TREC 2006 Video Retrieval Evaluation
Introductions

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Goals

- Promote progress in content-based retrieval from large amounts of digital video –
  - combine multiple errorful sources of evidence
  - achieve greater effectiveness, speed, usability
- Model an analyst interested in finding video of certain people, things, places, events, and combinations thereof
  - work on what video is “of” rather than what it is “about”
  - similar to needs of commercial video producers searching an archive for video to reuse rather than reshoot

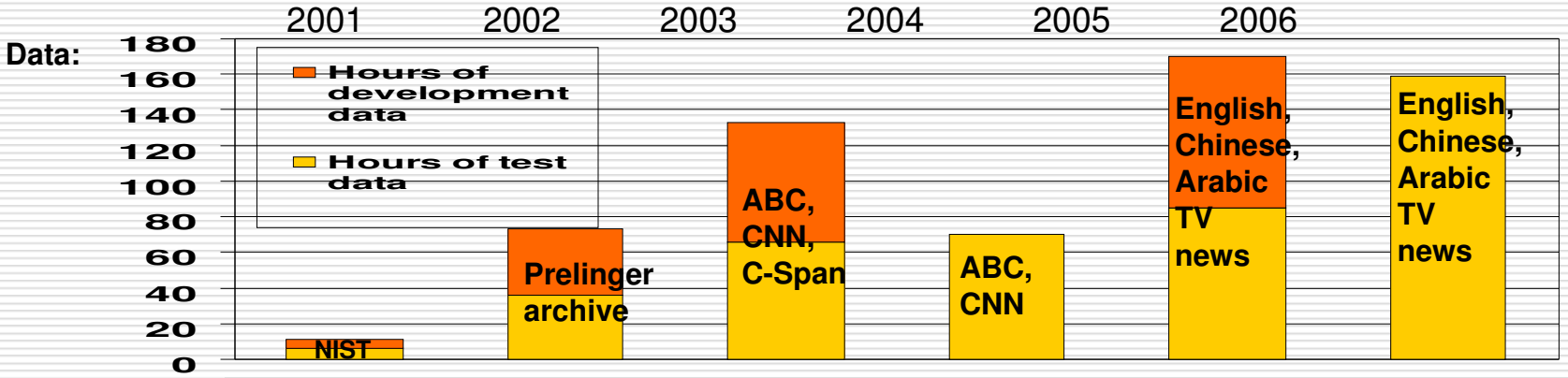
Goals

- Focus on relatively high-level functionality – near that of an end-user application like interactive search
- Confront systems with unfiltered data and realistic queries
- Measure against human abilities
- Supplement with focus on supporting automatic components
  - Automatic search, High-level feature detection
  - Shot boundary determination
- Integrate and profit from advances in low-level functionality, more narrowly tested
  - face recognition, text extraction, object recognition, etc

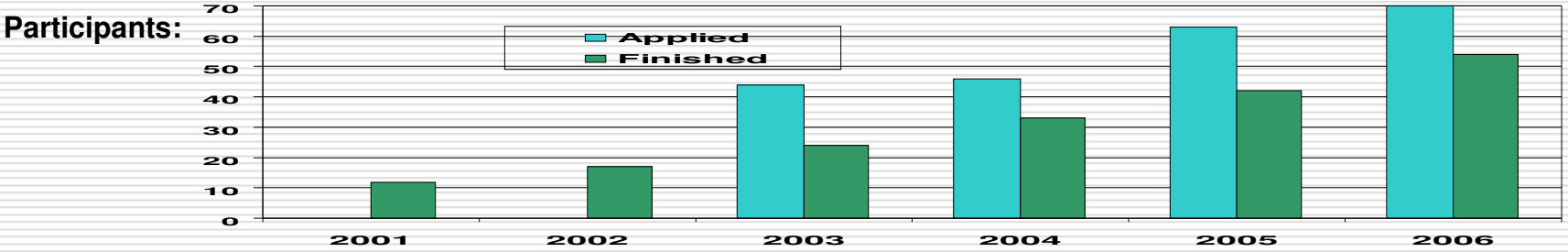
Goals

- Answer some questions:
  - How can systems achieve such retrieval (in collaboration with a human)?
    - usefulness of generic features
      - which features most useful?
      - how/when to combine?
    - human & system collaboration
      - who does what?
      - what is the optimal interface?
  - How can one reliably benchmark such systems?

Evolution: data, tasks, participants,...



Tasks:	2001	2002	2003	2004	2005	2006
	Shot boundaries Search	Shots Search Features	Shots Search Features Stories	Shots Search Features Stories	Shots Search Features BBC rushes	Shots Search Features BBC rushes Camera motion



Peer-reviewed papers:	2001	2002	2003	2004	2005	2006
		10	**17**	**46**	**39**	**17** (so far)

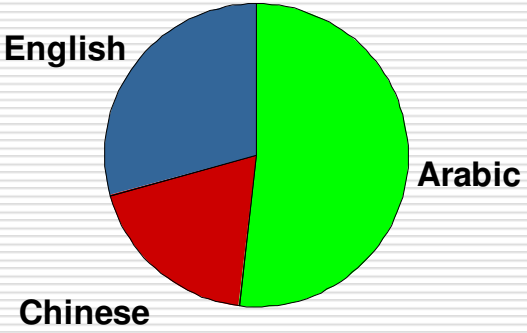
Evolution… 2006

- Data:
  - 159 hrs (Nov/Dec.'05 news in Arabic, Chinese, and English)
  - 50 hrs of BBC rushes
- 3 evaluated tasks (on news data)
  - Shot boundary determination
  - High-level feature extraction (39 submitted, 20 evaluated)
  - Search (automatic, manually-assisted, interactive)
    - Base scenario: an English-only searcher looking for video in Arabic, Chinese, and/or English
- 1 exploratory task (on BBC rushes)
  - Identify and remove redundancy
  - Organize/present according to useful features
  - Devise a practical, informative evaluation scheme

More about the 2006 data: News

(Some test data programs not represented in the training data)

TRECVID-use		Lang		Program	Hours	
tv5	tv6	Eng	NBC	NIGHTLYNEWS	9.0	
tv5	tv6	Eng	CNN	LIVEFROM	14.5	
	tv6	Eng	CNN	COOPER	8.3	
	tv6	Eng	MSN	NEWSLIVE	14.5	
						46.3
tv5	tv6	Chi	CCTV4	DAILY_NEWS	9.2	
	tv6	Chi	PHOENIX	GOODMORNCN	7.5	
	tv6	Chi	NTDTV	ECONFRNT	7.8	
	tv6	Chi	NTDTV	FOCUSINT	5.2	
						29.7
tv5	tv6	Ara	LBC	LBCNAHAR	35.3	
tv5	tv6	Ara	LBC	LBCNEWS	39.5	
	tv6	Ara	ALH	HURRA_NEWS	7.8	
						82.6
						158.6 hours



More Arabic than in 2005

More about the data: additional resources

- BBN: ASR/MT (GALE system) on Chinese and Arabic
- University of Amsterdam: MediaMill challenge data
- Columbia U./CMU/IBM - LCSOM: 449 features

More about the data: BBC rushes

- 50 hours of “French Experience” video; unedited.
- Some characteristics:
  - Mostly just natural sound (including crew noise)
  - Sometimes with an on-screen host
  - Lots of redundancy
    - very loooong shots (e.g.,... sun rising over several minutes)
    - multiple takes of actor/participant trying to get lines right
    - more interviews than in 2005
- Potential gold mine for reuse after the original production is complete, BUT inaccessible.
- Question: What sorts of things, large or small, can software do to help a searcher, unfamiliar with the material, efficiently find out what is there?

Evaluated tasks: 54 finishers

Accenture Technology Labs	USA	-- -- -- RU
AIIA Laboratory	Greece	SB -- -- --
AT&T Labs - Research	USA	SB -- SE RU
Beijing Jiaotong U.	China	-- -- SE --
Bilkent U.	Turkey	-- FE SE --
Carnegie Mellon U.	USA	-- FE SE --
Chinese Academy of Sciences (CAS/MCG)	China	-- -- -- RU
Chinese Academy of Sciences (CAS/JDL)	China	SB -- -- --
Chinese U. of Hong Kong	China	SB -- SE --
City University of Hong Kong (CityUHK)	China	SB FE SE --
CLIPS-IMAG	France	SB FE SE --
Columbia U.	USA	-- FE SE --
COST292 (www.cost292.org)	***	SB FE SE RU
Curtin U. of Technology	Australia	SB -- -- RU
DFKI GmbH	Germany	-- -- -- RU
Dokuz Eylul U.	Turkey	SB -- -- --
Dublin City U.	Ireland	-- -- SE RU
Florida International U.	USA	SB -- -- --
Fudan U.	China	-- FE SE --

2006: Extended teams

- COST292
  - LABRI, Bordeaux
  - Delft University of Technology, Netherlands
  - Bilkent University
  - Dublin City University
  - National Technical University of Athens
  - Queen Mary, University of London
  - ITI, Thessaloniki, Greece
  - University of Belgrade
  - University of Zilina
  - University of Bristol

Evaluated tasks: 54 finishers (cont.)

FX Palo Alto Laboratory Inc	USA	SB FE SE --
Helsinki U. of Technology	Finland	SB FE SE --
Huazhong U. of Science and Technology	China	SB -- -- --
IBM T. J. Watson Research Center	USA	-- FE SE RU
Imperial College London / Johns Hopkins U.	UK/USA	-- FE SE --
Indian Institute of Technology at Bombay	India	SB -- -- --
NUS / I2R	Singapore	-- FE SE --
IIT / NCSR Demokritos	Greece	SB -- -- --
Institut EURECOM	France	-- FE -- RU
Joanneum Research Forschungsgesellschaft	Austria	-- -- -- RU
KDDI/Tokushima U./Tokyo U. of Technology	Japan	SB FE -- --
Kspace (kspace.qmul.net)	***	-- FE SE -
Laboratory ETIS	Greece	SB -- -- --
LIP6 - Laboratoire d'Informatique de Paris 6	France	-- FE -- --
Mediamill / U. of Amsterdam	the Netherlands	-- FE SE --
Microsoft Research Asia	China	-- FE -- --
Motorola Multimedia Research Laboratory	USA	SB -- -- --
National Taiwan U.	Taiwan	-- FE -- --

2006: Extended teams

- K-SPACE
  - Queen Mary University of London
  - Koblenz University
  - Joanneum Research Forschungsgesellschaft mbH
  - Informatics and Telematics Institute
  - Dublin City University
  - Centrum voor Wiskunde en Informatica
  - Groupe des Ecoles des Telecommunications
  - Institut National de l'Audiovisuel
  - Institut Eurecom
  - University of Glasgow
  - German Research Centre for Artificial Intelligence (DFKI/LT)
  - Technische University Berlin
  - Ecole Polytechnique Federale de Lausanne
  - University of Economics, Prague

Evaluated tasks: 54 finishers (cont.)

NII/ISM	Japan	-- FE -- --
RMIT U. School of CS&IT	Australia	SB -- SE --
Tokyo Institute of Technology	Japan	SB FE -- --
Tsinghua U.	China	SB FE SE RU
U. of Bremen TZI	Germany	-- FE -- --
U. of California at Berkeley	USA	-- FE -- --
U. of Central Florida	USA	-- FE SE --
U. of Electro-Communications	Japan	-- FE -- --
U. of Glasgow / U. of Sheffield	UK	-- FE SE --
U. of Iowa	USA	-- FE SE --
U. of Marburg	Germany	SB -- -- RU
U. of Modena and Reggio Emilia	Italy	SB -- -- --
U. of Ottawa / Carleton U.	Canada	SB -- -- --
U. of Oxford	UK	-- FE SE --
U. of Sao Paolo	Brazil	SB -- -- --
U. Rey Juan Carlos	Spain	SB -- SE RU
Zhejiang U.	China	SB FE SE --

BBC rushes task: 12 finishers

Accenture Tecnology Labs / Siderean Software, Inc.	USA
AT&T Labs Research	USA
Chinese Academy of Sciences (CAS/MCG)	China
COST292	…
Curtin Univ.	Australia
DFKI Kaiserslautern	Germany
Dublin City Univ. / Univ. Rey Juan Carlos	Ireland / Spain
IBM	USA
Institut Eurecom	France
Joanneum Research	Austria
Marburg Univ.	Germany
Tsinghua Univ.	China

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- DTO, NIST/ITL for funding
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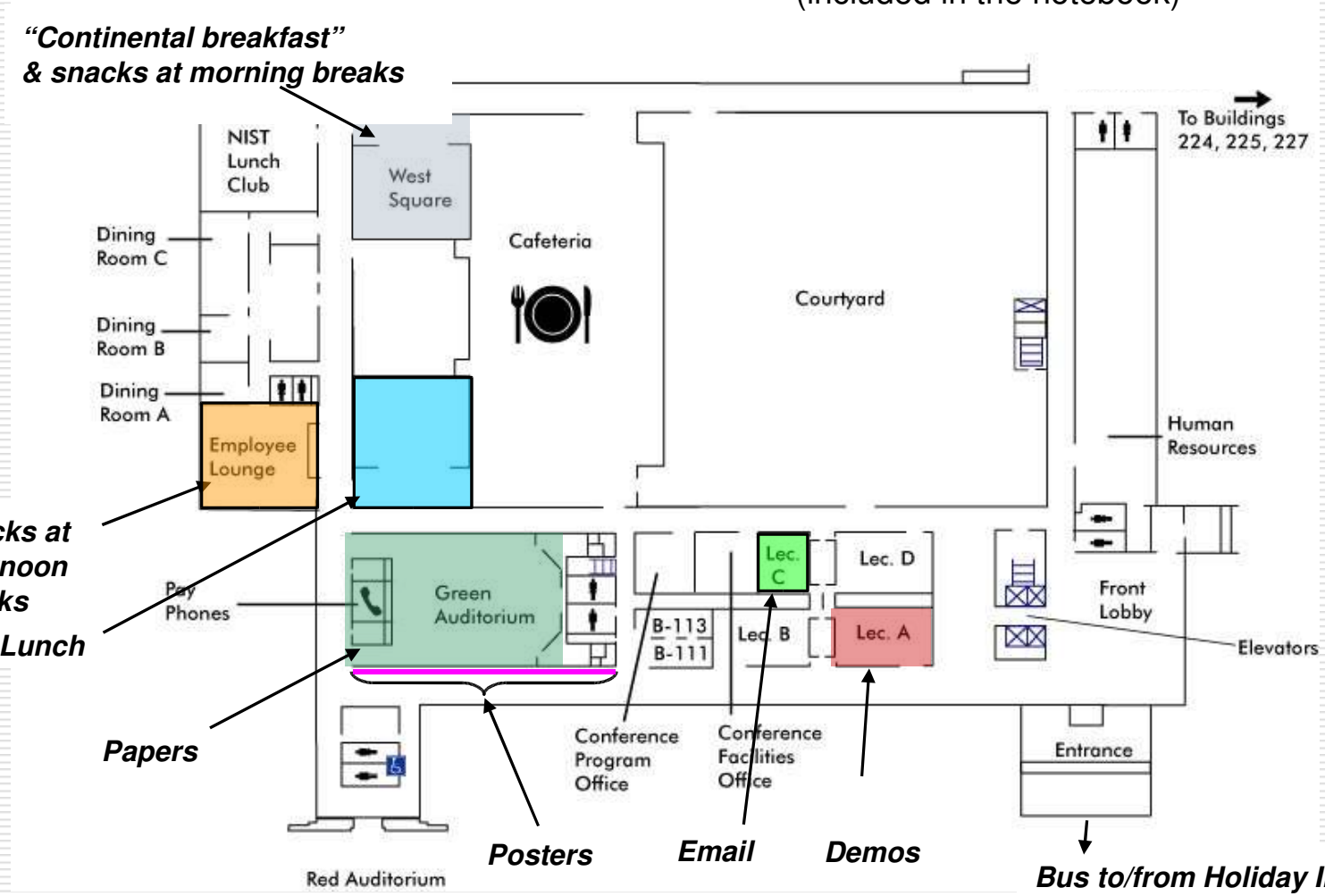
- DCU Centre for Digital Video Processing for formatting the master shot reference and selecting the key frames
- BBN for donating ASR/MT output for Arabic and Chinese sources
- Univ. of Amsterdam and Univ. of Iowa for helping in distribution of BBC data
- Univ. of Amsterdam for MediaMill challenge data
- Columbia Univ, CMU, IBM for LSCOM features

Agenda: Day 1

- Arranged by task
- Time for discussion of approaches & evaluation
- Monday
  - High-level features
  - Possible data for 2007
  - Lunch
  - Rushes
  - Demo/Poster previews
  - Demos & Posters
  - Workshop supper

Map: NIST Admin. Building, 1st Floor

(included in the notebook)



Agenda: Day 2

- Tuesday
  - Shot boundaries
  - Search
  - Lunch
  - TRECVID planning
    - Reuse of 2003-2006 broadcast news data?
      - No new distributions
      - Experiments with LSCOM features? MediaMill baseline?
      - Increased emphasis on event (object/person/+activity) topics and use of more of the video? (what about speed and volume goals?)
    - Sound & Vision
      - Tasks? development data? evaluation?
    - Rushes (BBC, perhaps Telemadrid)
      - Tasks? development data? evaluation?
    - Other items?

Reminders

- If you are driving to NIST rather than taking the NIST bus, you don't need to stop at the Visitor Center tomorrow.
  - Just show you conference badge and phot ID at the gate as you drive in.
- Workshop lunches will be in the main cafeteria.
  - Choose what you want (except bottled or packaged foods)
  - Proceed to the cashier and present your ticket
- The workshop supper is closeby at Growler's in Gaithersburg . This is a casual restaurant.
  - One ticket is included with your registration
  - You can buy additional tickets at the registration desk
  - If you don't plan to attend, please turn in your ticket at the registration desk so someone else can attend.
- If you are giving a talk, please have your computer connected or presentation loaded before the session begins.