Joint IMDL-ALLS Internships

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Outline

- Overview of Augmented Reality (AR)
- Interest in Augmented Reality Learning Experiences (ARLEs)
- Joint IMDL-ALLS Internships

Augmented Reality by Example

- Augmented reality Pop-up Book

Augmented Reality Formal Definition

- Combines real environment and virtual elements
- Has 3D registration
- Has real-time interactivity

Perspectives on Augmented Reality

- It's an interface – way of interacting with information, both as input and output.
- Has its unique affordances
  - "Situated-ness" in a real environment
  - "Embodiment" of interaction with data

Overview of the State of the Art

- Zoom Value Calibration (video)
- Tracking of curved rigid objects (video)
- AR X-ray (video)

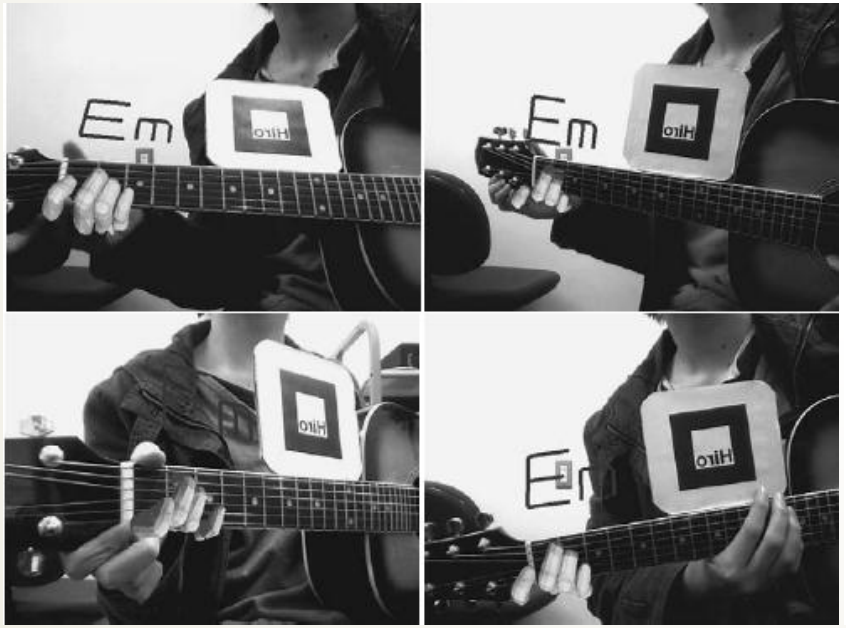
Tool: ARToolKit

- Developed by Hirokazu Kato and Mark Billinghurst
- C and C++ language software library
- uses computer vision techniques to calculate the real camera position and orientation relative to marked cards, allowing the programmer to overlay virtual objects relative to these cards

Collaboration with ALLS

- Conceptualizing, developing, evaluating ARLEs
  - Experience in AR and educational technology
- Students exchange
  - Internship for students of ALLS
  - Marc's visits to ALLS

Augmented Reality Learning Experiences



Research Interest

- AR-based educational technology
- Aspects
  - Affects on cognition, student performance, motivation, other constructs, *towards a theory*.
  - Design rules of ARLEs
  - Authoring tools for teachers
  - Integration to Philippine curriculum

Joint IMDL-ALLS Internships

- 2 interns, working independently
- to work at the Nara Institute of Science and Technology in Japan
- 300 hours internship: 160 hours at IMD, 140 hours at ALLS
- 30 days withn April – May 2013
- Inclusive of: airfare, lodging, living allowance (2000 JPY/day)

Internship Theme

- Internship students will create simple AR content for K-12 education on iPad or other platforms
- Can provide access to different types of cameras, HMDs, handhelds, moving projectors, ubiquitous displays
- Internship students can suggest application subject to suggestions and approval

Requirements

- Major in Computer Science
- Member of ALLS/recommended by ALLS
- Programming experience (preferably C, C++, Xcode)
- Motivated
- Research-oriented
- Independent
- Proposed idea

Time Table

	Activity
Week 1-2	At ALLS • Perform the ARToolkit Tutorials • Design phase
Week 3-6	At IMD • Training and assistance as required • Development
Week 7-8	At ALLS • Allowance for other work • Documentation

Useful Sites

- IMD Lab: http://imd.naist.jp/index_e.html
- NAIST: http://www.naist.jp/en/
- ARToolKit: http://www.hitl.washington.edu/artoolkit/
- Search Int'l Symposium on Mixed and Augmented Reality (ISMAR) on IEEE Xplore Digital Library
- Look for AR applications in the IEEE International Conference on Advanced Learning Technologies (ICALT)