

Automated Lecture Transcription

Brandon Muramatsu

mura@mit.edu

MIT, Office of Educational Innovation and Technology

(Really, I'm just moonlighting as an OCWC Staffer...)

Motivation



MIT OCW 8.01: Professor Lewin puts his life on the line in Lecture 11 by demonstrating his faith in the Conservation of Mechanical Energy.

- More & more academic videos on the Web
 - Universities recording lectures
 - Cultural organizations interviewing experts

Motivation

- Challenges
 - Volume
 - Search
 - Accessibility

Web Images Maps News Video Gmail more ▼

Google Video BETA

angular momentum


Search Videos Search the Web Advanced Video Search Preferences Moderate SafeSearch is on


Search: ☒ all videos ☐ videos playable on Google


From: All dates Duration: All


Results 1 - 10 of about 402 for angular momentum


Also try: [mechanical universe](#)


 [Caltech: The Mechanical Universe - 19 - Angular Momentum](#)
28:51 - 1 year ago - ★★★★★ - [video.google.com](#)

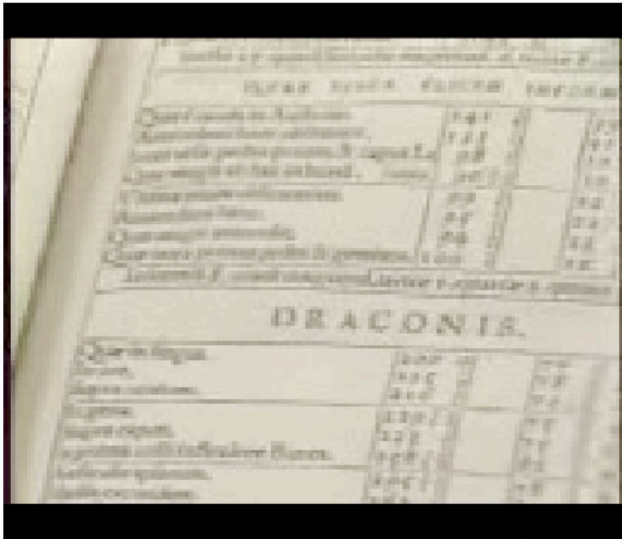
 [What Is The Conservation Of Angular Momentum?](#)
02:06 - 6 months ago - ★★★★★ - [metacafe.com](#)

 [Tennis Lessons - how to use angular momentum](#)
04:34 - 6 months ago - ★★★★★ - [graspr.com](#)

 [MIT Physics Lecture: Classical Mechanics - 21 - Torques ...](#)
47:52 - 1 year ago - ★★★★★ - [video.google.com](#)

 [What is the conservation of angular momentum?](#)
02:05 - 2 years ago - ★★★★★ - [youtube.com](#)

 [fahrradreifen drehimpuls physik angular momentum physics](#)
00:23 - 1 year ago - ★★★★★ - [youtube.com](#)



[Caltech: The Mechanical Universe - 19 - Angular Momentum](#)
28:51 - Feb 23, 2008 - ★★★★★ (3 Ratings) - Rate: ★★★★★
Watch this video on [video.google.com](#)

This series helps teachers demystify physics by showing students what it look hot-air balloon events, symphony concerts, bicycle shops, and other locales n

Research: Spoken Lecture Project

James Glass
glass@mit.edu



- Speech recognition & automated transcription of lectures
- Why lectures?
 - Conversational, spontaneous, starts/stops
 - Different from broadcast news, other types of speech recognition
 - Specialized vocabularies

Research: Spoken Lecture Project

James Glass
glass@mit.edu



- Processor, browser, workflow
 - web.sls.csail.mit.edu/lectures/
- Prototyped with lecture & seminar video
 - MIT OCW (~300 hours, lectures)
 - MIT World (~80 hours, seminar speakers)

Supported with iCampus MIT/Microsoft Alliance funding

What problems are we trying to solve? For Learners? For Content Producers?

- Finding...(primary)
 - Content in videos (text metadata)
 - Specific “phrase” in video (via transcript)
 - Specific “concept” in video
- Facilitating...(secondary)
 - Accessibility (closed captioning)
 - Translations

Transition: Towards a Lecture Transcription Service

- Develop a prototype **production** service
 - MIT, University of Queensland
 - Engage external partners (hosted service?, community?)
- **Requirements** gathering
 - Internal MIT customers (OCW, AMPS)
 - External (OpenCast, UC Berkeley, Others)

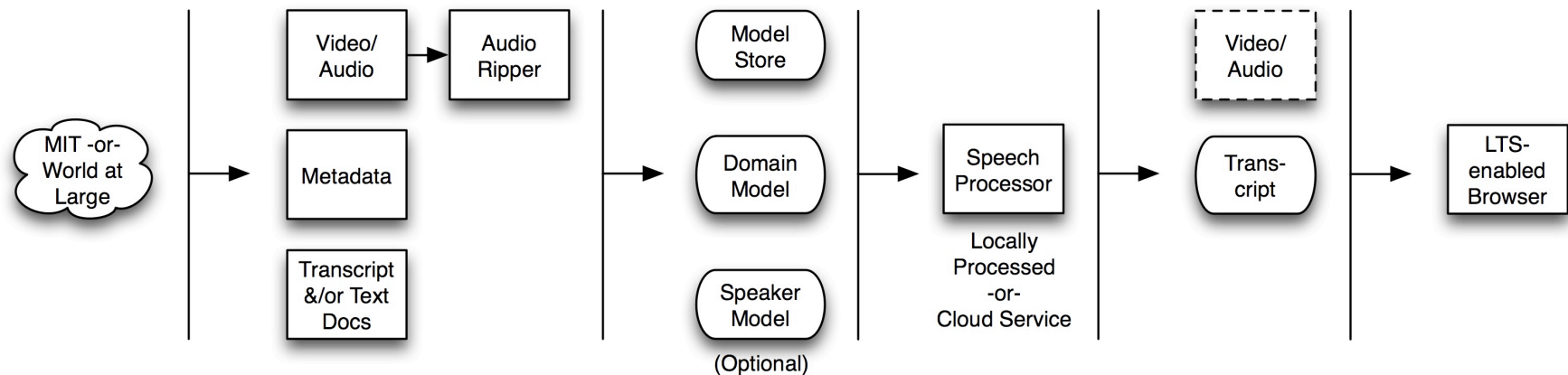
MIT Projects/Customers

- OpenCourseWare
 - (Production support)
 - Existing videos & audio, new video
 - Lecture notes, slides, etc. for domain model
 - Multiple videos/audio by same lecturer for speaker model
 - Diverse topics/disciplines
 - Improve search and retrieval (more granularity)
 - English transcripts can facilitate translation
- MIT 150th Celebration (AMPS)
 - Highly produced, individual speakers
 - Full transcripts available
 - Facilitate search

External Customers/Interest

- University of Queensland
 - Lecture podcasting
 - 25 years of interviews with world-class scientists, Australian Broadcasting Company
- UC Berkeley
 - Lecture podcasting, 500+ hours of new content per term
 - Improve search and retrieval
- OpenCast Project (www.opencast.org)
 - Extend generic podcast production workflow
- Harvard University Extension
 - 100th Anniversary

Lecture Transcription Workflow



Demo

- Spoken Lecture Browser
 - web.sls.csail.mit.edu/lectures
 - Requires Real Player 10
- Alternate UI, Google Audio Indexing
 - labs.google.com/gaudi
 - U.S. political coverage (2008 elections, CSPAN)



Lecture Browser

SPOKEN LANGUAGE SYSTEMS

MIT COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE LABORATORY

Search for words: and/or pick a category:

angular momentum

Any category

Search

Examples: violin, "solar system", wine AND glass

50 results for angular momentum

1. Angular Momentum, Torques, Conservation of Angular Momentum, Spinning Neutron Stars, Stellar Collapse

Lecture 20, Physics I: Classical Mechanics, Physics, MIT, 1999 (Walter Lewin)

51:05



- ▶ we're now answering the part of eight oh one which is the most difficult for students and faculty alike ... we are going to enter the domain of **angular momentum** and forks it's extremely non intuitive ... the good news however is that b will stay with this concept for at least four five lectures today i will
- ▶ the good news however is that b will stay with this concept for at least four five lectures today i will introduce both fork an **angular momentum** ... what is **angular momentum** if an object has a mass m ... and it has a velocity v ... then clearly it has a **momentum** ... v that's very well defined your reference frame the product of m and v ... thank the **momentum** ... i can take relative to any point i choose i choose this point q arbitrary ... this now ... is the position
- ▶ this now ... is the position vector which i call our of q ... but this angle buffet to ... an **angular momentum** relative to that point q it's a vector or ... is the position vector relative to that point q cross p

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web.sls.csail.mit.edu/lectures

A Lecture Transcription Service?

- Under consideration
- Limitations (anticipated, may change)
 - Lecture-style content (technology optimized)
 - Approximately 80% accuracy
 - Probably NOT full accessibility solution
 - Other languages? (not sure)
 - Browser open-sourced (expected)
 - Processing hosted/limited to MIT (current thinking)
 - So will submit jobs via MIT-run service
 - Audio extract, domain models and transcripts available donated for further research

Thanks!

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