the presentations order at this day !
- Presentation maximum 25-30 minutes / group
 - Slides structure
 - Introduction – "say what we want to say"
 - Going into the subject – "say it"
 - Future trends
 - Summary – "say what have said"
- In English / or French – whatever you prefer
- More than one person from a group can present

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Your presentations

- The audience
- Students for students
- You have complex topics – but present at your level of understanding !
- If you do not understand something and try to explain it - we will not understand it as well !

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Your presentations

- The time limit
- Maximum 25-30 minutes
- judge your content accordingly
- Assume 1 to 2 minutes per slide depending on complexity
- Minimum 15 slides maximum 25

Your presentations

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- ✚ **Type of presentation**
- ✚ Goal - Informative / educational
- ✚ You have a "fluid" topic
- ✚ You define your topic based on research
- ✚ Goal – you present review of an area

Your presentations

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- ✚ **Getting your Point Across**
- ✚ You audience has a limited attention span 10-20 sec and presentation > 30 minutes is considered becomes boring !
- ✚ How you get the audience with you
 - ✚ Simple clear slides – CONTENT WILL BE EVALUATED
 - ✚ Use graphics / audio / video / colors in text BUT CAREFUL
 - ✚ Change voice level – no monotony !
 - ✚ Talk to your audience, NOT to the presentation
 - ✚ Interact with your audience – e.g. ask/answer questions
 - ✚ Speak clearly, slow, with a peace
 - ✚ Manage your nerves – we all have them ! ✚

Your presentations

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- ✚ **Structure of the presentation**
- ✚ Slides structure
 - ? Introduction – "say what we want to say "
 - ? Going into the subject – "say it"
 - ? Future trends
 - ? Summary – "say what have said"
 - ? REFERENCES (websites / articles / books)
- ✚ Keep slides headers simple and catchy if needed

Your presentations

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- ✚ **Content - Visualize your ideas**
- ✚ Use figures / pictures / eventually video
- ✚ One picture says more than 1000 words ✚
- ✚ Keep them simple and clear
- ✚ Keep them related to the text
- ✚ Watch colors / contrasting colors etc.

Your presentations

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- ✚ **Content - Future work / future trends**
 - ✚ It is possible that future idea will be the main idea of your presentation – IT IS ALSO OK !
 - ✚ It is not OK if YOU DON'T HAVE FUTURE TRENDS at all
- ✚ Summary/Conclusion/Discussion
- ✚ Briefly summarize your presentation
- ✚ This is the last chance you have to convince the audience you have done a significant piece of work SO YOU BETTER USE IT !!!

Your presentations

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- ✚ Nothing contributes more to a good presentation more than

PRACTISE
PRACTISE
PRACTISE



Your presentations

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- I am here to help you !
- I can evaluate the first draft of your material / slides – discuss the content of your presentation
- Or discuss any other thing related to projects
- You can check colors used / layout on our projector
- I care of equipment for your presentation
 - I bring laptop at the presentation day
 - You may use your own laptop
 - If you want to use mine - please do not forget to send me presentation earlier or bring it at CD-ROM or USB
 - Note: I will ask you for electronic version of your presentation + other material used during your presentation

Your presentations...will be graded

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- We will use peer-form evaluation for each presentation – you will grade each other, not only we grade you!

	Criteria			
	1	2	3	4
Organization	Audience cannot understand presentation because there is no sequence of presentation	Audience has difficulty following presentation because student jumps around	Students present information in logical way that audience can understand	Students present information in logical, interesting sequence which audience can follow
Content	Students does not have a group of information; students cannot answer questions about subject	Students is overwhelmed with information and is able to answer enough questions	Students is at ease with content, has done and given a lot of useful information	Students demonstrates full knowledge with explanation
Visuals	Students used no visual	Students visual was hard to follow	Students present a game board, map or map sheet for presentation that was easy to follow	Students used a game board, map or map sheet that was well done and easy to follow
Delivery	Students mumbles, mumbles presentation, speaks and speaks one quickly for students to hear	Students mumbles, mumbles presentation, audience members have difficulty hearing presentation	Students's voice is clear, students pronounce words clearly	Students used a clear voice and correct pronunciation all the time
Body Language and Performance	No movement or gestures, no enthusiasm	Very little movement or gestures, not a great performance	Went through the motions with enthusiasm	Students is very enthusiastic which makes presentation fun

Your presentations


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Questions are welcome !

Feel free to email me

I am here to help you !

... and you are here to have fun !


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Multimedia Technologies (cont.)

Information systems for MM technologies

Information systems for multimedia applications Haptic Interfaces

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<http://haptic.mech.nyu.edu>

- Haptic or "force-back" devices allow users to interact with the computer via sense of touch
- Haptic devices sense some form of finger, hand, head or body movement
- Allow individuals to touch and manipulate virtual objects, with true "feeling" of the physical properties of those objects



Very old idea !
research ongoing
since 1940

Information systems for multimedia applications Haptic Interfaces

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- Haptic or "force-back" devices allow users to interact with the computer via sense of touch
- We do not talk about
 - Simple joysticks
 - Touch screen devices
 - Programmable touchfeedback associated with mouse or keyboard
- We talk about programmable 3D sense of touch, that allow us manipulate objects/touch them/ feel shape and texture

Information systems for multimedia applications Haptic Interfaces (pneumatic)

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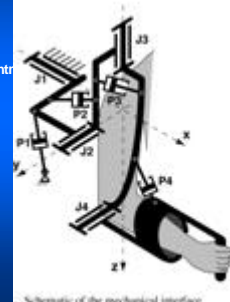
user needs to "feel" the device + device needs to learn users movements

Information systems for multimedia applications Haptic Interfaces

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Examples of haptic Interfaces

➤ **VIDEO Master Arm (X, Y, Z)**
<http://cyborg.seas.smu.edu/~syslab/MasterArm.htm>
is a unilateral aluminium manipulator with four revolute joints. It tracks the shoulder-elbow motions of the right arm of the human operator. The master is strapped to the right arm of the human operator, such it accommodates different operations

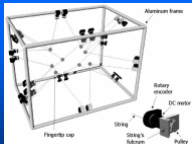


Information systems for multimedia applications Haptic Interfaces

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Two-Handed Multi-Fingers Haptic Interface Device

VIDEO



Information systems for multimedia applications Haptic Interfaces

Examples of haptic Interfaces

➤ **Haptic Master VIDEO**

➤ http://intron.kz.tsukuba.ac.jp/vrlab_web/hapticmaster/hapticmaster_e.html

A six-degree-of-freedom (XYZ + Pitch (up/down) + Yaw (left/right) + Roll (rotation)) manipulator employing a parallel mechanism to apply reaction forces to the fingers of the operator



Information systems for multimedia applications Haptic Interfaces

Examples of haptic Interfaces

➤ **Haptic Master**

➤ http://intron.kz.tsukuba.ac.jp/vrlab_web/hapticmaster/hapticmaster_e.html

➤ Force sensation - can simulate:

- hard surface - cannot push surface, feel resistance
- elastic surface - can push / deform
- Flow - feel force + velocity of flow, resistance when rotate hand

➤ Named "Steward platform" - size of ~ 40 cm

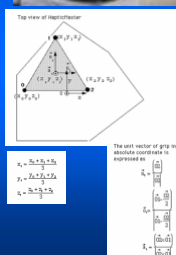
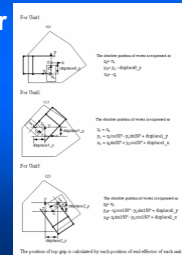


Information systems for multimedia applications Haptic Interfaces

Examples of haptic Interfaces

➤ **Haptic Master**

How to calculate position and orientation of top grip



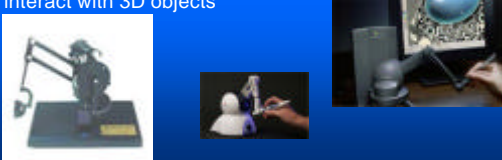
Information systems for multimedia applications


Haptic Interfaces

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VIDEO Examples of haptic Interfaces

- **Phantom** (<http://www.sensable.com/>) is like a miniature desk lamp. It has a stylus grip or a finger print thimble which users can reach into virtual worlds to touch and interact with 3D objects




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Multimedia Technologies (cont.)

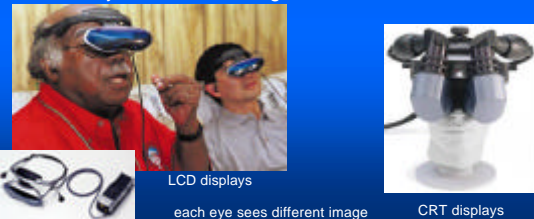
Displays / Screens / Projectors

Information systems for multimedia applications

Head-mounted displays

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- Instead of watching the screen, the user wears a glasses - miniature screens.
- This way 3 dimension image is observed

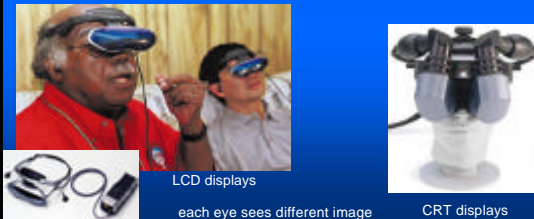


Information systems for multimedia applications

Head-mounted displays

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BUT HOW 3D VISION WORKS ?



Information systems for multimedia applications

3D vision

- <http://www.vision3d.com/stereo.html>
- <http://www.neotek.com/3dtheory.htm>
- <http://www.3d-web.com/>

artificial creation of 3D vision—
projecting different
images to each eye

- **Example - How to make images 3D**

- Project separately to each eye (head mounted devices).
- Polarized glasses and double projection of polarized images



Information systems for multimedia applications

3D vision

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- **Show for each eye**

- Each eye will see image projected by different screen LCD or CRT
- Combines with head tracking allow for vision of 360 degrees



Information systems for multimedia applications

Head-mounted displays for 3D

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✦ Sony Glasstron – 3D vision



- ✦ Display: Two 0.55-inch Liquid Crystal Displays
 - ? To have a 3D impression
 - ? ✦ not for children/long use ✦ may "spoil" eyes!
 - ✦ After 3h it shuts down automatically
- ✦ Resolution: 180,000 pixels (800 H x 225 V)
 - ? ✦ some color contrast problem (eg. black is not really black)
- ✦ Virtual Image Size: like 52" diagonal screen when seen from a distance of ~2m (6.5 feet)
- ✦ Earphones: In-the-ear; ✦ built in, cannot use your own!
 - ? Standard Video Input –can project your own videos from PC!

Information systems for multimedia applications

Head-mounted displays

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✦ Example augmented reality - "video see-through" display

- ✦ Take the wearer's surrounding environment (small video cameras attached to the outside of the glasses to capture images)
- ✦ video image is played in real-time and the graphics are superimposed on the video
- ✦ Need also head tracking system + may be body tracking systems
- ✦ ✦ long delays in image-adjustment when the viewer moves his/her head

Information systems for multimedia applications

Head-mounted displays

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VIDEO

Information systems for multimedia applications

Head-mounted displays

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✦ Future - optical see-through display



- ✦ device uses light to paint images onto the retina by rapidly moving the light source across and down the retina
- ✦ ✦ costs about \$10,000
- ✦ ✦ retinal-scanning display is small
- ✦ Future vision - ordinary-looking pair of glasses that will have a light source on the side to project images on to the retina

Information systems for multimedia applications

Head-mounted displays

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✦ Characteristics of Head Mounted Displays

- ✦ Resolution de 350 x 240 up to 1280 x 1024
- ✦ Cost 500 CHF to more than 150.000 CHF!!!
- ✦ Optical field 20 deg horizontal / 17 vertical to 120 deg horizontal / 90 deg vertical
- ✦ Technology : the vast majority is LCD based. The top market uses fibre optic technology + measure movements of head
- ✦ They require a powerful computer to calculate at real time the images for 2 eyes (power depends on the resolution and the complexity)

Information systems for multimedia applications

Projectors / Screens

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✦ <http://www.presentingsolutions.com/>

- ✦ Equipment for displaying analogue and digital images - device accepts output from a computer and projects it onto a hanging screen or wall
- ✦ It accepts VGA output at resolutions typically 800x600 or 1024x768
- ✦ may also project standard video from a VCR, DVD or cable box.
- ✦ used for classroom / conference presentation / home theater ("front-projection TVs")



Information systems for multimedia applications Projectors / Screens

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Current technologies

- CRT Cathode Ray Tube
- LCD Liquid Crystal Display (based on light absorption)
- TFT Thin Film Transistor (transistors for each pixel!)
- DLP Digital Light Processing (reflection)
 - ? DMD Digital Micromirror Device (chips with mirrors)
- Light-Valve Image Light Amplifier (reflection)
- Laser one beam for each pixel !

Information systems for multimedia applications Data Projectors

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Important characteristics

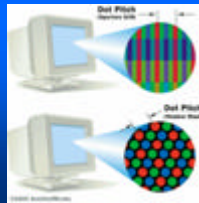
- **Luminance**
 - Measured in Lumen (ex. Our projector is 600 Lumen)
- **Quality of colours representation**
 - colour alignment (3 beams)
 - Contrast between black and white
- **Resolution**
 - ? Resolution in pixels (de 640x480 (VGA) to 2400x2000 ...)
 - ? Frequency (25 to 100 Hz)
- **Physical characteristics**
- **Portability** implies small size / light weight
- **Combination of colours**
 - ? One lens
 - ? Three lenses (one for each colour)
- Good image: brightness, resolution, colour, contrast

Information systems for multimedia applications Computer Screens

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Important characteristics

- **Display technology** - CRT & LCD technologies
- **Cable technology** - VGA and DVI
- **Viewable area** (usually measured diagonally) 15"-21"
- **Aspect ratio** (4:3, 16:9)
- **orientation** (landscape/portrait)
- **Maximum resolution**
- **Dot pitch** - space between pixels
- **Refresh rate** (72 Hz)
- **Color depth** (#bits/pixel, eg 24b)
- **Power consumption** (CRT 110 / LCD 40 Watt)
- Good image: brightness, resolution, colour, contrast



Information systems for multimedia applications Projectors / Screens technologies

- Cathode Ray Tube - *CRT Projectors*
 - Developed more than 15 years ago, still used
 - Vacuum-tube based
 - Technique based on light CREATION
- Disadvantages
 - low luminance(250-300 ANSI Lumen)
 - Frequent calibrations are necessary for alignment of 3 colours
- Advantages
 - high resolution (more than 2500x2000)
 - Can display in many resolutions
 - More expensive models can self-calibrate and minimize deformations



LCD & CRT

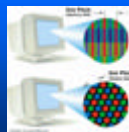
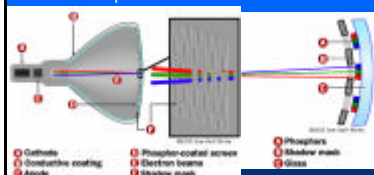


Information systems for multimedia applications Projectors / Screens technologies

Cathode Ray Tube - CRT Technology

- **phosphor** - material - when exposed to radiation, emits visible light . Layers of phosphor inside the tube

1225 pixels / cm²



Information systems for multimedia applications Projection via video Cubes

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- Set of video screen as one big screen
 - Techniques: Video split // line doubler // interpolation

Disadvantages

- Images are split by a black "lines"
- difficult (impossible) see the same balance of colours amongst the screens
- big and heavy
- expensive

Advantages

- good luminance and resolution
- easily expandable



Information systems for multimedia applications Projectors / Screens technologies

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- LCD - Liquid Crystal Display
- The most used today technology
- Based on polarisation of the light
 - Technique based on light BLOCKING
- Disadvantages
 - Cannot display sharp colour black
 - Fixed resolution, difficult to change
 - Spherical deformations in corners are not possible to correct
 - Pixelisation (visible pixels)



Information systems for multimedia applications Projectors / Screens technologies

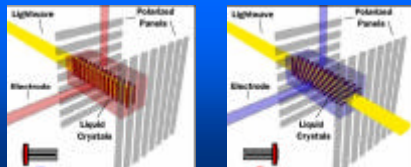
201

- Liquid Crystal Display LCD - Advantages
 - Low cost (from 500 CHF for resolution VGA)
 - Rapidly growing technology - resolutions are higher and higher
 - Light weight
 - high luminance for reasonable price
 - ? 1000 CHF for 1000 ANSI Lumen
 - ? 2500 CHF for 2000 ANSI Lumen

Information systems for multimedia applications Projectors / Screens technologies

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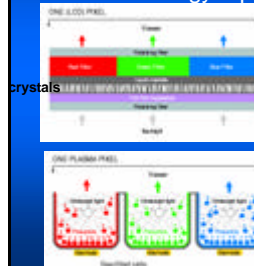
- Liquid Crystal Display - LCD technology
- Unenergized (left) - crystals direct light through two polarizing filters, allowing a natural background color to show
- Energized (right) - they redirect the light to be absorbed in one of the polarizers



Information systems for multimedia applications LCD - Liquid Crystal Display & plasma displays

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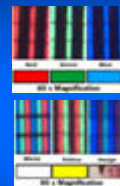
- LCD technology & plasma screen



different means to create colors

LCD uses liquid crystals and color filters

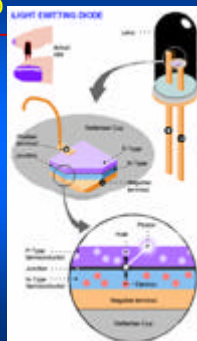
plasma uses gas and phosphors



Information systems for multimedia applications LCD - Liquid Crystal Display & LED

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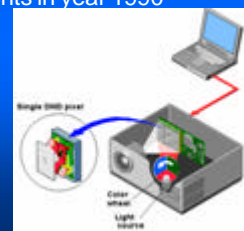
- LCD technology & LED - light emitting diode
- Both used - eg. in this printer control panel
- Alphanumeric readouts can be LCD
- on/off indicators are LEDs



Information systems for multimedia applications Projectors / Screens technologies



- DLP - Digital Light Processing
 - <http://www.dlp.com>
 - Invention of Texas Instruments in year 1990
 - Disadvantages
 - Fixed resolution
 - Spherical deformation in corners
 - Advantages
 - Good luminance
 - Good contrast black/white
 - Low pixelisation



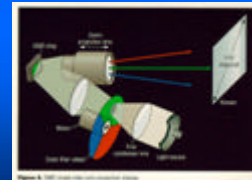
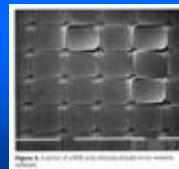
Information systems for multimedia applications DMD – Digital Micro-mirror Device

- Based on micro-mirrors devices (more than million) VIDEO \leftarrow IE
- Signal is converted into digital and send to microchip
- The state of each bit (0 or 1) rotates its mirror ± 10 degrees.
- Color is achieved with color filters
- When only one DLP chip is used three-color wheel is spun and synchronized appropriately
- some devices use three separate sets of mirrors (three DMD chips) for each RGB color separately



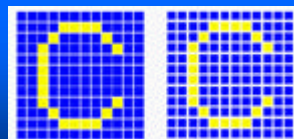
Information systems for multimedia applications DMD – Digital Micro-mirror Device

- How the mirrors are assembled together
- How DMD works



Information systems for multimedia applications DMD – Digital Micro-mirror Device

- DMD & Liquid Crystal Display LCD
- gap between the mirrors in a DMD pixel is smaller than the gap in an LCD display, resulting in a sharper display



DMD pixel

LCD display

Information systems for multimedia applications Summary on technologies - CRT & LCD & DLP



Cathode Ray Tube
CRT



Liquid Crystal Display
LCD



Digital Light Processing
DLP