

November 27-28, 2006

# International Workshop on Spoken Language Translation

- Evaluation Campaign on Spoken Language Translation -

ATR Spoken Language Communication Research Laboratories Kyoto, Japan

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## Theme

Last Update: 08/24/2009 07:25:10

Spoken language translation technologies attempt to cross the language barriers between people having different native languages who each want to engage in conversation by using their mother-tongue. Spoken language translation has to deal with problems of automatic speech recognition (ASR) and machine translation (MT).

One of the prominent research activities in spoken language translation is the work being conducted by the Consortium for Speech Translation Advanced Research ([C-STAR III](#)), which is an international partnership of research laboratories engaged in automatic translation of spoken language. Current members include [ATR](#) (Japan), [CAS](#) (China), [CLIPS](#) (France), [CMU](#) (USA), [ETRI](#) (Korea), [ITC-irst](#) (Italy), and [UKA](#) (Germany). A multilingual speech corpus comprised of tourism-related sentences (BTEC\*) has been created by the C-STAR members and parts of this corpus were already used for previous IWSLT workshops focusing on the evaluation of MT results based on text input (<http://mastarpj.nict.go.jp/IWSLT2004>) and the translation of ASR output (word lattices, N-best lists) using read speech as input (<http://penance.is.cs.cmu.edu/iwslt2005>). The full BTEC\* corpus consists of 160K of sentence-aligned text data and parts of the corpus will be provided to all evaluation campaign participants for training purposes.

In this workshop, we focus on the translation of spontaneous speech which includes ill-formed utterances due to grammatical incorrectness, incomplete sentences, and redundant expressions. The impact of spontaneity aspects on the ASR and MT systems performance as well as the robustness of state-of-the-art MT engines towards speech recognition errors will be investigated in detail.

Two types of submissions are invited: 1) participants in the evaluation campaign of spoken language translation technologies, and 2) technical papers on related issues. Each participant in the evaluation campaign is requested to submit a paper describing the utilized ASR and MT systems and to report results using the provided test data.

An overview of the evaluation campaign is as follows:

### Theme:

- Spontaneous speech translation

### Translation Directions:

- Arabic/Chinese/Italian/Japanese into English (AE, CE, IE, JE)

### Input Conditions:

- *Speech* (audio)
- *ASR Output* (word lattice or N-best list)
- *Cleaned Transcripts* (text)

### Supplied Resources:

- *training corpus*:
  - AE, IE:
    - 20,000 sentence pairs of BTEC\*
    - three develop sets (3x500 sentence pairs, 16 multiple references)
  - CE, JE:
    - 40,000 sentence pairs of BTEC\*
    - three develop sets (3x500 sentence pairs, 16 multiple references)
- *develop corpus*:
  - speech data, word lattices, N-best lists of 500 input sentences with 7 reference translations for each translation direction and input condition
- *test corpus*:
  - speech data, word lattices, N-best lists of 500 input sentences for each translation direction and input condition

→ word segmentations will be provided according to the output of the provided ASR engines

### Data Tracks:

The past IWSLT workshop results showed that the amount of BTEC\* sentence pairs used for training largely effects the performance of the MT systems on the given task. However, only CSTAR partners have access to the full BTEC\* corpus. In order to allow a fair comparison between the systems, we decided to distinguish the following two data tracks:

- *Open Data Track* ("open" for everyone :->)
  - no restrictions on training data of ASR engines
  - any resources, besides the full BTEC\* corpus and proprietary data, can be used as the training data of MT engines. Concerning the BTEC\* corpus and proprietary data, only the *Supplied Resources* (see above) are allowed to be used for training purposes.
- *C-STAR Data Track*
  - no restrictions on training data of ASR engines
  - any resources (including the full BTEC\* corpus and proprietary data) can be used as the training data of MT engines.

### Evaluation Specification:

- ASR output
  - (automatic) WER
- MT output
  - (automatic) BLEU, NIST, METEOR (using 7 reference translations)
  - (subjective) fluency, adequacy

→ systems will be ranked according to the metrics underlined above

→ human assessment will be carried out for the top-10 systems (according to the BLEU metric) of the ASR Output condition, Supplied data track, Chinese-to-English translation task

### Technical Paper:

The workshop also invites technical papers related to spoken language translation. Possible topics include, but are not limited to:

- Spontaneous speech translation
- Domain and language portability
- MT using comparable and non-parallel corpora
- Phrase alignment algorithms
- MT decoding algorithms
- MT evaluation measures

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## Evaluation Campaign

Last Update: 03/22/2007 04:14:50

The evaluation campaign is carried out using a multilingual speech corpus. It contains tourism-related sentences similar to those that are usually found in phrasebooks for tourists going abroad. Details about this *Basic Travel Expression Corpus*(BTEC\*), the different data set conditions for each track, the guidelines on how to submit one's translation results, and the evaluation specifications used in this workshop are given below.

### Online Run Submission

- access the URLs of the respective data sets listed below
- register your login
- login to the server
- select the respective translation condition
- follow the instructions below to upload the respective MT output file(s)
- the automatic evaluation will be carried out:
  - case-sensitive, with punctuations (*official evaluation specifications*), whereby all MT outputs will be preprocessed (tokenizing punctuations) before evaluation using the released [ppEnglish.case+punc.pl](#) script
  - case-insensitive, without punctuations (*additional evaluation specifications*), whereby all MT outputs will be preprocessed (forcing lower-case, removing punctuations) before evaluation using the released [ppEnglish.no\\_case+no\\_punc.pl](#) script

#### devset1\_CSTAR03, devset2\_IWSLT04, devset3\_IWSLT05

- upload a single hypothesis file (plain text file)
- one translation per line using the same sentence order as the respective input data set
- automatic evaluation scores will be sent to registered login email
- URL: <http://rosie.is.cs.cmu.edu:8080/iwslt2006/Evaluation-develop>

#### devset4\_IWSLT06

- upload two hypothesis files (plain text files) created using the same MT engine:
  - translation of the ASR Output data file(s)
  - translation of the correct recognition results
- for each hypothesis file: one translation per line using the same sentence order as the respective input data set
- automatic evaluation scores will be sent to registered login email
- URL: <http://rosie.is.cs.cmu.edu:8080/iwslt2006/Evaluation-develop4>

#### testset\_IWSLT06

- same outline as *devset4\_IWSLT06*

- TESTSET server can NOW be used to submit additional contrastive runs until the workshop
- URL: <http://rosie.is.cs.cmu.edu:8080/iwslt2006/Evaluation-test>

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## Corpus Specifications

### Training Corpus:

- [CE], [JE]
  - 40K sentences randomly selected from the BTEC\* corpus
  - coding:
    - Chinese: EUC-china (and UTF-8)
    - English: ISO-8859-1
    - Japanese: EUC-japan (and UTF-8)
  - word segmentations for Chinese and Japanese according to ASR output format
- [AE],[IE]
  - 20K sentences randomly selected from the BTEC\* corpus
  - coding:
    - Arabic: UTF-8
    - English: ISO-8859-1
    - Italian: ISO-8859-1
- data format:
  - each line consists of two fields divided by the character '\'
  - sentence consisting of words divided by single spaces  
**format: <SENTENCE\_ID>\<MT\_TRAINING\_SENTENCE>**
  - Field\_1: sentence ID
  - Field\_2: MT training sentence
- example:
  - JE\_TRAIN\_00001\this is the first training sentence
  - JE\_TRAIN\_00002\this is the second training sentence

### Develop Corpus:

- 489 sentences obtained from simple conversations (question/answer scenario) in the travel domain
- coding:
  - Arabic: UTF-8
  - Chinese: EUC-china (and UTF-8)
  - Italian: ISO-8859-1
  - Japanese: EUC-japan (and UTF-8)
- data format:
  - **1-BEST**  
**format: <SENTENCE\_ID>\<MT\_INPUT\_SENTENCE>**
    - Field\_1: sentence ID (as given in the Develop Corpus)
    - Field\_2: best recognition hypothesis
    - example:
      - CE\_DEV4\_001\best ASR hypo for 1st input
      - CE\_DEV4\_002\best ASR hypo for 2nd input
      - ...
      - CE\_DEV4\_489\best ASR hypo for last input

- **N-BEST**

format: <SENTENCE\_ID>\<NBEST\_ID>\<MT\_INPUT\_SENTENCE>

- Field\_1: sentence ID (as given in the Develop Corpus)
- Field\_2: NBEST ID (max; 20)
- Field\_3: recognition hypothesis
- example:
  - CE\_DEV4\_001\01\best ASR hypo for 1st input
  - CE\_DEV4\_001\02\2nd-best ASR hypo for the 1st input
  - ...
  - CE\_DEV4\_001\20\20th-best ASR hypo for the 1st input
  - CE\_DEV4\_002\01\best ASR hypo for the 2nd input
  - ...

- **word lattice** → [HTK Standard Lattice Format \(SLF\)](#)
- **speech data** → RAW format, 16 kHz, signed-short, little-endian

**Test Corpus:**

- 500 sentences obtained from simple conversations (question/answer scenario) in the travel domain
- coding: → see *Develop Corpus*
- data format: → see *Develop Corpus*

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## Translation Input Conditions

**Spontaneous Speech (CE)**

- speech data (wave form)
  - each participant has to use its own ASR engine!
- ASR output (word lattice, N-best, 1-best) of ASR engines provided by the CSTAR partners

**Read Speech (AE, CE, IE, JE)**

- ASR output (word lattice, N-best, 1-best) of ASR engines provided by the CSTAR partners

**Correct Recognition Results (AE, CE, IE, JE)**

- mandatory for all run submissions
- text input

In order to investigate the effects of recognition errors on the MT performance, two translation result files have to be uploaded by the participant when submitting a run:

1. the translation results obtained either from the speech/ASR\_output input condition (wave form, word lattice, N/1-BEST list)
2. the translation results of the correct recognition result input using the same MT engine

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## Data Tracks

The past IWSLT workshop results showed that the amount of BTEC\* sentence pairs used for training largely effects the performance of the MT systems on the given task. However, only CSTAR partners have access to the full BTEC\* corpus. In order to allow a fair comparison between the systems, we decided to distinguish the following two data tracks:

**Open Data Track** ("open" for everyone :->)

- no restrictions on training data of ASR engines
- any resources, besides the full BTEC\* corpus and proprietary data, can be used as the training data of MT engines. Concerning the BTEC\* corpus and proprietary data, only the *Supplied Resources* (see above) are allowed to be used for training purposes.

## C-STAR Data Track

- no restrictions on training data of ASR engines
- any resources (including the full BTEC\* corpus and proprietary data) can be used as the training data of MT engines.

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## Evaluation Specifications

### Subjective Evaluation:

Human assessments of translation quality with respect to the "fluency" and "adequacy" of the translation (similar to the evaluation guidelines used in projects by NIST) is carried out by native speakers ("fluency") and non-/native speakers ("adequacy") of American English using a browser-based evaluation tool.

- "Fluency" indicates how the evaluation segment sounds to a native speaker of English. The evaluator grades the level of English used in the translation using one of the following phrases:
  - "Flawless English"
  - "Good English"
  - "Non-native English"
  - "Disfluent English"
  - "Incomprehensible"
- The "adequacy" assessment is carried out after the fluency judgement is done. The evaluator is presented with the "gold standard" translation and has to judge how much of the information from the original translation is expressed in the translation by selecting one of the following grades:
  - "All of the information"
  - "Most of the information"
  - "Much of the information"
  - "Little information"
  - "None of it"

The subjective evaluation will be carried out as follows:

- most popular data track only (*CE, ASR Output condition, Open Data Track*)
- top-10 systems (ranked according to BLEU)
- 3 evaluators per sentence

### Automatic Evaluation:

- [BLEU](#), NIST, METEOR (using 7 reference translations)
- Evaluation Parameter:
  - [Official Evaluation Specifications](#) (to be used for MT system rankings in this year's IWSLT evaluation campaign):
    - case sensitive
    - with punctuation marks ('.', '?', '!', '"') tokenized
  - [Additional Evaluation Specifications](#) (used in previous IWSLT evaluation campaigns):
    - case insensitive (lower-case only)
    - no punctuation marks (remove '.', '?', '!', '"')
    - no word compounds (replace hyphens '-' with space)

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## Organizers

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### Organizers

- Satoshi Nakamura (ATR, Japan; **Chair**)
- Herve Blanchon (CLIPS, France)
- Gianni Lazzari (ITC-irst, Italy)
- Youngjik Lee (ETRI, Korea)
- Alex Waibel (CMU, USA / UKA, Germany)
- Bo Xu (CAS, China)

### Program Committee

- Michael Paul (ATR, Japan; **Evaluation Campaign Chair**)
- Marcello Federico (ITC-irst, Italy; **Technical Paper Chair**)
- Nicola Bertoldi (ITC-irst, Italy)
- Christian Boitet (CLIPS, France)
- Genichiro Kikui (NTT, Japan)
- Kevin Knight (ISI, USA)
- Young-Suk Lee (IBM, USA)
- Phillip Koehn (Univ. of Edinburgh)
- Sadao Kurohashi (Univ. of Kyoto)
- José B. Mariño (UPC, Spain)
- Arul Menezes (Microsoft, USA)
- Masaaki Nagata (NTT Cyber Space Labs, Japan)
- Hermann Ney (RWTH, Germany)
- Seung-Shin Oh (ETRI, Korea)
- Wade Shen (MIT, USA)
- Stephan Vogel (CMU, USA)
- Andy Way (Dublin City University, Ireland)
- Chengqing Zong (CAS, China)

### Local Arrangements

- Genichiro Kikui (NTT, Japan; **Local Arrangements Chair**)
- Noriko Mibayashi (ATR, Japan)
- Daichi Mochihashi (ATR, Japan)
- Kiyonori Ohtake (ATR, Japan)
- Eiichro Sumita (ATR, Japan)

### Supporting Organizations



Advanced Telecommunication Research Institute International (ATR)



Association for Computational Linguistics (ACL)



Center for the Evaluation of Language and Communication Technologies (CELCT)



European Language Resources Association (ELRA)



National Institute of Information and Communications Technology (NICT)



International Speech Communication Association (ISCA)

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## Keynote Speeches

Last Update: 11/30/2006 04:55:10

### November 27, 2006

#### TC-STAR: a Speech to Speech Translation Project

13:30-14:30 [Dr. Gianni Lazzari](#) (ITC-irst, Italy)

→slides

Speech to speech translation is a challenging research problem. To simplify the task and make it somewhat more feasible, the first research project addressing this topic in the 1990's worked on restricted domains such as scheduling appointment.

TC-STAR (*Technology and Corpora for Speech to Speech Translation*) is the first joint research project addressing speech-to-speech translation in an unrestricted domain.

TC-STAR works on European parliamentary speeches in native or non-native English and Spanish. The topics of the speeches include everything that is discussed in the European Parliament. Moreover the translation of Chinese broadcast news into English was chosen in order to link the project to available international benchmarks.

My talk will give an overview of the TC-STAR project, the main achievements and the results of the last evaluation campaign.

### November 28, 2006

#### Recent Results on MT Evaluation in the GALE Program

13:30-14:30 [Dr. Salim Roukos](#) (IBM, US)

→slides

We will give an overview of the first year's evaluation results of the GALE program that is based on human post editing of the output of MT systems. A post-editor edits the MT system output until the same meaning is conveyed as in the "Gold" reference. The Human Translation Error Rate (HTER) counts the number of edits performed by a post-editor normalized by the length of the "Gold" reference as the MT error metric. We will report on the sensitivity and stability of the new HTER metric for evaluating MT systems. We also compare the correlation of various automated metrics (BLEU, TER) to HTER.

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## Open Discussion

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### November 28, 2006

#### Speech Translation - Where is the Progress? What are the Challenges?

17:30-18:20

[moderator]

Stephan VOGEL (CMU, USA)

[panelists]

Mike DILLINGER (Spoken Translation, USA),

Marcello FEDERICO (ITC-irst, Italy),

Ruiqiang ZHANG (NICT/ATR, Japan)

5 years of machine translation evaluations, esp. those organized by NIST, tell a wonderful success story: machine translation has made amazing progress, at least when translating text sources, like news, for the "big" languages like Arabic and Chinese. This improvement comes from using more data in data-driven MT systems, but also from better models, better training and decoding algorithms.

The picture seems less sparkling when we look at speech translation. Even in a simple approach, in which first-best recognition result is fed into a text translation system the improvements in speech recognition and in machine translation will result in improved speech translation. There has been quite some work on tighter coupling between the two components, like lattice translation, using ASR features in MT and optimizing the end-to-end performance, it still seems to be once-in-a-while improvements which result from this work. Additional topics relating to speech translation are disfluency removal, segmentation and automatic punctuation.

The panel discussion will take a critical look at recent work in speech translation:

- what has been done?
- what improvements have been reported?
- how solid are these improvements?
- Are there any important aspects of speech translation which have been completely overlooked or are deemed to be important but beyond the reach of our current technologies?
- Are there additional requirements when speech translation is not an end but the output fed into other systems, like question answering systems?
- How close are we to useful applications of speech translation technology?

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## Program

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### November 27, 2006

#### Workshop Opening

9:15	9:20	Address of Welcome <i>Satoshi NAKAMURA</i>
9:20	9:50	Overview of the IWSLT06 Evaluation Campaign <i>Michael PAUL</i>

#### Best Paper Award (chair: Satoshi NAKAMURA)

09:50	10:20	The RWTH Statistical Machine Translation System for the IWSLT 2006 Evaluation <i>Arne MAUSER, Richard ZENS, Evgeny MATUSOV, Sasa HASAN, Hermann NEY</i>
coffee ☕ break		

#### Evaluation Campaign I (chair: Chengqing ZONG)

10:40	11:00	The NiCT-ATR Statistical Machine Translation System for IWSLT 2006 <i>Ruiqiang ZHANG, Hirofumi YAMAMOTO, Michael PAUL, Hideo OKUMA, Keiji YASUDA, Yves LEPAGE, Etienne DENOUEAL, Daichi MOCHIHASHI, Andrew FINCH, Eiichiro SUMITA</i>
11:00	11:20	NTT Statistical Machine Translation for IWSLT 2006 <i>Taro WATANABE, Jun SUZUKI, Hajime TSUKADA, Hideki ISOZAKI</i>
11:20	11:40	The UKA/CMU Statistical Machine Translation System for IWSLT 2006 <i>Matthias ECK, Ian LANE, Nguyen BACH, Sanjika HEWAVITHARANA, Muntsin KOLSS, Bing ZHAO, Almut Silja HILDEBRAND, Stephan VOGEL, Alex WAIBEL</i>
11:40	12:00	The ITC-irst SMT System for IWSLT 2006 <i>Boxing CHEN, Roldano CATTONI, Nicola BERTOLDI, Mauro CETTOLO, Marcello FEDERICO</i>

lunch 🍽️ break

#### Invited Talk (chair: Satoshi NAKAMURA)

13:30	14:30	<a href="#">TC-STAR: a Speech to Speech Translation Project</a> <i>Gianni LAZZARI (ITC-irst, Italy)</i>
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#### Evaluation Campaign II (chair: Matthias ECK)

14:30	14:50	Toward Integrating Word Sense and Entity Disambiguation into Statistical Machine Translation <i>Marine CARPUAT, Yihai SHEN, Xiaofeng YU, Dekai WU</i>
14:50	15:10	The TALP Ngram-based SMT System for IWSLT 2006 <i>Josep M. CREGO, Adrià de GISPert, Patrik LAMBERT, Maxim KHALILOV, Marta R. COSTA-JUSSÀ, José B. MARIÑO, Rafael BANCHS, José A.R. FONOLLOSA</i>
15:10	15:30	TALP Phrase-Based System and TALP System Combination for IWSLT 2006 <i>Marta R. COSTA-JUSSÀ, Josep M. CREGO, Adrià de GISPert, Patrik LAMBERT, Maxim KHALILOV, José A.R. FONOLLOSA, José B. MARIÑO, Rafael BANCHS</i>
15:30	15:50	The MIT-LL/AFRL IWSLT-2006 MT System <i>Wade SHEN, Brian DELANEY, Tim ANDERSON</i>
coffee ☕ break		
<b>Technical Paper I</b> (chair: Marcello FEDERICO)		
16:10	16:30	Automatic Sentence Segmentation and Punctuation Prediction for Spoken Language Translation <i>Evgeny MATUSOV, Arne MAUSER, Hermann NEY</i>
16:30	16:50	Continuous Space Language Models for the IWSLT 2006 Task <i>Holger SCHWENK, Marta R. COSTA-JUSSÀ and José A. R. FONOLLOSA</i>
16:50	17:10	Using Monolingual Source-Language Data to Improve MT Performance <i>Nicola UEFFING</i>
17:10	17:30	Reordering Rules for Phrase-based Statistical Machine Translation <i>Boxing CHEN, Mauro CETTOLO, Marcello FEDERICO</i>
<b>Banquet</b>		
18:00		bus transfer from the workshop venue to the banquet venue
19:00	21:30	restaurant " <i>The Garden Oriental</i> " (Garden Terrace)
21:30		bus transfer to Kyoto station OR night-spot activities located nearby (15 min. walk)

## November 28, 2006

<b>Technical Paper II</b> (chair: Genichiro KIKUI)		
09:00	09:20	Tuning Machine Translation Parameters with SPSA <i>Patrik LAMBERT, Rafael E. BANCHS</i>
09:20	09:40	An Efficient Graph Search Decoder for Phrase-Based Statistical Machine Translation <i>Brian DELANEY, Wade SHEN, Timothy ANDERSON</i>
09:40	10:00	AER: Do we need to "improve" our alignments? <i>David VILAR, Maja POPOVIC, Hermann NEY</i>
coffee ☕ break		
<b>Evaluation Campaign III</b> (chair: Eiichiro SUMITA)		

10:20	10:40	The JHU Workshop 2006 IWSLT System <i>Wade SHEN, Richard ZENS, Nicola BERTOLDI, Marcello FEDERICO</i>
10:40	11:00	The XMU Phrase-Based Statistical Machine Translation System for IWSLT 2006 <i>Yidong CHEN, Xiaodong SHI, Changle ZHOU</i>
11:00	11:20	Finite-State Transducer-based Statistical Machine Translation using Joint Probabilities <i>Srinivas BANGALORE, Stephan KANTHAK, Patrick HAFFNER</i>
11:20	11:40	The CMU-UKA Syntax Augmented Machine Translation System for IWSLT-06 <i>Andreas ZOLLMANN, Ashish VENUGOPAL, Stephan VOGEL, Alex WAIBEL</i>
11:40	12:00	IWSLT-06: experiments with commercial MT systems and lessons from subjective evaluations <i>Christian BOITET, Youcef BEY, Mutsuko TOMOKIYO, Wenjie CAO, Hervé BLANCHON</i>
lunch ☺ break		
<b>Invited Talk</b> (chair: Alex WAIBEL)		
13:30	14:30	<a href="#">Recent Results on MT Evaluation in the GALE Program</a> <i>Salim ROUKOS (IBM, US)</i>
<b>Evaluation Campaign IV</b> (chair: Hervé BLANCHON)		
14:30	14:50	NLPR Translation System for IWSLT 2006 Evaluation Campaign <i>Chunguang CHAI, Jinhua DU, Wei WEI, Peng Liu, Keyan ZHOU, Yanqing HE, Chengqing ZONG</i>
14:50	15:10	The SLE Example-Based Translation System <i>Pete Whitelock, Victor Poznanski</i>
15:10	15:30	Phrase Reordering for Statistical Machine Translation Based on Predicate-Argument Structure <i>Mamoru KOMACHI, Masaaki NAGATA, Yuji MATSUMOTO</i>
15:30	15:50	Example-based Machine Translation based on Deeper NLP <i>Toshiaki NAKAZAWA, Kun YU, Daisuke KAWAHARA, Sadao KUROHASHI</i>
coffee ☺ break		
<b>Evaluation Campaign V</b> (chair: Youngjik LEE)		
16:10	16:30	IBM Arabic-to-English Translation for IWSLT 2006 <i>Young-Suk LEE</i>
16:30	16:50	The University of Washington Machine Translation System for IWSLT 2006 <i>Katrin KIRCHHOFF, Kevin DUH, Chris LIM</i>
16:50	17:10	MATREX: DCU Machine Translation System for IWSLT 2006 <i>Nicolas STROPPA, Andy WAY</i>
<b>Demonstration</b>		
17:10	17:30	Speech-to-Speech Translation Technologies @ ATR-SLC <i>Satoshi NAKAMURA</i>
<b>Open Discussion</b>		

17:30	18:20	<p>Speech Translation - Where is the Progress? What are the Challenges?"</p> <p>[moderator] Stephan VOGEL (CMU, USA)</p> <p>[panelists] Mike DILLINGER (Spoken Translation, USA), Marcello FEDERICO (ITC-irst, Italy), Ruiqiang ZHANG (NICT/ATR, Japan)</p>
<p><b>Workshop Closing</b></p>		
18:20	18:30	<p>Closing Remarks</p> <p><i>Marcello FEDERICO</i></p>

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