

A Touch-panel based User Interface and Utilization of User's Memories for Known-item Search (KIS) Task in TRECVID 2011

知を識る。

Knowledge Systems Laboratory.

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Goal

Interactive KIS Task

output

1 single video

Evaluate

Mean Elapsed Time
(<5mins)

Mean
Average Precision

User Satisfaction
(1---7)

Query:

391 Queries in test:

Find the video of a man in white T-shirt,
blond hair, talking about FBI

Find the video of a baby in stroller being
pushed by a woman in blue pants in a
house with hardwood floors.

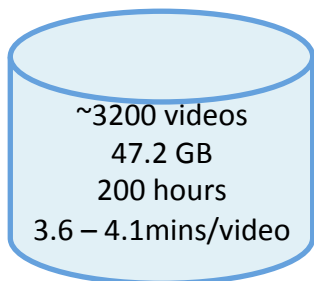
⋮

Find the video showing a hand next to a
computer keyboard and a cat's tail and
paw

Data Collection:

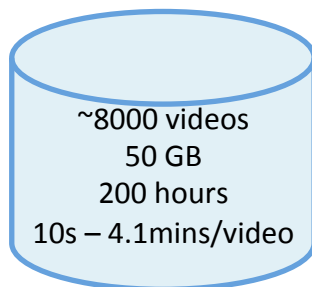
Training Data

(with XML)

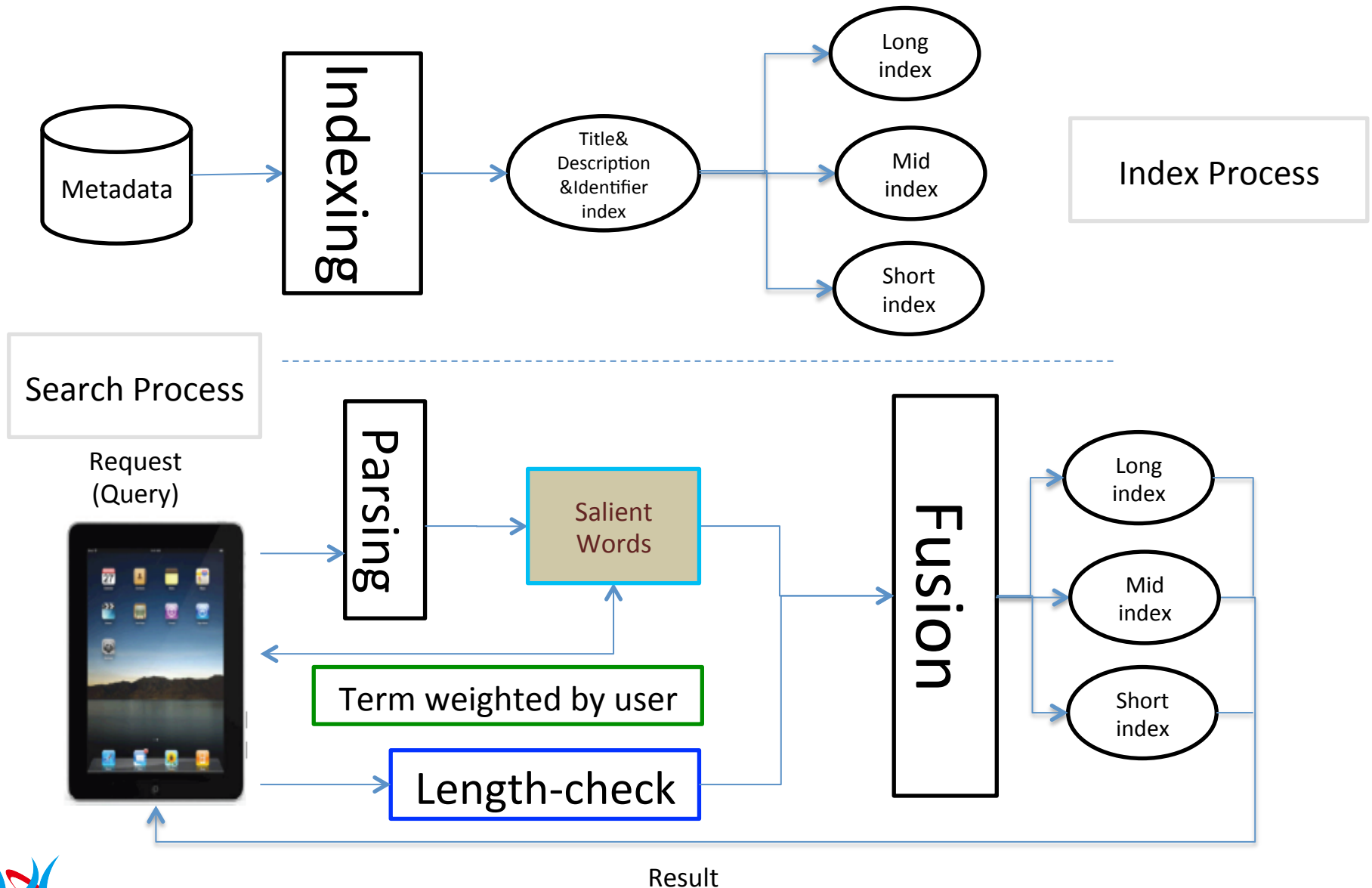


Test Data

(with XML)

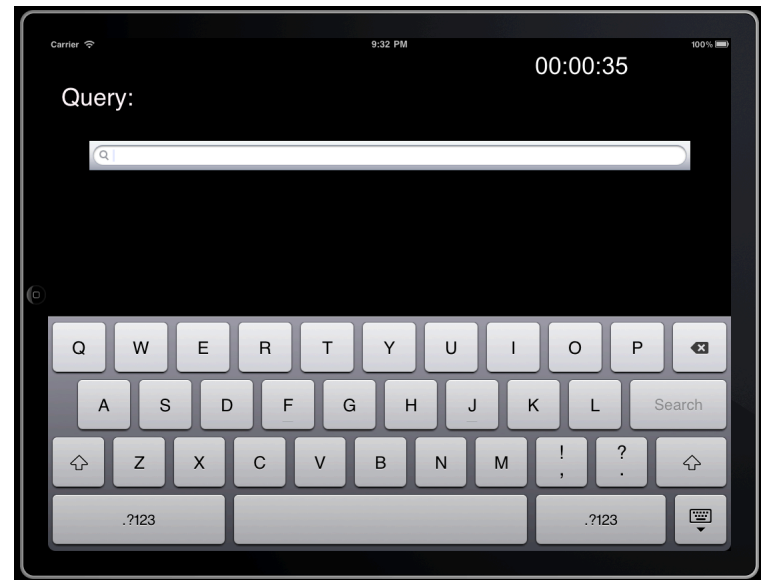


System Structure



Feature(1): User Interface

- Description:
 - Efficient and User-friendly Interface.
- Solution:
 - iPad as UI
 - Intuitive, Easy to use
- Goal:
 - Better mean elapsed time and user satisfaction.

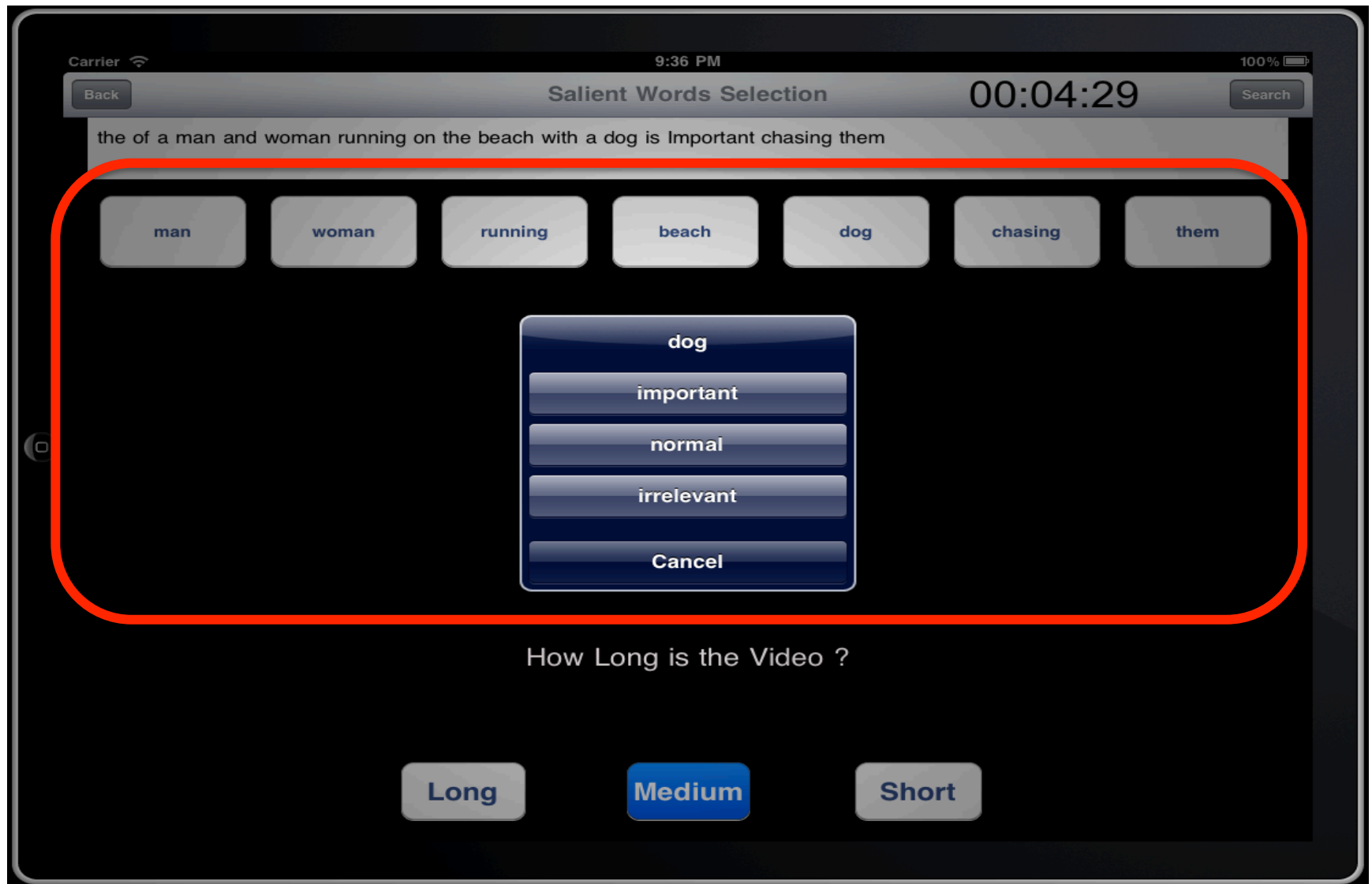


Feature(2): Visualizing Weighted Terms

- Description:
 - Salient Term, Computer **Only**, NOT Effective.
- Solution:
 - Let user decide query terms' weight, In Visual.
- Goal:
 - Better Engine Performance & User Satisfaction.



Visual Level



Feature(3): Length-check

- Description:
 - User remember video's length roughly.
- Solution:
 - Add “short”, “medium”, “long” functions.
- Goal:
 - Better Engine Performance.



Visual Level

The screenshot shows a mobile application interface with a dark background. At the top, there is a status bar with 'Carrier', signal strength, '9:34 PM', and '100%' battery. Below this is a header bar with a 'Back' button, the title 'Salient Words Selection', a timer '00:02:18', and a 'Search' button. A text input field contains the sentence 'the of a man and woman running on the beach with a dog chasing them'. Below the input field are seven buttons labeled 'man', 'woman', 'running', 'beach', 'dog', 'chasing', and 'them'. At the bottom, a red rounded rectangle highlights a section titled 'How Long is the Video ?' which contains three buttons: 'Long', 'Medium' (which is highlighted in blue), and 'Short'.

Carrier 9:34 PM 100%

Back Salient Words Selection 00:02:18 Search

the of a man and woman running on the beach with a dog chasing them

man woman running beach dog chasing them

How Long is the Video ?

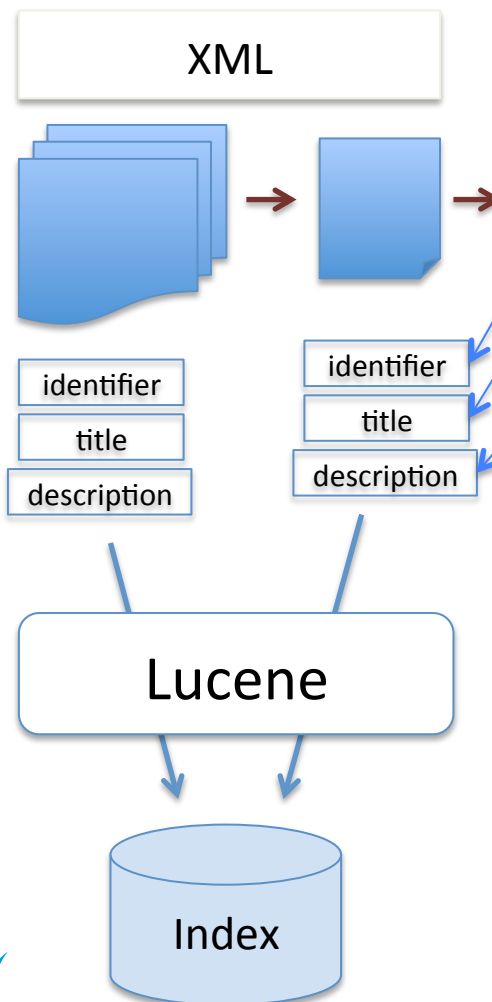
Long Medium Short

Short: less
than 20
seconds

Medium:
21-59
seconds

Long: more
than 1 min

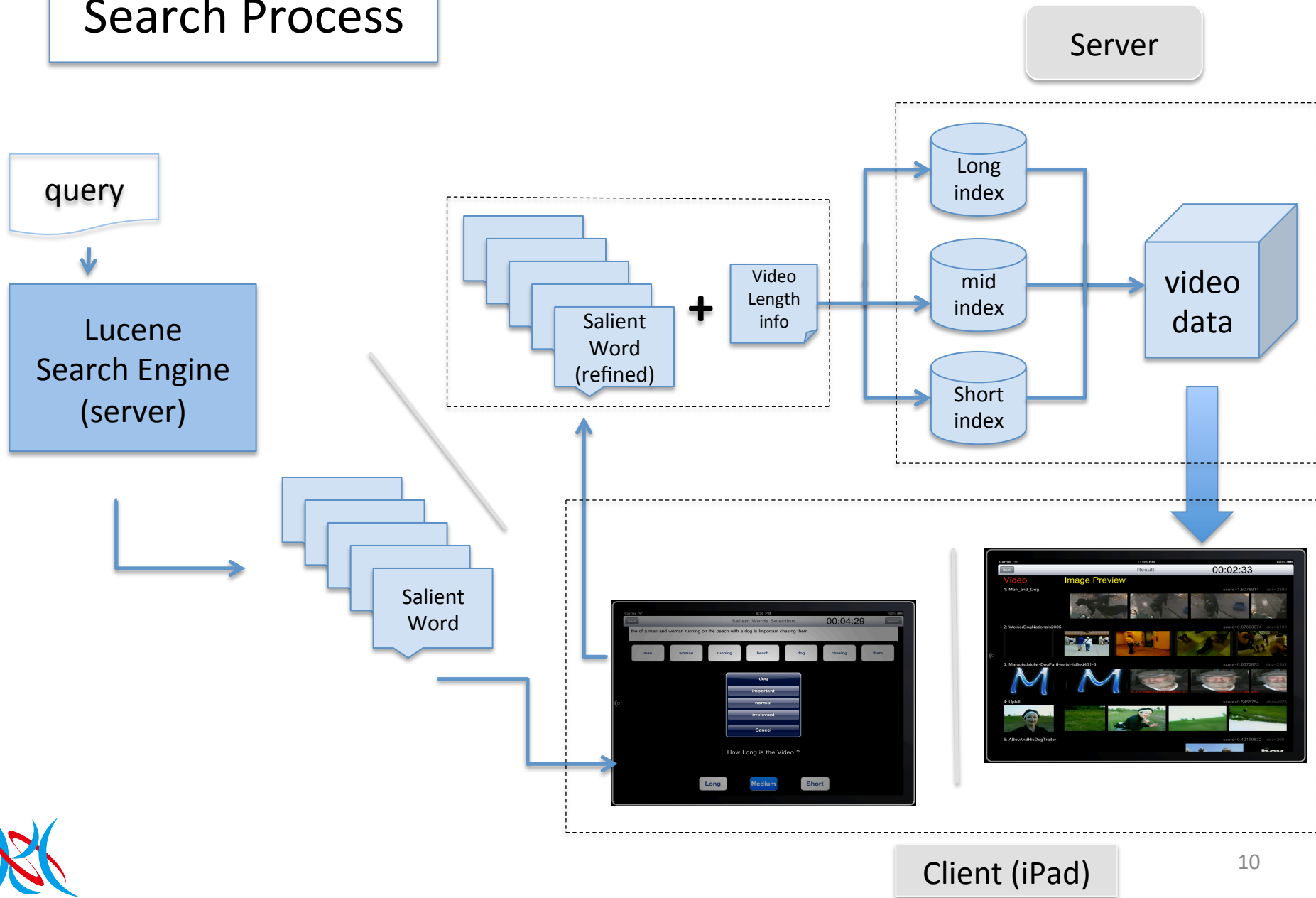
Index Process



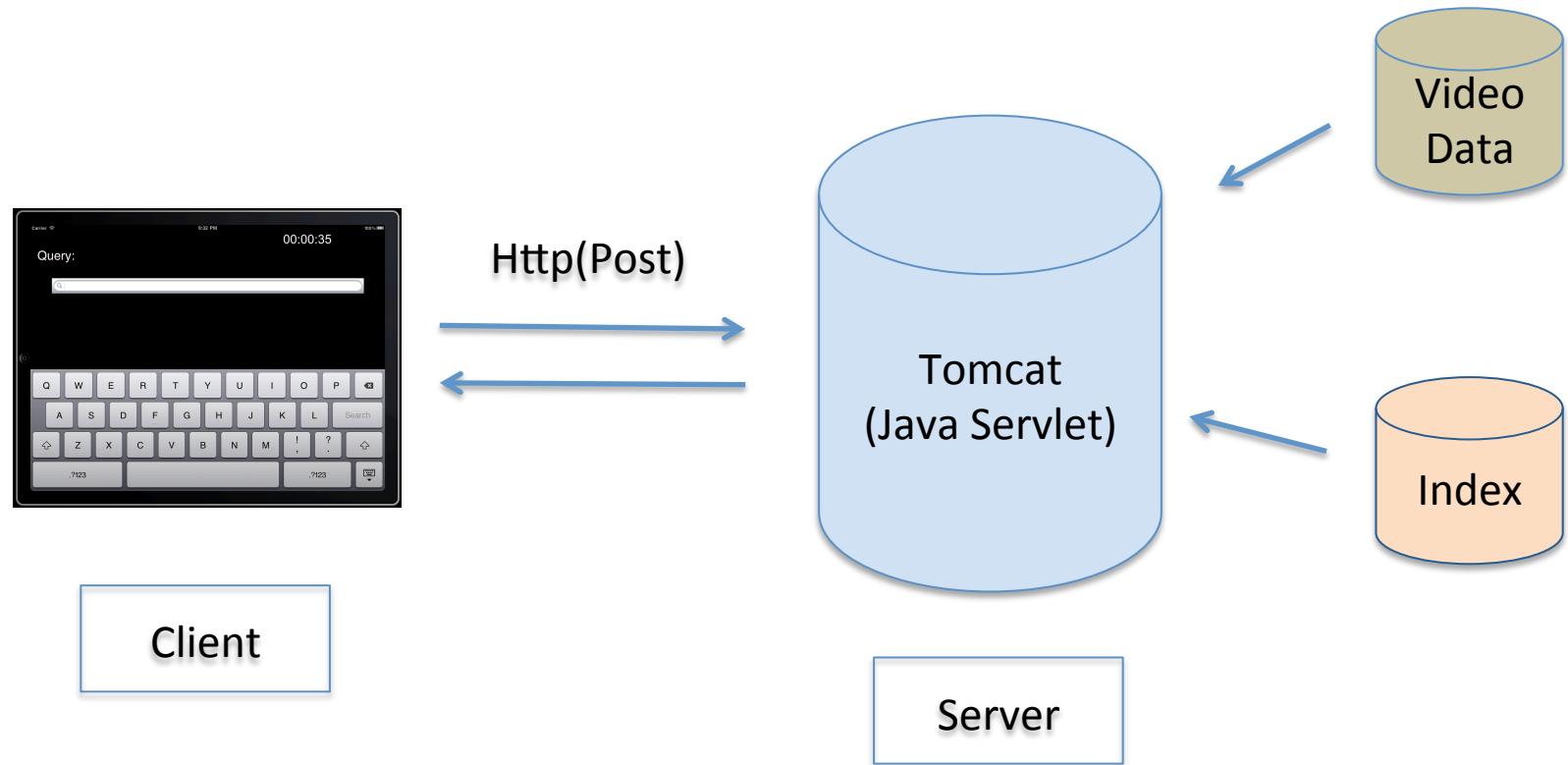
```
2ndSHEDUnderwaterHockeyTournamentFinals_meta.xml
2ndSHEDUnderwaterHockeyTournamentFinals_meta.xml > No Selection

1 <?xml version="1.0" encoding="UTF-8"?>
2 <metadata>
3   <identifier>2ndSHEDUnderwaterHockeyTournamentFinals</identifier>
4   <title>2nd SHED Underwater Hockey Tournament Finals</title>
5   <title>2nd SHED Underwater Hockey Tournament Finals</title>
6   <creator>www.usauwh.com</creator>
7   <mediatype>movies</mediatype>
8   <collection>sports</collection>
9   <description>2nd SHED Underwater Hockey Tournament Finals, Located in San Jose CA - 2005</
10  description>
11  <date>2005</date>
12  <year>2005</year>
13  <year>2006</year>
14  <subject>Underwater Hockey; H2ockey; Octopush; San Jose; SHED; Tournament; Finals;</subject>
15  <licenseurl>http://creativecommons.org/licenses/by/2.5/</licenseurl>
16  <publicdate>2006-07-07 05:15:07</publicdate>
17  <adder>duereg@hotmail.com</adder>
18  <uploader>duereg@hotmail.com</uploader>
19  <publisher>www.usauwh.com</publisher>
20  <sound>sound</sound>
21  <color>color</color>
22  <resource>movies</resource>
23  <license>http://creativecommons.org/licenses/by/2.5/</license>
24  <format>Video</format>
25  <keywords>SHED, Underwater Hockey, Tournament, San Jose, H2ockey, uwh, Octopush</keywords>
26  <holder>Matt Blair</holder>
27  <updateddate>2006-09-05 16:00:47</updateddate>
28  <updater>duereg</updater>
29 </metadata>
```

Search Process



Network

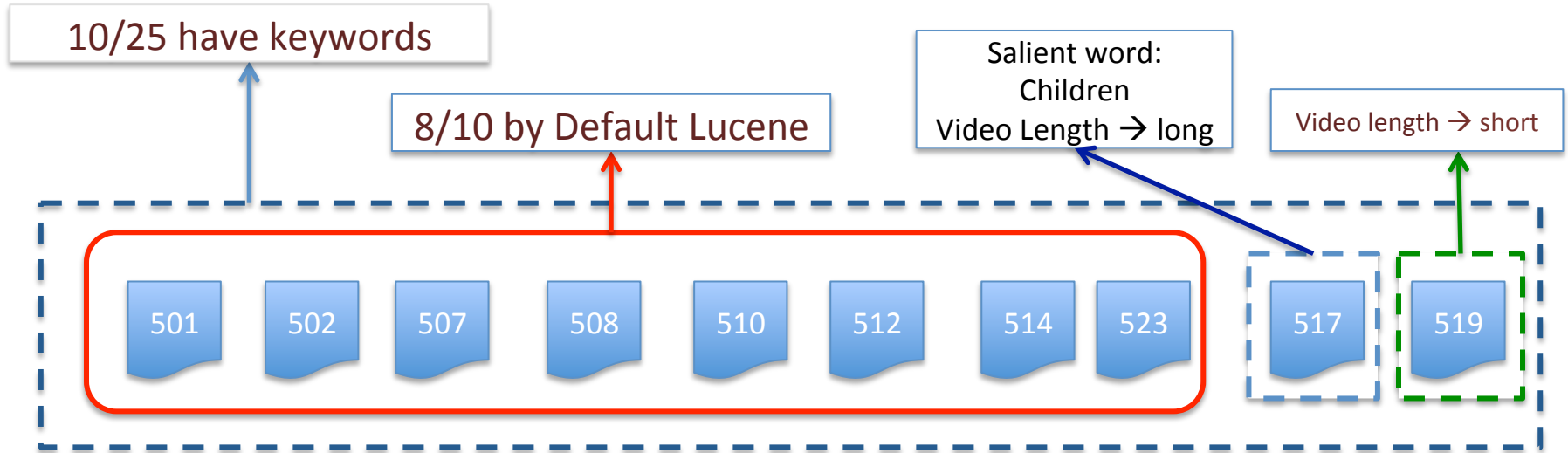


iPad User Interface...

Video



Interesting Issue



Rank change	Topic No.									
	501	502	507	508	510	512	514	523	517	519
Pre.	2	5	1	1	4	3	1	8	*	*
Aft.	1	1	1	1	1	1	1	1	1	3

Result:

Index & Methods combination	25 Test Topics		
	Mean Precision	Mean Elapsed Time	Mean User Satisfaction
XML	0.320	3.544	4.000
+ Salient Word Refining & Length Verification	0.400		

MP & MIR comparison:

Index & Methods combination	25 Test Topics	
	Mean Precision	Mean Inverted Rank
XML	0.320	0.176
+ Salient Word Refining & Length Verification	0.400	0.373



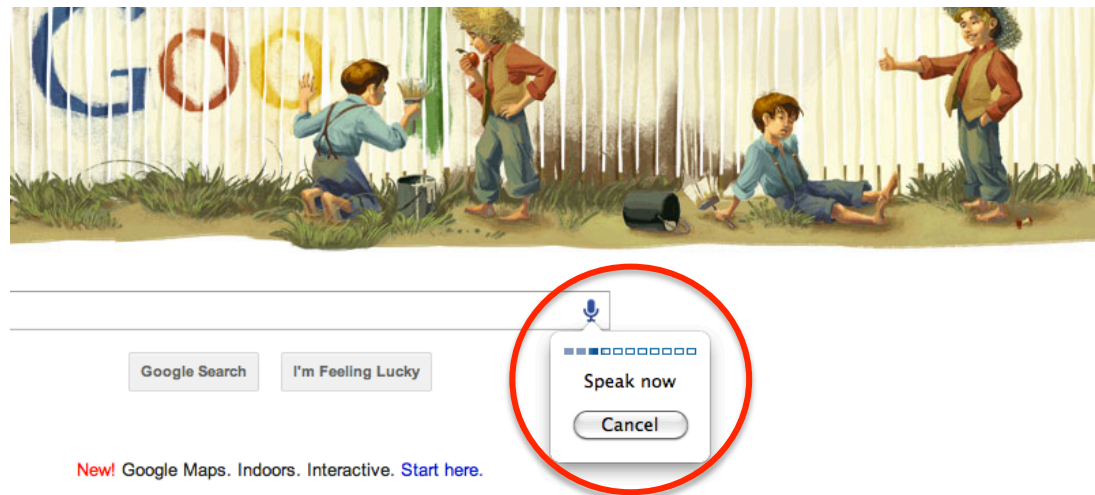
Summary

- TRECVID 2011:
 - Interactive KIS task
- Index data: only metadata
- 3 issues:
 - iPad
 - Salient word refining
 - Video Length Check
- Index and Search process
- Results.



Future Work

- Performance enhancement:
 - OCR, ASR index implementation.
 - Voice-aid Query Input.



Thank You

Question?

