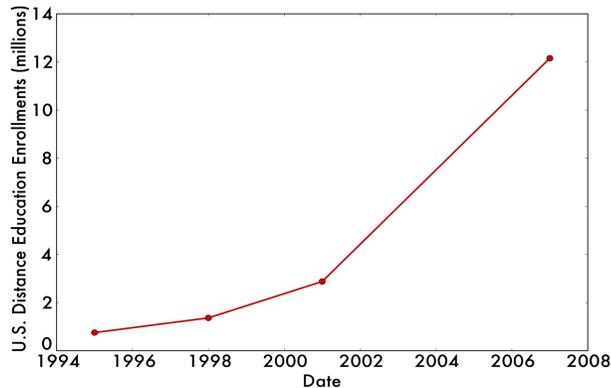


A Video Annotation and Indexing System

BACKGROUND



Distance education enrollments at U.S. college-level, degree-granting institutions have grown twelve-fold since 1995.

Source: U.S. Department of Education



The Microsoft Research Annotation System (MRAS), developed in 1999, introduced features such as video annotations but was ultimately ten years ahead of its time.

Source: Grudin and Barger, 2005.



Initiatives such as MIT OpenCourseWare have brought distance education to the web, but do they adequately replicate the in-classroom experience?

“The isolation that results from the distance learning process can complicate the learning process...”

Jill M. Galusha, University of Southern Mississippi

OBJECTIVE

+ Improve online video education by creating a **more interactive, easier to use, and innovative** online video system.

METHODOLOGY

Phases

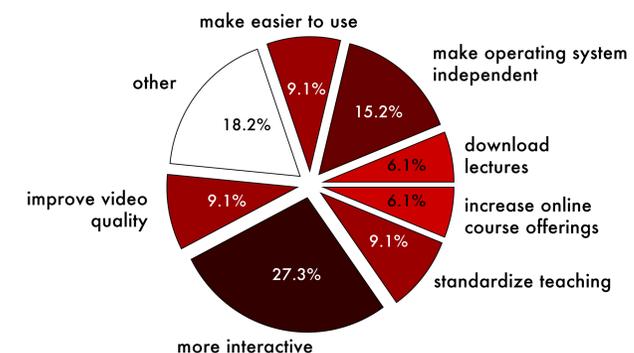
- I. Planning: Determined the goals of and set timelines for the rest of the semester.
- II. Implementation: Developed system based on feedback from students and faculty.
- III. Documentation: Produced IPRO Office deliverables and codebase documentation.

Communication

+ Communication outside of class was primarily conducted via email, group wiki, and bug tracker.

RESULTS

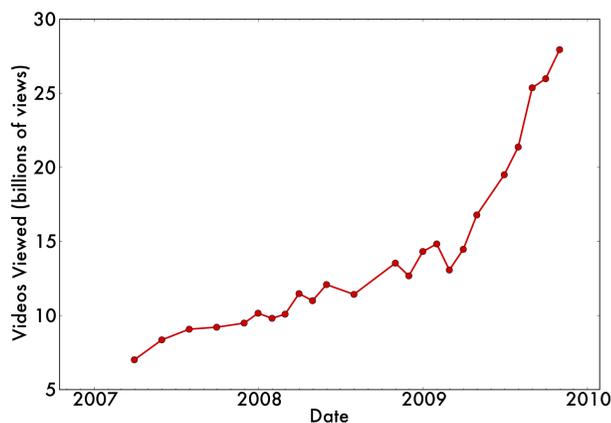
Preliminary Questionnaire



The majority of survey respondents desired greater interactivity, whether it be with the instructor or other students. Respondents also would like operating system independence.

“[F]ew changes are taking place in the university structure . . . to accommodate the special needs of the distance-learning student.”

Richard Bothel, Troy State University



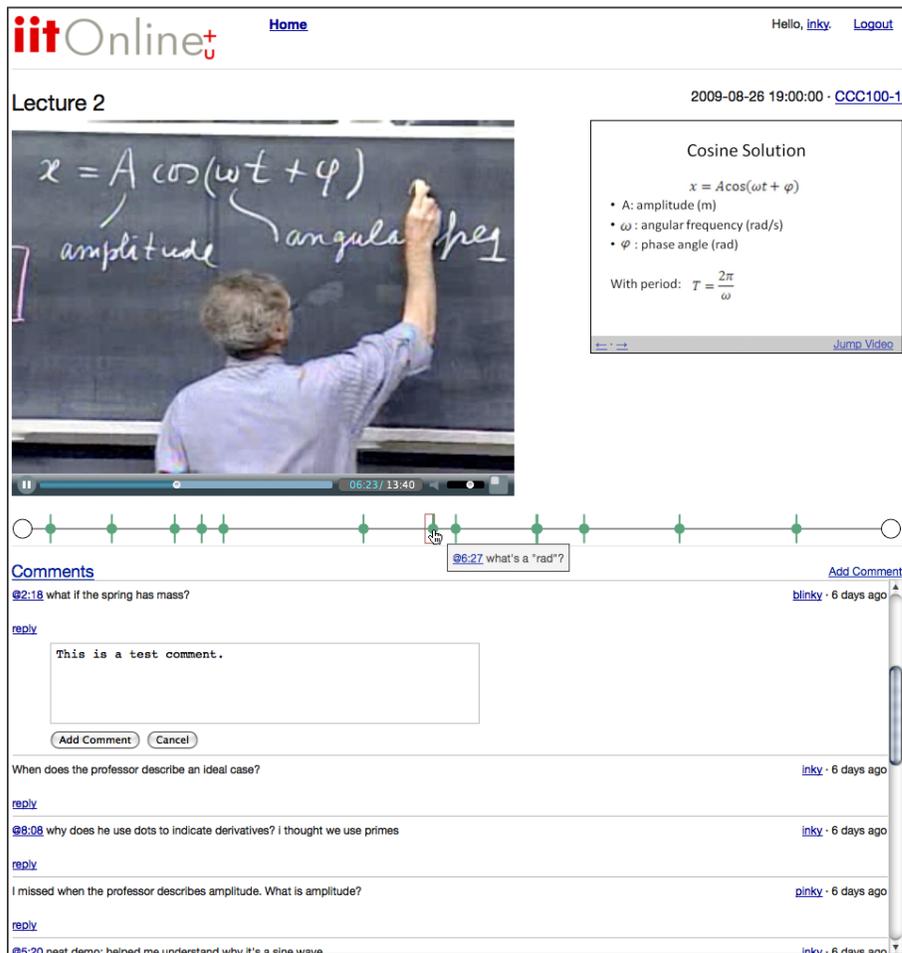
Video views at U.S. online video sites grew steadily from 2007–2009, but dramatically increased in 2009.

Source: comScore, Inc.



RESULTS, CONT.

User Interface

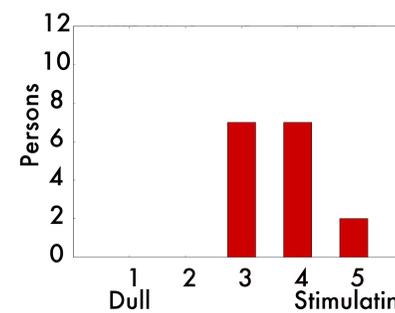
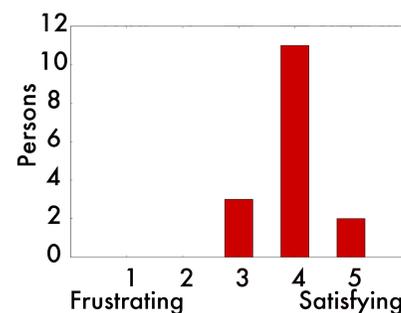
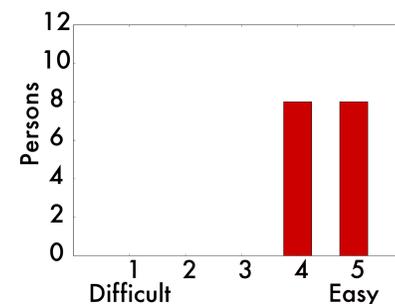
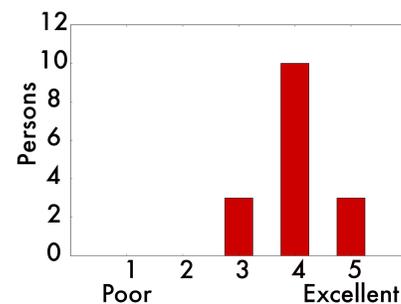


Our interface was designed to be simple, easy to use, and operating system independent yet powerful.

"If the interface is all on the web and it isn't too much additional work, I would use it."

Professor Mattox Beckman, IIT-CS

Feature	MRAS	MIT OCW	YouTube EDU	iTunes U	iitOnline+u
OS independence		✓	✓		✓
discussion forum	✓		✓		✓
time-stamped comments	✓		✓		✓
unified interface	✓		✓		✓
comment timeline					✓
slide viewer			✓		✓
synchronized slides					✓
email notifications	✓				✓



The majority ($\geq 80\%$) of users found our interface excellent, easy to use, and satisfying.

FUTURE WORK

- + Deploy the system in two classes next semester.
- + Measure the system's impact on online education.
- + Improve system based on user feedback.
- + Implement remaining minor features.
- + Perform rigorous testing on all aspects of the system.
- + Make the codebase more idiomatic and optimized.
- + Expand the system beyond IIT.

ACKNOWLEDGMENTS

- + Wai Gen Yee, advisor
- + Ophir Frieder, advisor
- + toca, LLC
- + Sun Microsystems
- + John Salt, IIT-OTS

