

Realidade (Virtual) Aumentada

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COMPSI-UNIVEM

Perfil

- Bacharel em Ciência da Computação no UNIVEM
- Mestre em Ciência da Computação na UFSCar (Realidade Virtual e Aumentada)
- Doutorando em Ciência da Computação na UFSCar (Interfaces Avançadas)

- Professor do Centro Universitário Eurípides de Marília (UNIVEM)
- Pesquisador na Área de Interfaces Avançadas
- Membro dos laboratórios COMPSI (UNIVEM) e WINDIS (UFSCar)



Agenda

- Definindo as tecnologias
 - Histórico de RV e RA
 - Sistemas de RA e Aplicações
 - Projetos do COMPSI-UNIVEM
 - Futuro

Interface?



Interfaces pré-WIMP

Displays a list of files and subdirectories in a directory.

```
DIR [drive:][path][filename] [/P] [/W] [/A[[:!attribs]]] [/O[[:!sort]]]
  [/S] [/B] [/L] [/C[H]]
```

```
[drive:][path][filename] Specifies drive, directory, and/or file name.
/P      Pauses after each screenful of information.
/W      Uses wide list format.
/A      Displays files with specified attributes.
attribs  D Directories      R Read-only files      H Hidden files
         S System files    A Files ready to archive - Prefix meaning "not"
/O      List by files in sorted order.
sortord  N By name (alphabetic)      S By size (smallest first)
         E By extension (alphabetic) D By date & time (earliest first)
         G Group directories first  - Prefix to reverse order
         C By compression ratio (smallest first)
/S      Displays files in specified directory and all subdirectories.
/B      Uses bare format (no heading information or summary).
/L      Uses lowercase.
/CH     Displays file compression ratio; /CH uses host allocation unit size.
```



```
mars@marsmain ~ $ pwd
/home/mars
mars@marsmain ~ $ cd /usr/portage/app-shells/bash
mars@marsmain /usr/portage/app-shells/bash $ ls -al
total 130
drwxr-xr-x  3 portage portage 1024 Jul 25 10:06 .
drwxr-xr-x 33 portage portage 1024 Aug  7 22:39 ..
-rw-r--r--  1 root  root   35808 Jul 25 10:06 ChangeLog
-rw-r--r--  1 root  root   27002 Jul 25 10:06 Manifest
-rw-r--r--  1 portage portage  4645 Mar 23 21:37 bash-3.1_p17.ebuild
-rw-r--r--  1 portage portage  5977 Mar 23 21:37 bash-3.2_p39.ebuild
-rw-r--r--  1 portage portage  6151 Apr  5 14:37 bash-3.2_p48-r1.ebuild
-rw-r--r--  1 portage portage  5988 Mar 23 21:37 bash-3.2_p48.ebuild
-rw-r--r--  1 portage portage  5643 Apr  5 14:37 bash-4.0_p10-r1.ebuild
-rw-r--r--  1 portage portage  6230 Apr  5 14:37 bash-4.0_p10.ebuild
-rw-r--r--  1 portage portage  5648 Apr 14 05:52 bash-4.0_p17-r1.ebuild
-rw-r--r--  1 portage portage  5532 Apr  8 10:21 bash-4.0_p17.ebuild
-rw-r--r--  1 portage portage  5660 May 30 03:35 bash-4.0_p24.ebuild
-rw-r--r--  1 root  root   5660 Jul 25 09:43 bash-4.0_p28.ebuild
drwxr-xr-x  2 portage portage 2048 May 30 03:35 files
-rw-r--r--  1 portage portage  468 Feb  9 04:35 metadata.xml
mars@marsmain /usr/portage/app-shells/bash $ cat metadata.xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE pkgmetadata SYSTEM "http://www.gentoo.org/dtd/metadata.dtd">
<pkgmetadata>
<herd>base-system</herd>
<use>
  <flag name='bashlogger'>Log ALL commands typed into bash; should ONLY be
    used in restricted environments such as honeypots</flag>
  <flag name='net'>Enable /dev/tcp/host/port redirection</flag>
  <flag name='plugins'>Add support for loading builtins at runtime via
    'enable' </flag>
</use>
</pkgmetadata>
```



preset in the DIRCMD environment variable. Override by prefixing any switch with - (hyphen)--for example, /-W.



WWW.OSVICARISTAS.COM.BR

WIMP



Virtual PC "DOS" Enhanced

Program

File Options Window Help

Main

File Manager Control Panel Print Manager

Windows Setup PIF Editor Read Me

Settings Help

Color Fonts

International Date/Time

Optimizes Windows.

Device Contention

Com1 Com2 LPT1

Always Warn Never Warn Idle (in sec.) 2

OK Cancel Virtual Memory Help

Paul

- Internet Explorer
- Hotmail
- Files and Settings Transfer Wizard
- MSN Explorer
- Windows Media Player
- Windows Movie Maker
- Tour Windows XP
- My Documents
- My Pictures
- My Music
- My Computer
- My Network Places
- Control Panel
- Help and Support
- Search
- Run...

All Programs

Log Off Turn Off Computer

About Windows

Microsoft Windows xp Home Edition

Microsoft © Windows
Version 5.1 (Build 2600.xpclient.010817-1148)
Copyright © 1985-2001 Microsoft Corporation

This product is licensed under the terms of the [End-User License Agreement](#) to:
Paul Thurrott
Windows & .NET Magazine

Physical memory available to Windows: 261,616 KB

IBM System Storage DS4000/FASiT Storage Manager 10 (Subsystem Management)

Storage Subsystem View Mappings Array Logical Drive Controller Drive Advanced Help

Logical/Physical View Mappings View

Logical

- Storage Subsystem (RAID 5) (3.813 TB)
- Array1 (RAID 5) (80.0 GB)
- Storage Subsystem (80.0 GB)
- Storage Subsystem (80.0 GB)
- Storage Subsystem (80.0 GB)
- Storage Subsystem (80.0 GB)

Physical

Enclosure 85 (back)

Enclosure 0 (front)

IBM System Storage DS Storage Manager 10 (Enterprise Management)

About IBM System Storage DS Storage Manager 10

IBM System Storage DS Storage Manager (Enterprise Management)

Version 10.60.G5.11

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IBM Support URL=
<http://www.ibm.com/servers/storage/support/disk/>

Interfaces Pós-WIMP

Realidade Virtual

- Linha do tempo
 - Sutherland (1967)
 - Bolt (1977)
 - Lanier (1980)
 - Kirner (1995)
 - Lanier (1999)
 - Kirner (2000)



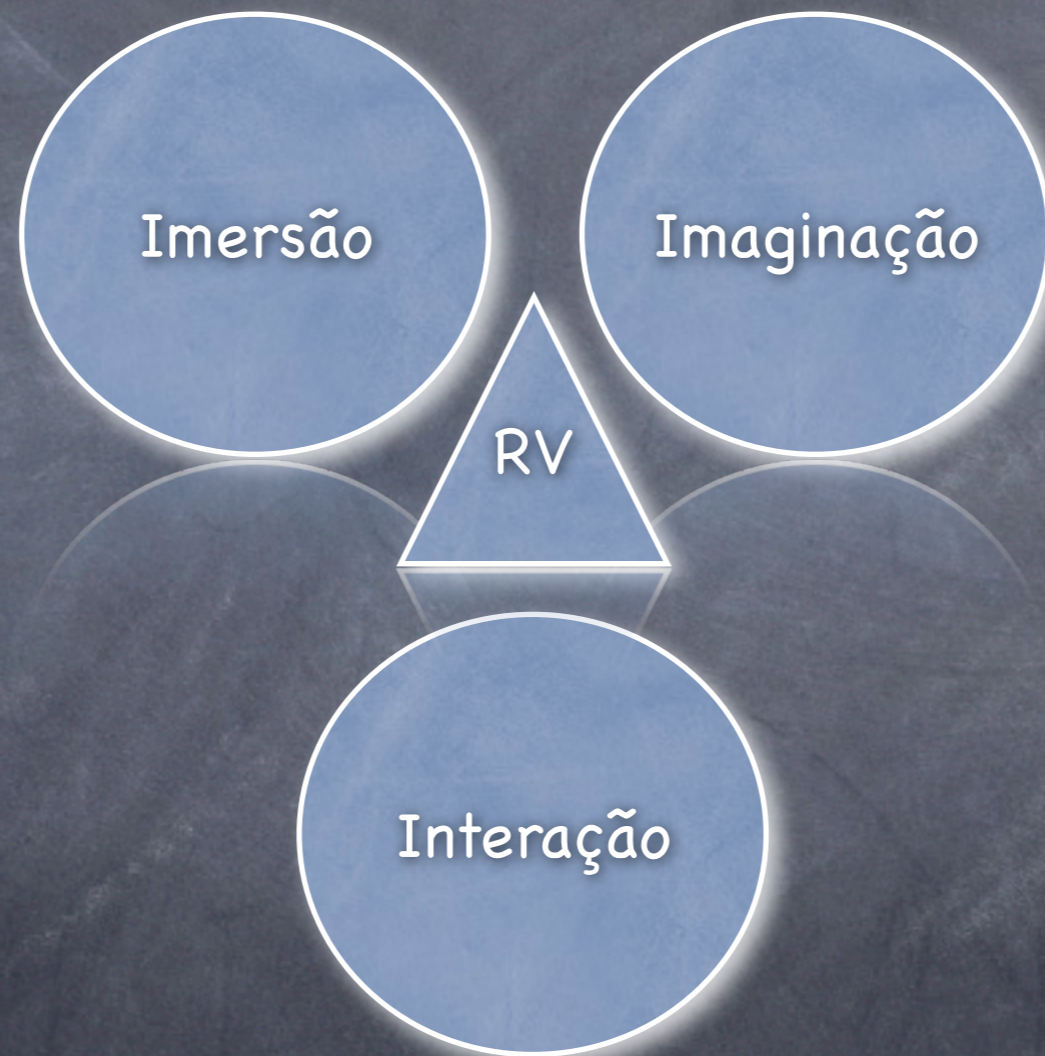
Realidade Virtual

- Realidade Virtual é uma **interface** avançada para aplicações computacionais, onde o usuário pode **navegar** e **interagir**, em tempo real, em um ambiente **tridimensional** gerado por computador, usando **dispositivos**.

Realidade Virtual



Realidade Virtual: pilares



Realidade Virtual no cotidiano



Realidade Virtual



Realidade Virtual



Realidade Misturada

- Ambiente real + Ambiente virtual.
- Duas maneiras: **Virtualidade Aumentada e Realidade Aumentada.**



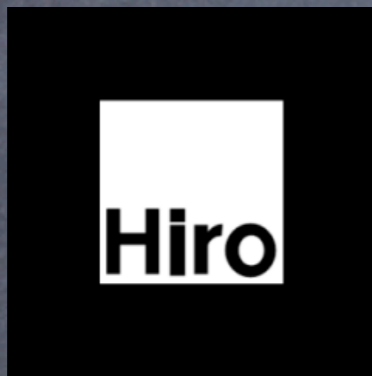
Virtualidade Aumentada



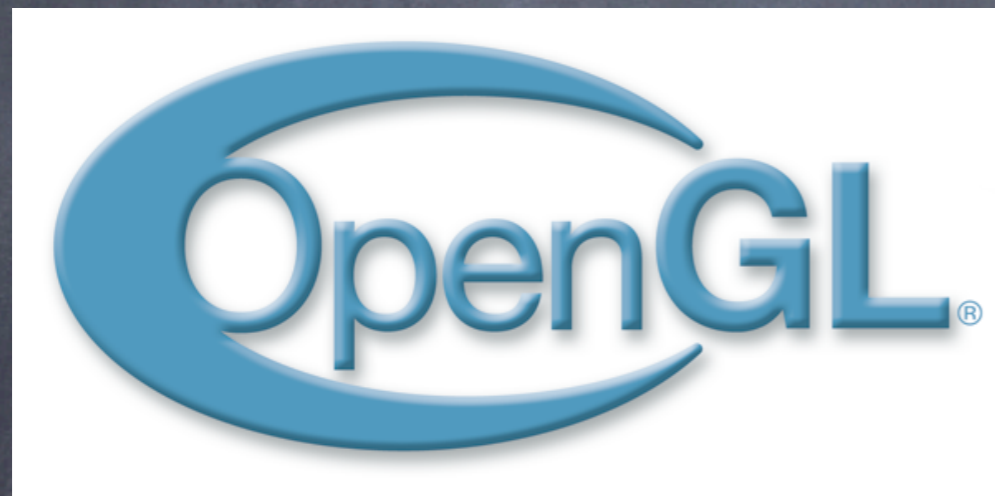
Realidade Aumentada

- **Realidade Aumentada é a inserção de objetos virtuais no ambiente físico real, mostrada ao usuário, em tempo real, com o apoio de algum dispositivo tecnológico, adaptado para visualizar e manipular os objetos reais e virtuais.**

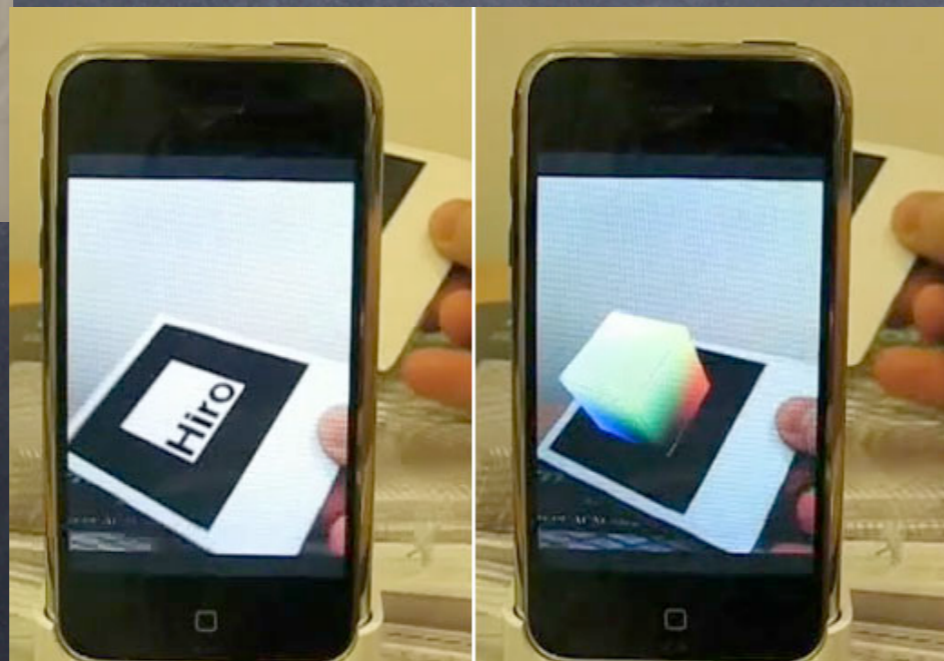
Como funciona a RA?



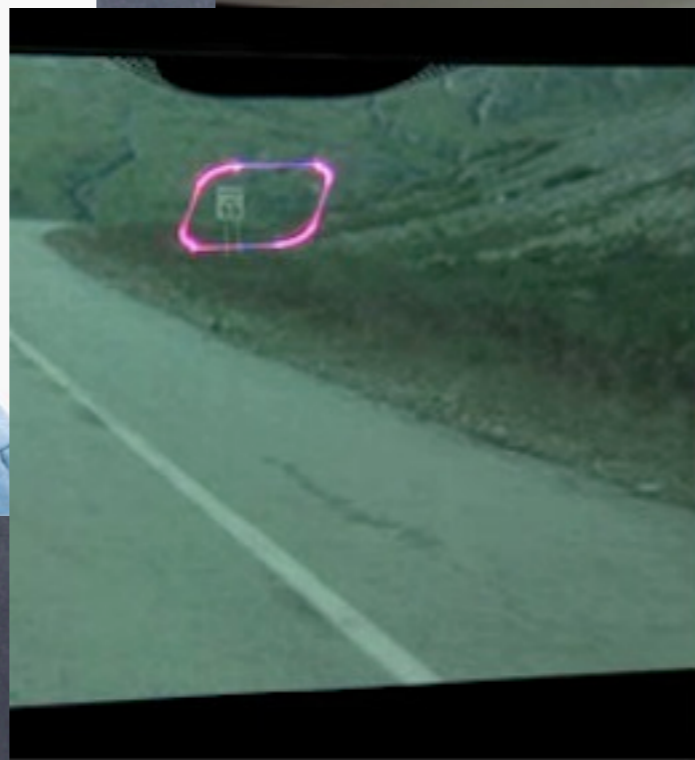
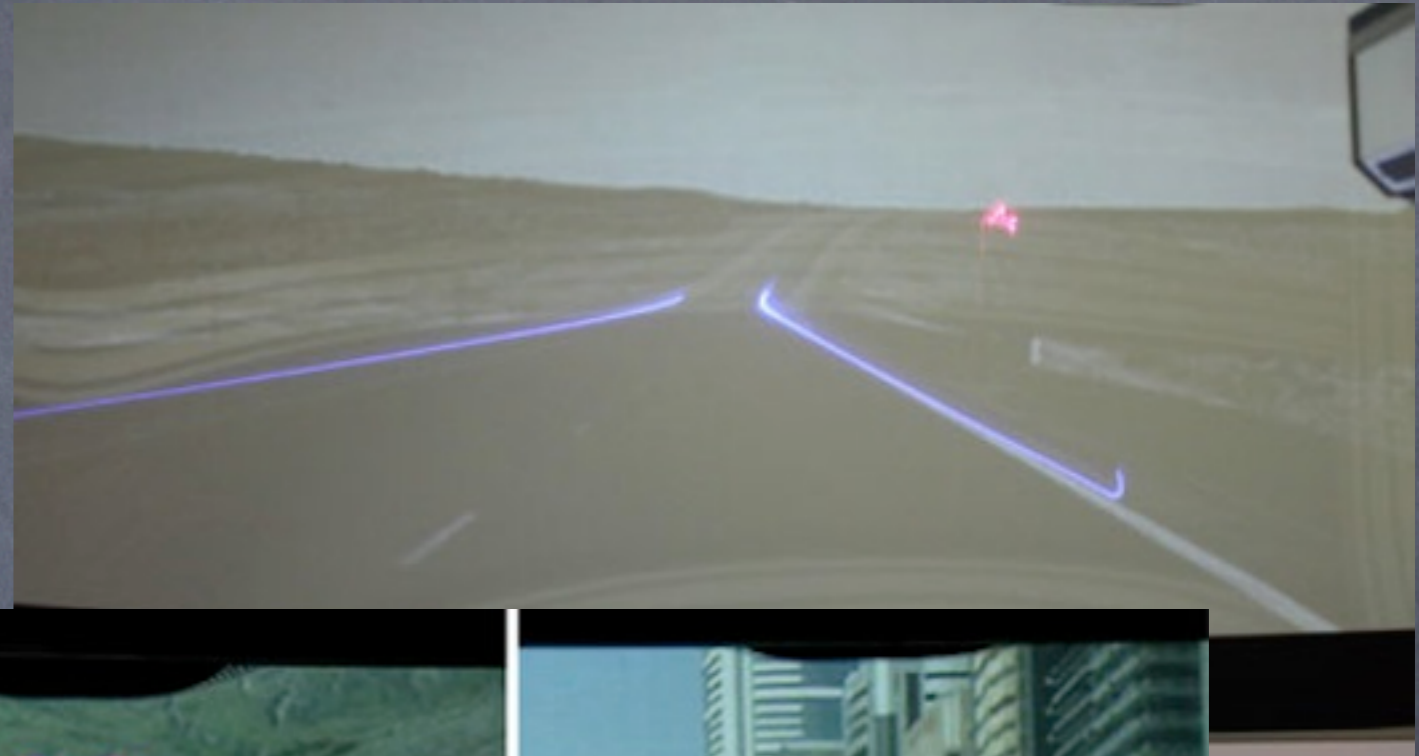
Tecnologias de apoio: APIs Gráficas



Realidade Aumentada por Video



Realidade Aumentada por Visão Direta



Realidade Aumentada por Projeção



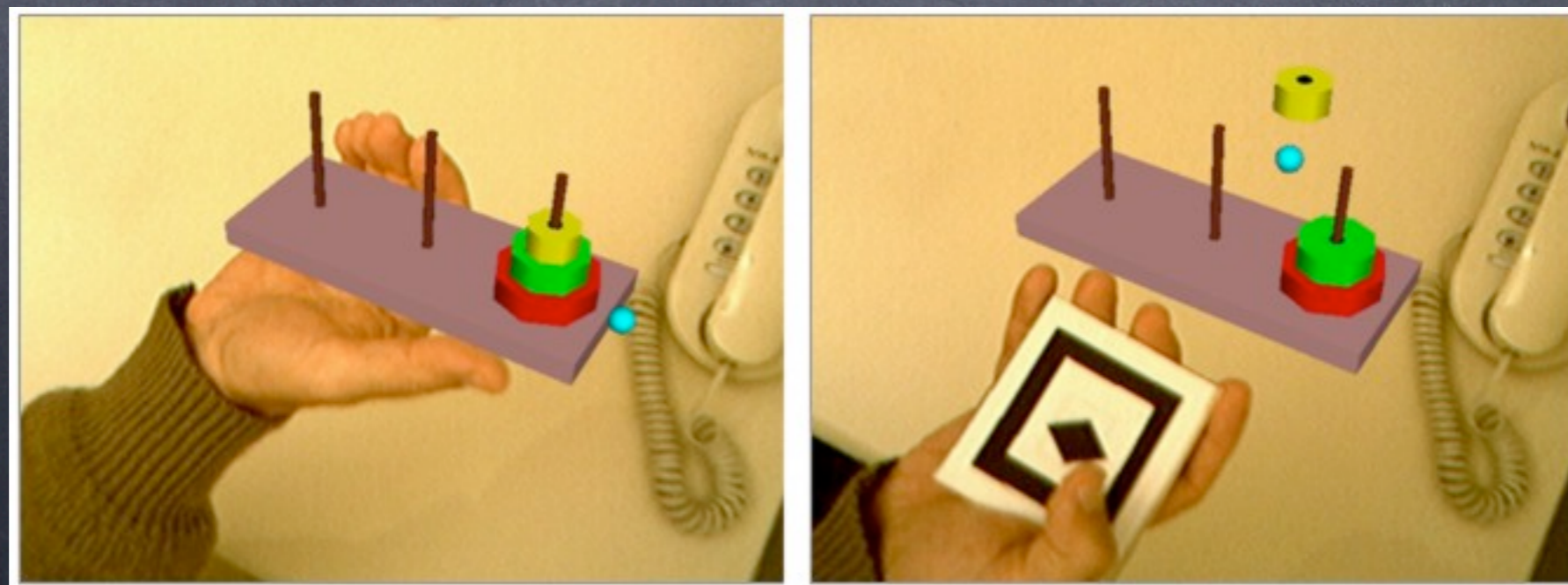
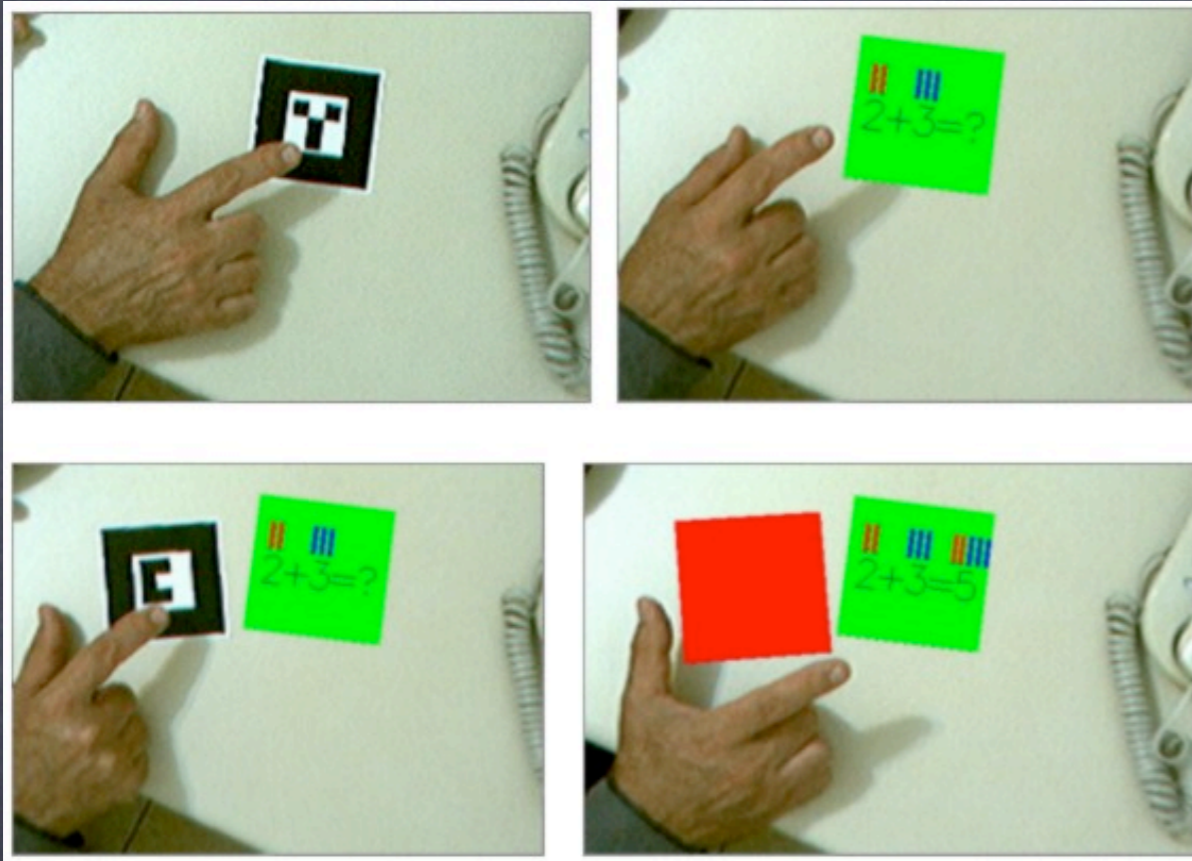
Aplicações em Medicina



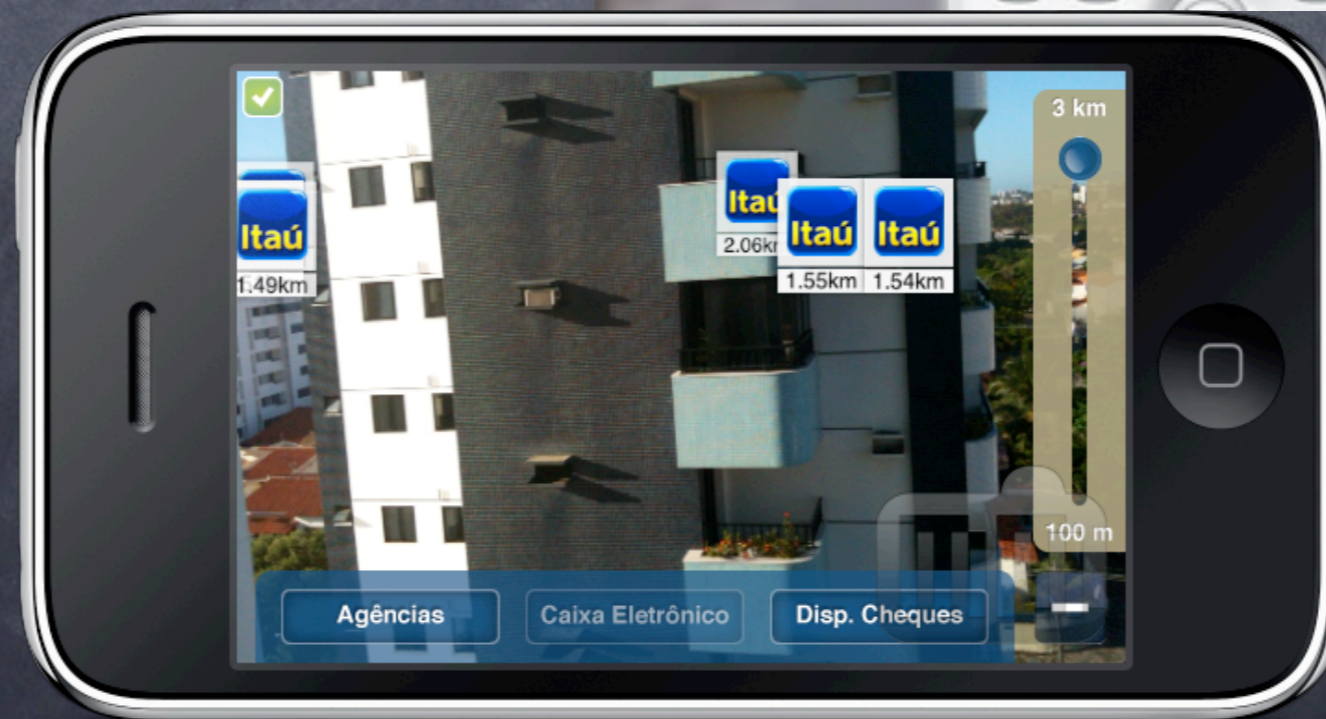
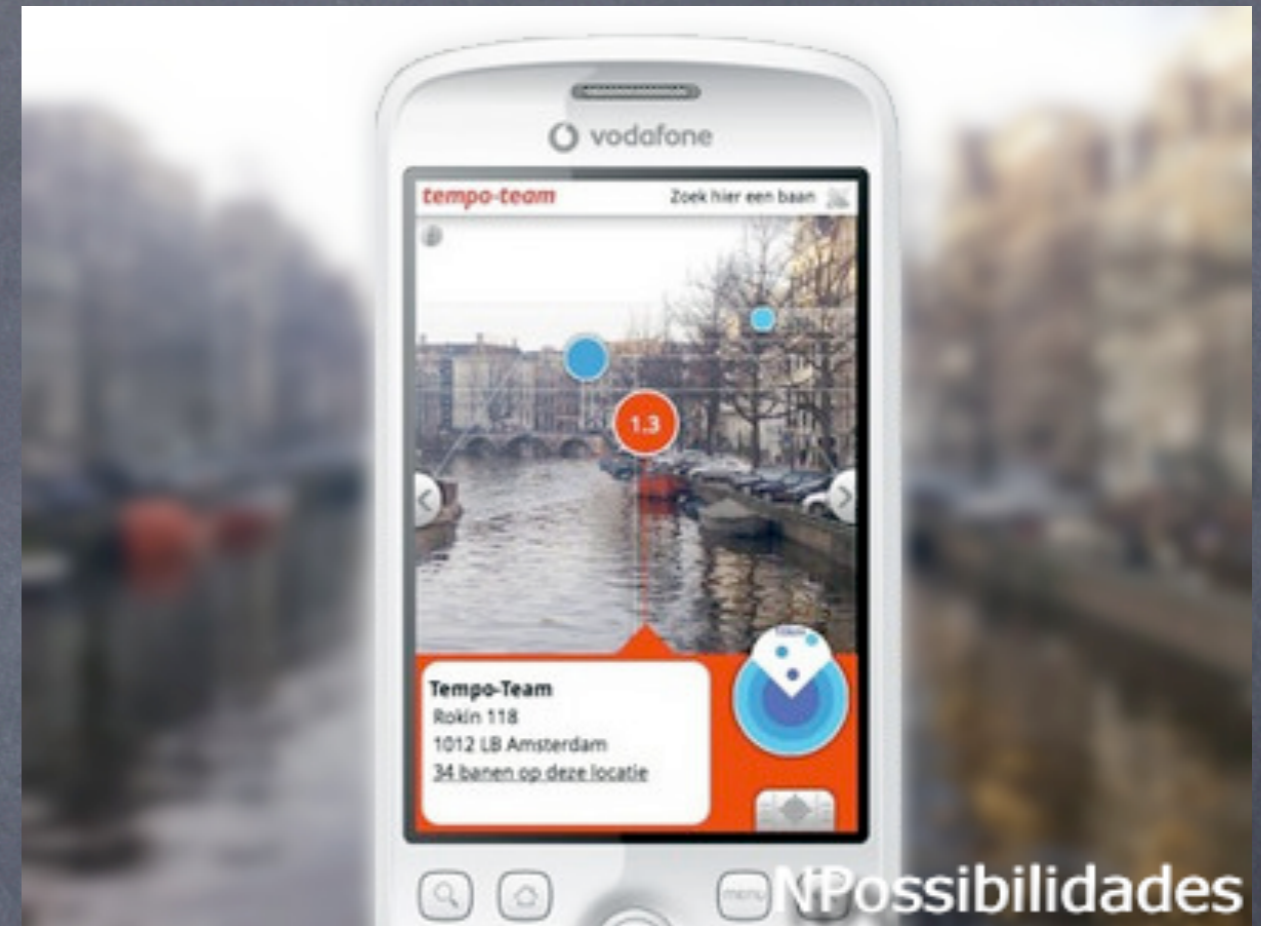
Aplicações em Treinamento



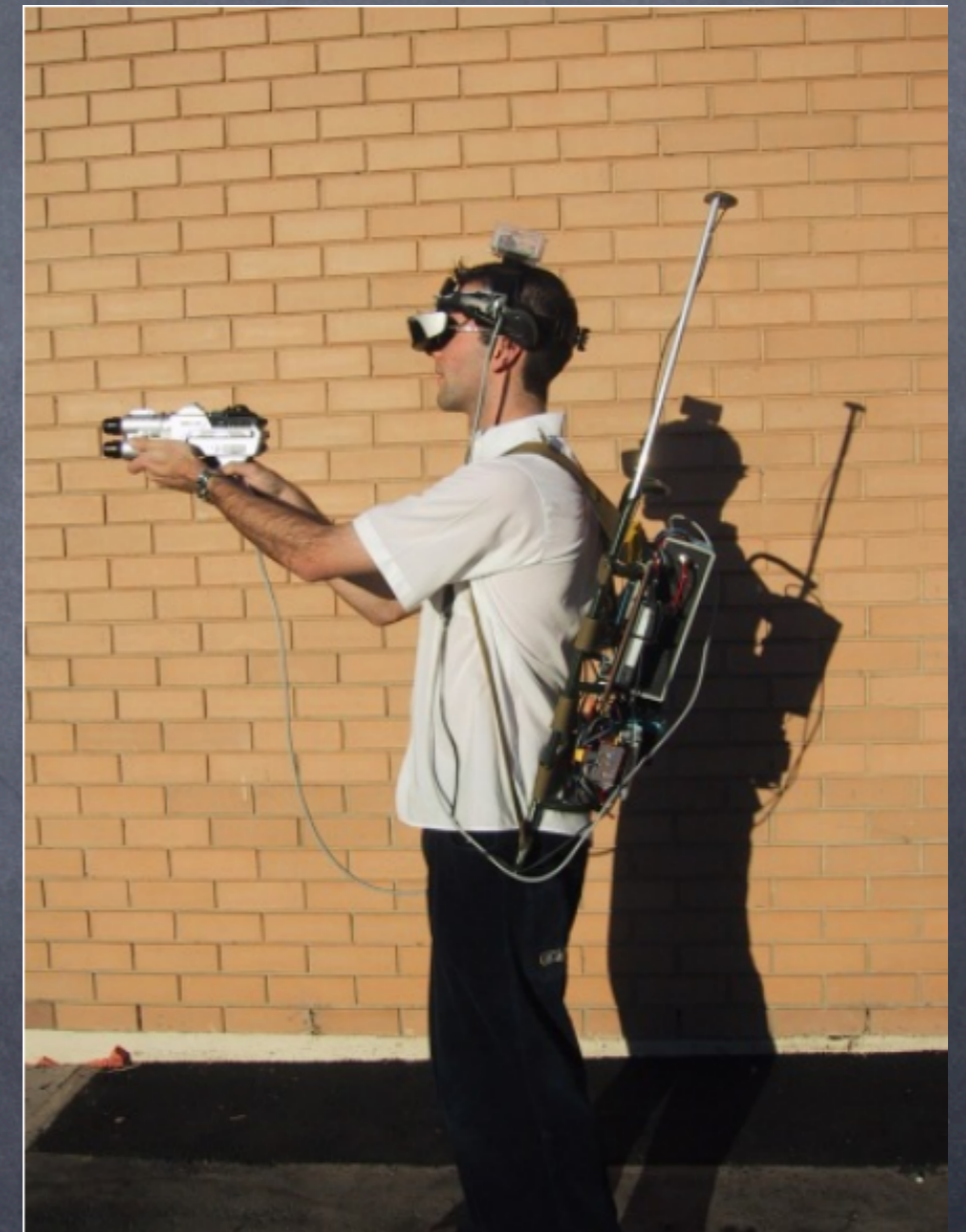
Aplicações em Educação



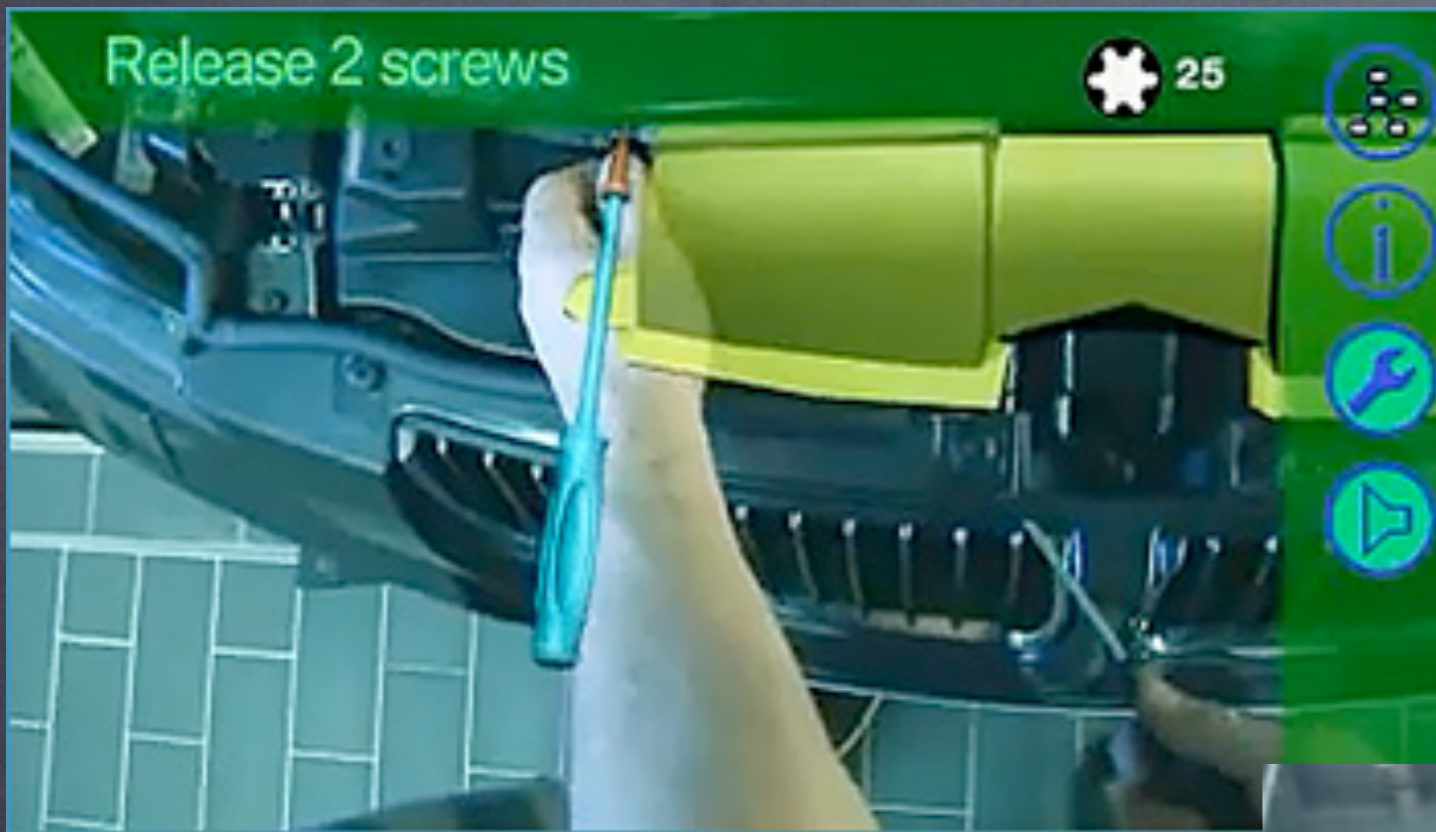
Aplicações em Navegação



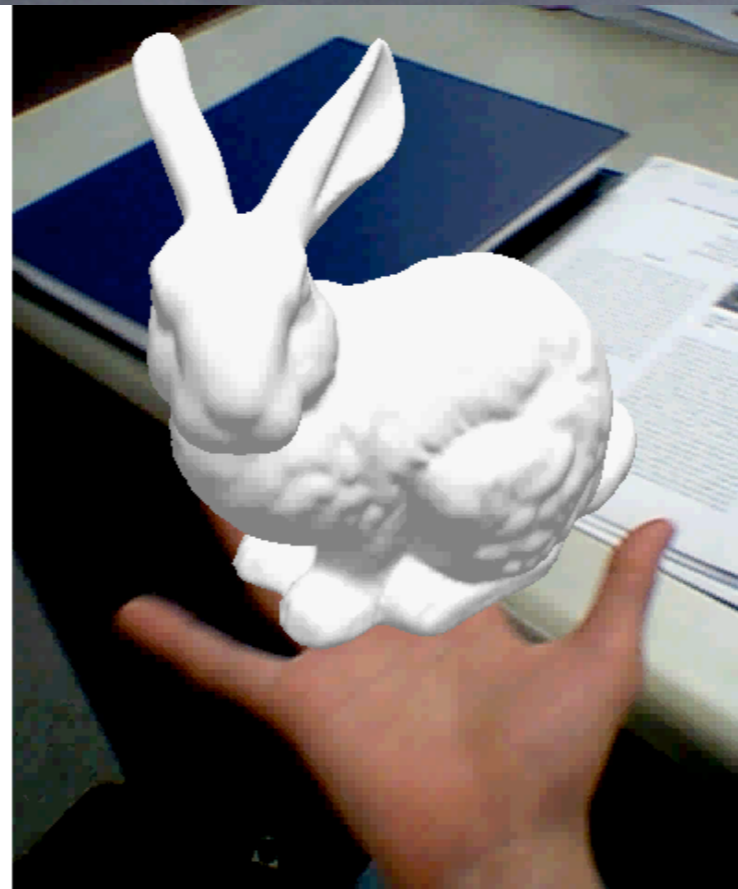
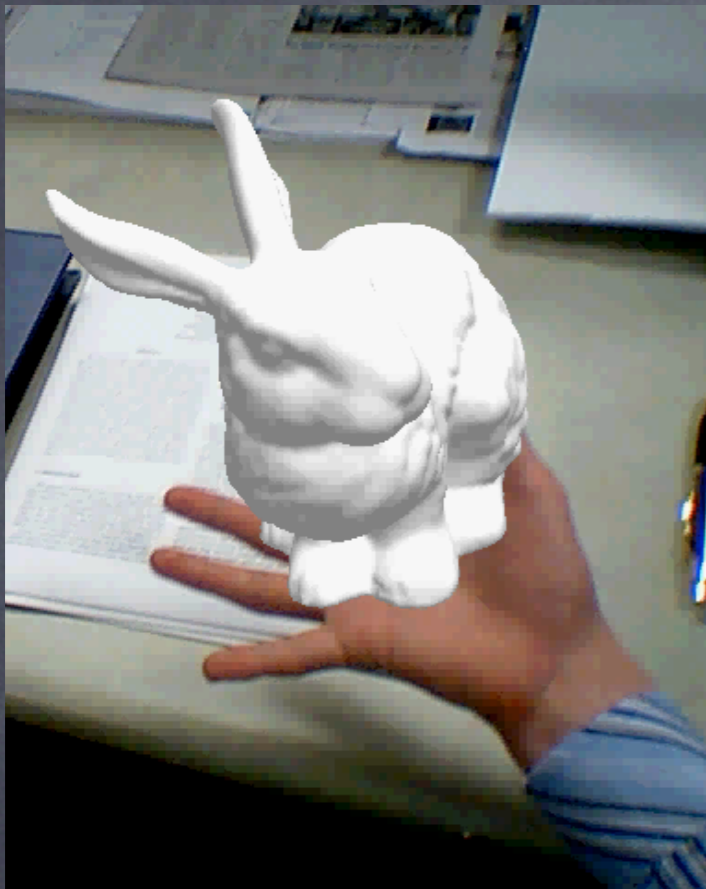
Aplicações em Entretenimento



Aplicações em Manutenção



RA Sem Marcadores



My Store

CART: 2 ITEM \$164.00

Hervé Léger - Sequin dress \$84.00

Average Rating ★★★★★
57 Reviews

99 people like this.

Colors

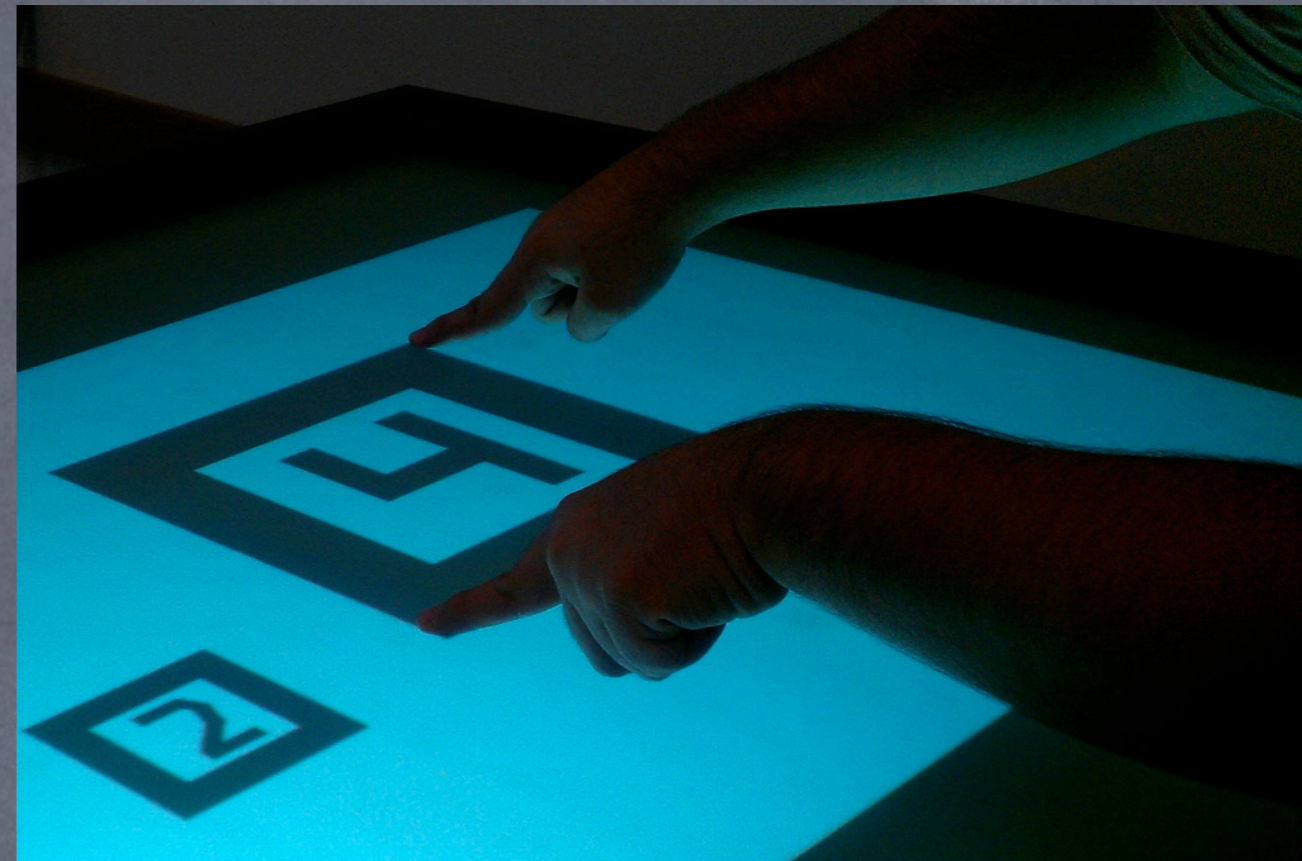
My Photos

WebCam Social Shopper
Powered by ZUGORA

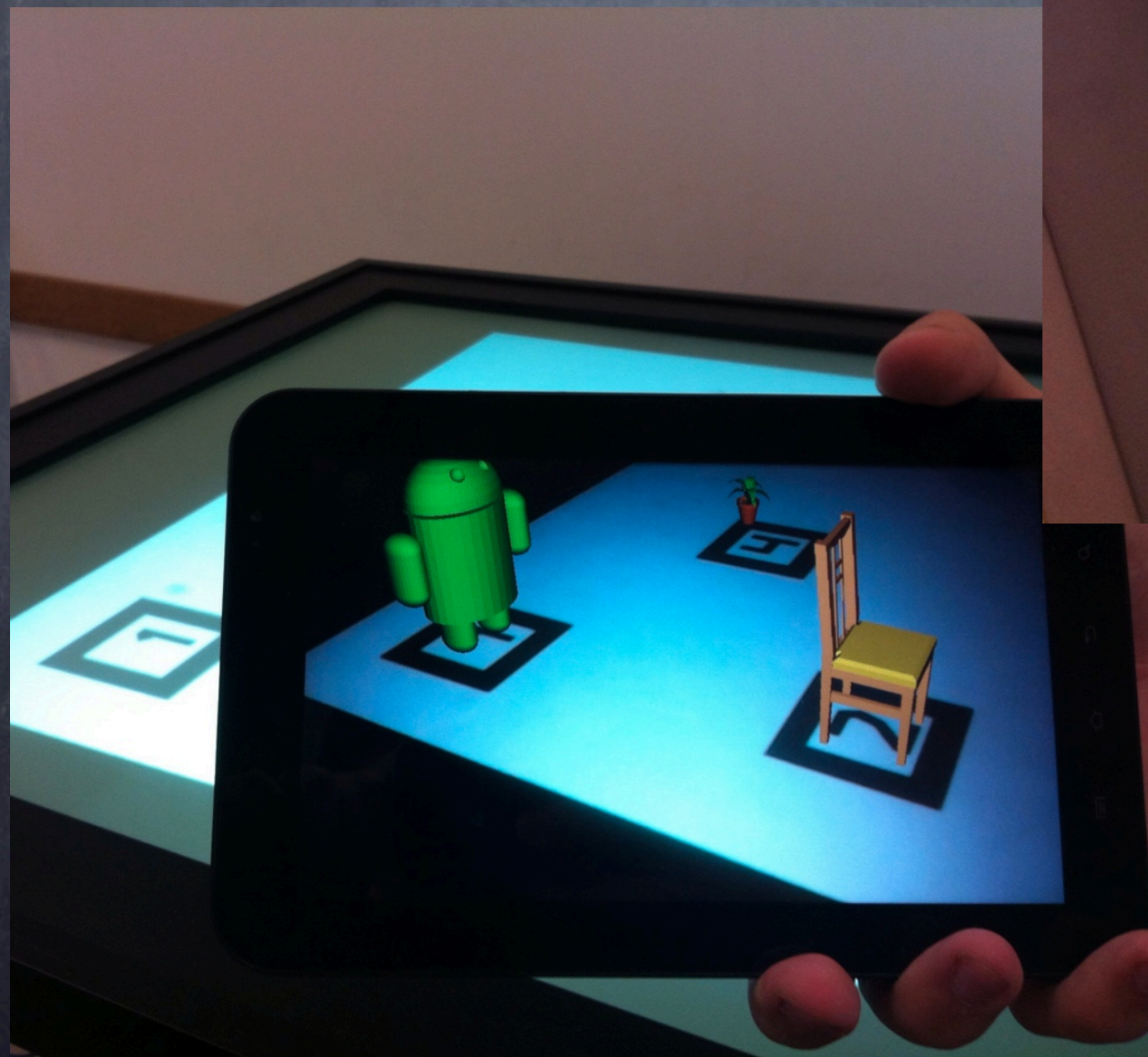
Projetos do COMPSI-UNIVEM



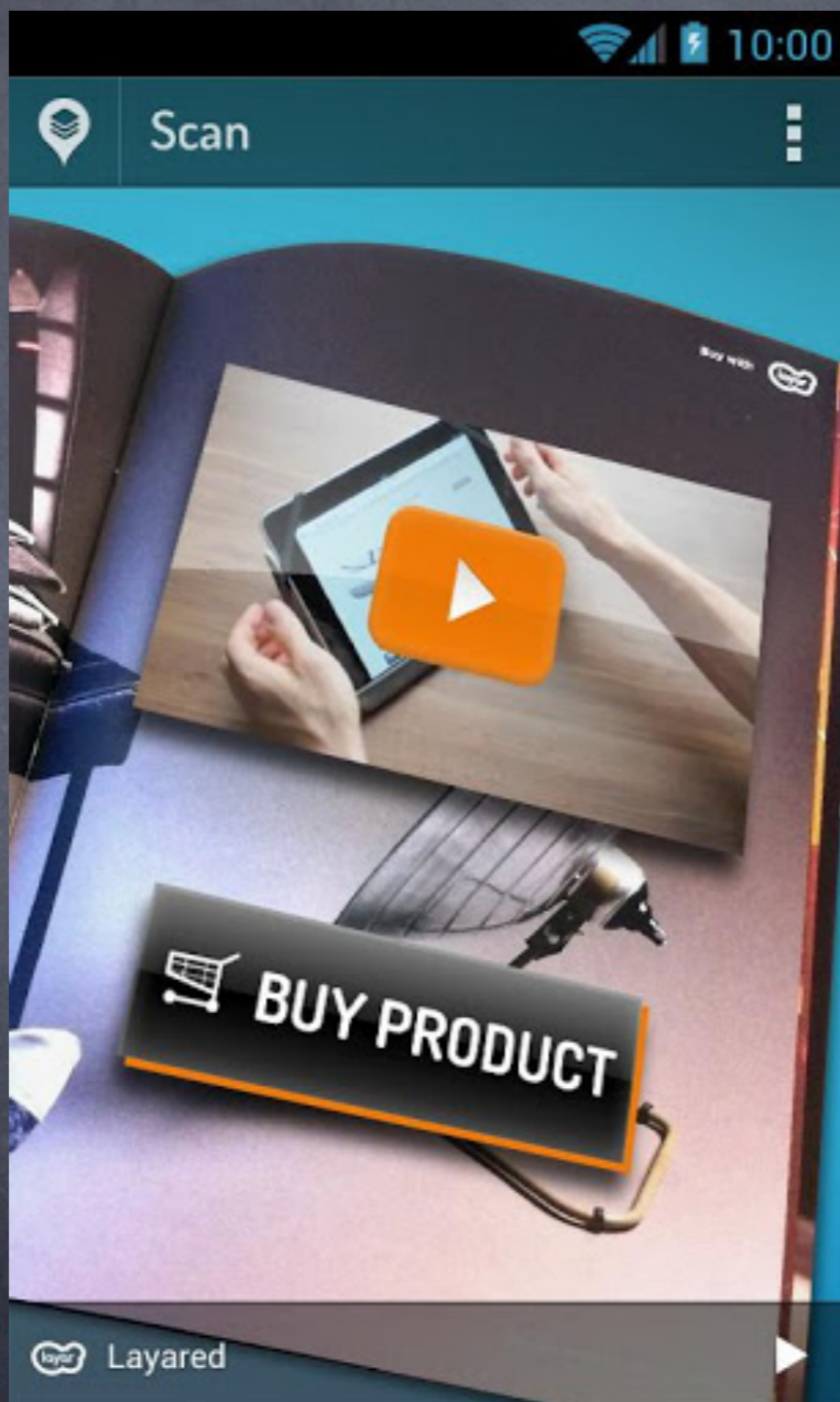
Projetos do COMPSI-UNIVEM



Projetos do COMPSI-UNIVEM



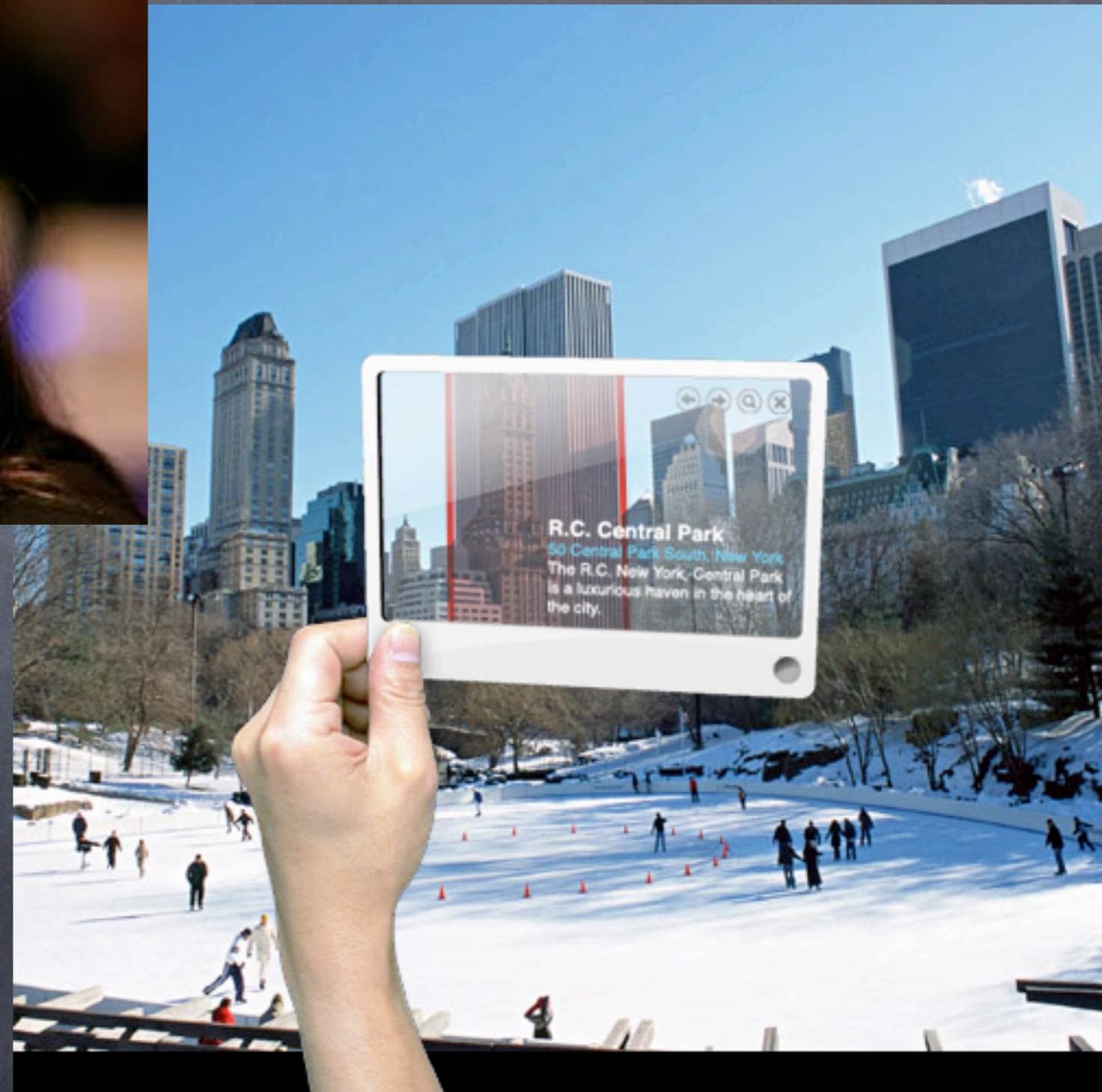
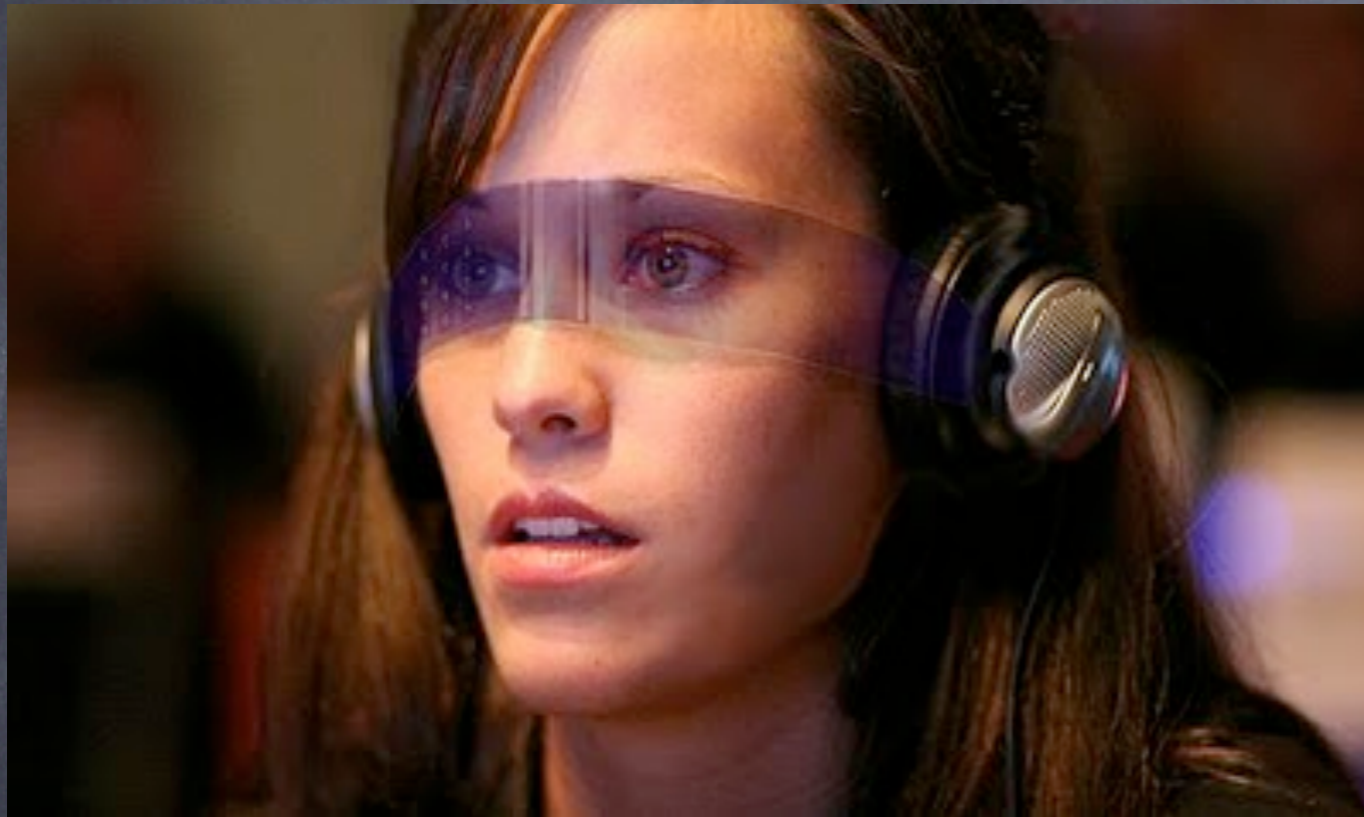
Projetos do COMPSI-UNIVEM



Ferramentas para RA

- ARToolkit (C/C++, Objective-C)
- ARToolkitPro (C/C++)
- ARToolkit NFT (C/C++ Sem Marcadores)
- osgART (OpenSceneGraph Alto Nível)
- NyARToolkit (C/C++, Java, C#),
- JARToolkit (Java)
- FLARToolkit (flash actionscript)
- SLARToolkit (silverlight C#)
- OpenCV (C/C++, Python)
- Vizard (Python)
- AndAR e DroidAR (Android)

Futuro: hiper-realidade



Realidade (Virtual) Aumentada



CONTATOS

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