IN4MATX 148: Ubiquitous Computing Prototyping and Projects

Week 4: Design Crit 2, The Visual Narrative (Storyboards), Augmented Reality

23 April 2012
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On Deck for Tonight

- Part I: The Visual Narrative (Storyboarding)

  - *Special Guest Presenter: Matt Roberts, Artistic Recruiter for Story, Walt Disney Animation Studios*

- Part II: Design Crit 2

- Part III: Augmented Reality

  - *Your Exercise for the Week*

Part I: The Visual Narrative (Storyboarding)

Special Guest Presenter: Matt Roberts,
Artistic Recruiter for Story, Walt Disney Animation Studios

No video taping, photography, or recording of any kind

On Deck for Tonight

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Course Logistics

- Sketching Exercise (1) submissions graded
  - *Presentation matters (even if raw drawing skill doesn't)*
  - *Think about communication through* sets *of sketches*
- Group Projects: Initial reports graded with (minor) feedback
  - *Presentation matters (even if raw drawing skill doesn't)*
  - ***Be prepared for the poster session next week***
- Sketching Exercise (2) due at the end of tonight's crit
  - *Graded and available for pick-up by Wednesday*
- Questions? Comments? Concerns?

Part II: Design Crit 2

Design Crit 2

- Presenters, explain by introducing: ~ *3 minutes*
  - What you produced and why
  - How you imagine the technologies would be used
  - What is novel about the idea
    (what boundaries are being pushed?)
- Critics, constructively interrogate the work: ~ *4 minutes*
  - *What is going on?*
  - *What is the flow of the interaction?*
  - *What can be changed to make it more original?*

Part III: Augmented Reality

based on Pinz/Reitmayr's Introduction to Augmented Reality
http://www.icg.tu-graz.ac.at/courses/ARVU

What is Augmented Reality?

Virtual Reality
*users in computer-generated world
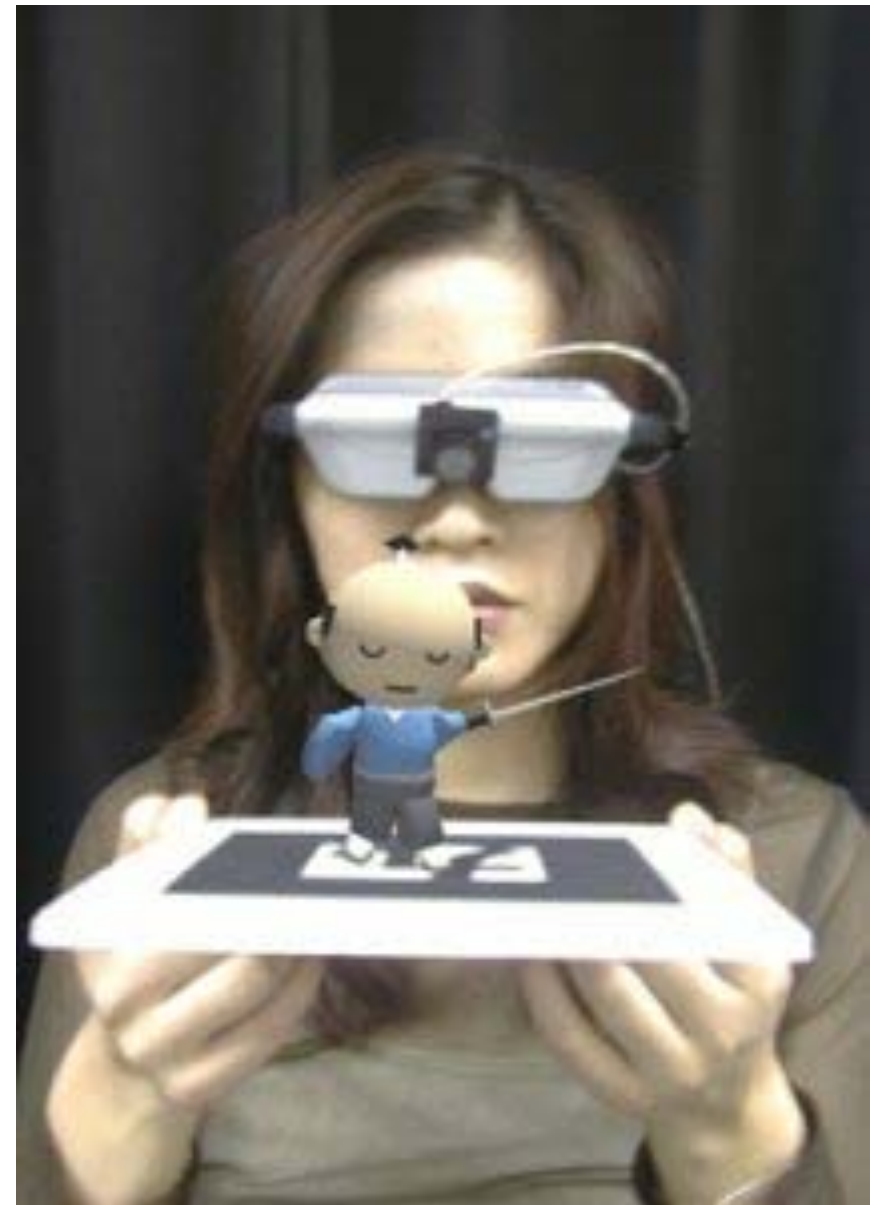isolated from the real world*

Augmented Reality
adds to the real world

What is Augmented Reality?

- Superimposes virtual information on the real world

- Interactive in real time

- Spatial: Virtual objects are registered in 3D space [Azuma 97]

Milgram's Reality–Virtuality Continuum

Real Environment ⟶ Augmented Reality (AR)   Augmented Virtuality (AR) ⟵ Virtual Environment
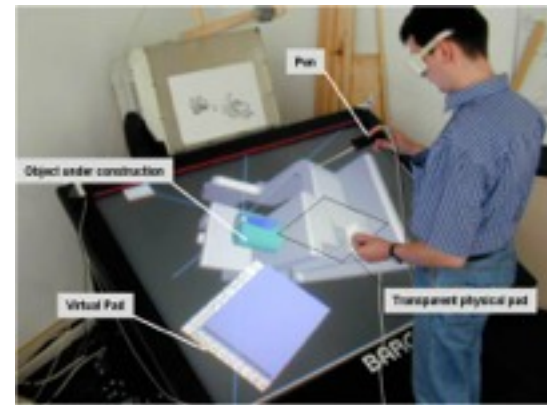
Potential Application: Expert Guidance

http://youtu.be/P9KPJIA5yds

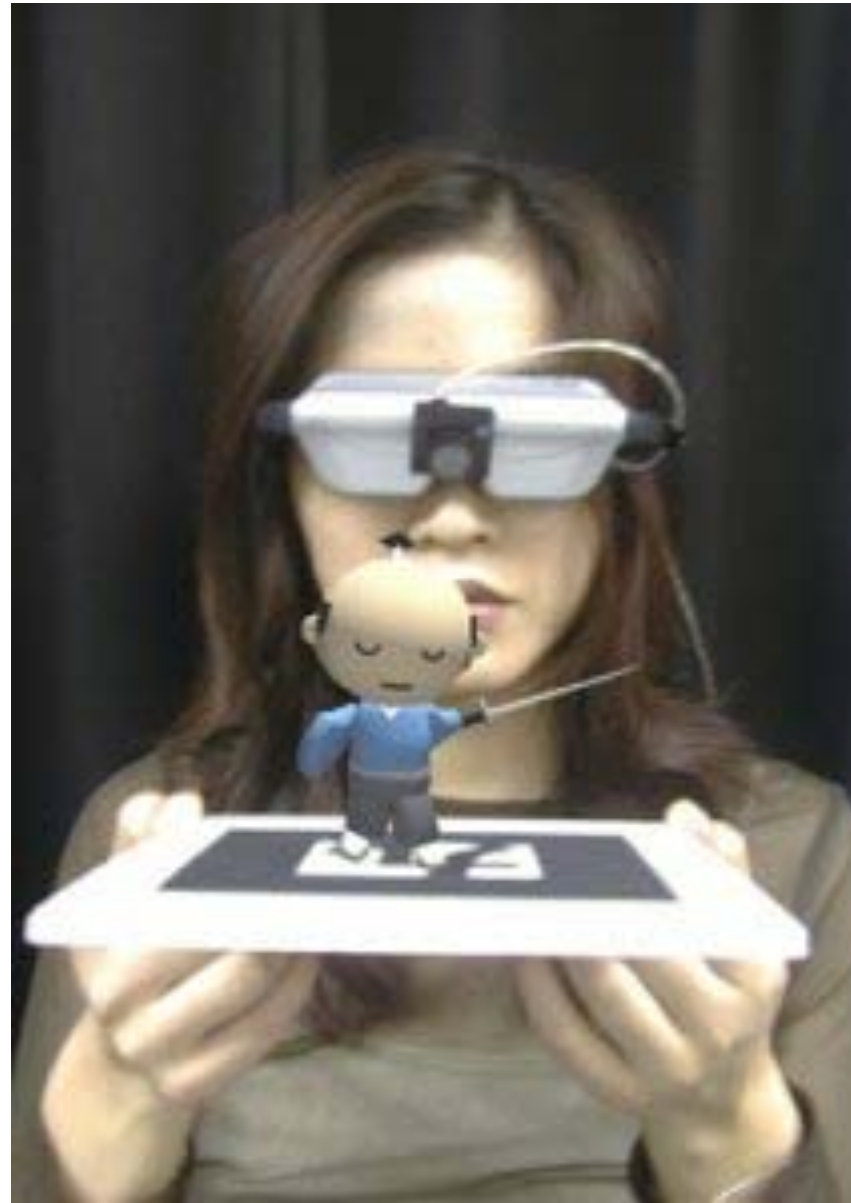# The Registration Problem

- Fast and accurate registration of the virtual and real
  - Camera calibration
  - Registration
  - Multiview geometry

http://www.ronaldazuma.com/videos/DissertationVideo.mp4
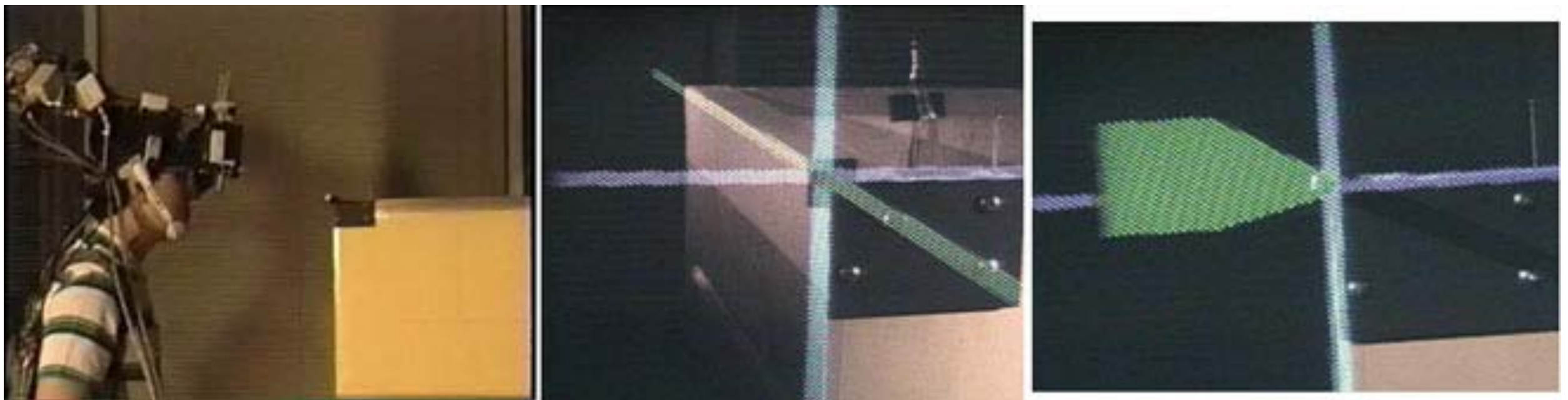
Camera-Based Tracking: ARToolkit

http://www.hitl.washington.edu/artoolkit/
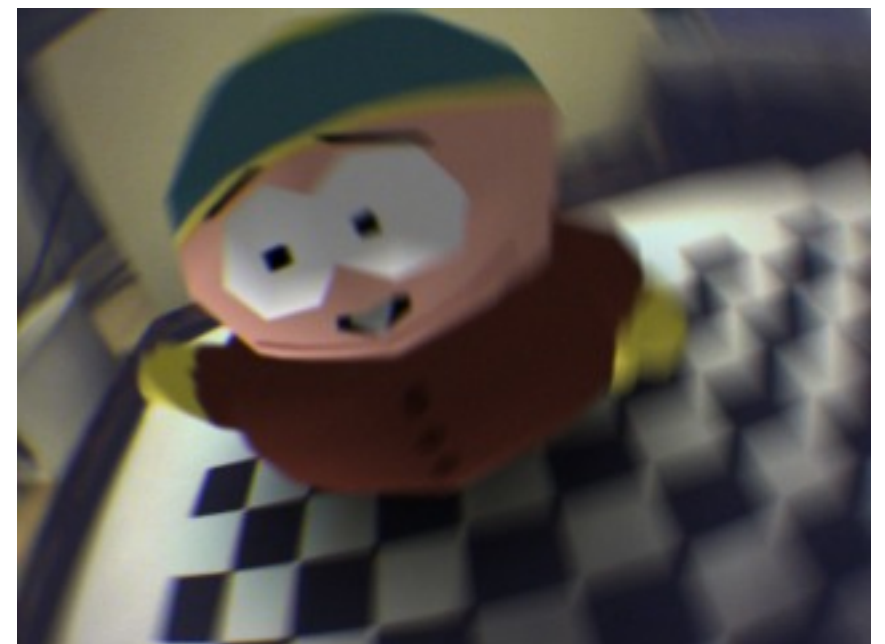
http://youtu.be/prSaEYNBvLg

Visual Coherence

- Realistic integration between virtual and real
  - Occlusions
  - Shadows and lighting
  - Camera effects
  - Noise
  - Motion blur

Mobile, Head-Mounted AR

Columbia *Touring Machine*

Rockwell Vest

Handheld AR

- Low Cost
- Robust
- Billions of devices
- Intuitive UI

- Networking support
- Tracking support
- Rapid prototyping
- Content creation easy

Projected AR (Out-of-Body Virtual Experiences)

http://youtu.be/D0ojxzS1fCw

YOUR EXERCISE FOR THIS WEEK

An augmented reality technology that provides people with information about a farmer's market (shopper ratings, the source of the products, information about the farmers or farming techniques

6 storyboards (5+ frames each) showing how this new technology might be used (including ≥ 1 error-recovery scenario)

Next Week

- Storyboarding + Augmented Reality assignment **Due** (6 storyboards, 5+ frames each)

- Design crits, take three

- Animating the user experience

- Bring: sketchbook, drawing tools, laptop

- Intro to location-aware computing systems

- **Group project poster session**

- *Don't forget your readings!*