I²R successfully completes its first Asian Network-Based Speech-to-Speech Translation System

- The Institute for Infocomm Research (I²R) team joins seven other Asian countries in the Asian Speech Translation Advanced Research Consortium to demonstrate speech-to-speech translation technology for 72 language combinations

Singapore, 29 July 2009 - Ever wished for technology that can translate your own conversation as you speak to eight different Asian friends in their native languages? A*STAR’s Institute for Infocomm Research (I²R), who is a member of the Asian Speech Translation Advanced Research Consortium, has invented a technology that can do just that! It operates with the help of a portable device and does a real-time network-based speech translation as you speak.

The Speech Translation team in I²R, led by Dr Li Haizhou developed this technology over a span of two years that enables speech translation between Malay language and any of the eight other Asian languages - Japanese, Chinese, Korean, Thai, Indonesian, Vietnamese, Hindi and English.

The Asian Speech Translation Advanced Research Consortium was founded to create a basic infrastructure for spoken language communication to overcome the language barriers in the Asia-Pacific region.

It will launch “the first Asian network-based speech-to-speech translation system” that can perform real-time, location-free, multi-party communication
between speakers of different Asian languages today (*Please refer to page 4*). Originally started by six members, the Asian Speech Translation Advanced Research Consortium was established in June 2006 by the National Institute of Information and Communications Technology (NICT) and the Advanced Telecommunications Research Laboratories (ATR).

Founding countries included Japan (NICT/ATR), Korea (Electronics and Telecommunications Research Institute - ETRI), Thailand (National Electronics and Computer Technology Center - NECTEC), Indonesia (Badan Pengkajian Dan Penerapan Teknologi or The Agency For the Assessment and Application Technology - BPPT), China (National Laboratory of Pattern Recognition of the Institute of Automation of Chinese Academy of Sciences - NLPR-CASIA), and India (Centre for Development of Advance Computing – C-DAC). In 2008, Vietnam (Institute Of Information Technology - IOIT) and Singapore, represented by I²R, joined the Consortium.

The consortium is working collaboratively to collect Asian language corpora¹, to create common speech recognition and translation dictionaries, to develop Web service speech translation modules for Asian languages, and to standardize interfaces and data formats for connecting speech translation modules internationally.

Professor Lye Kin Mun, Deputy Executive Director (Research) said, “I²R has come a long way in developing speech recognition and machine translation technologies. Today’s demonstration demonstrates our technological capabilities working with other Asian partners in breaking down communication barriers. We hope to work with more countries on a global scale with this imminent success.”

The I-R team is led by Dr. Li Haizhou, Department Head of Human Language Technology, with members, Dr. Ma Bin, Ms. Aw Ai Ti, Dr. Vladimir Pervouchine, Ms. Tong Rong, Mr. Bai Shuanhu, and Ms. Sharifah Mahani Aljunied.

- END -

¹ Collection of recorded remarks used for linguistic analysis
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**Background about the test:**

- Eight-member research groups participate in the experiment that cover nine major Asian languages (Japanese, Chinese, Korean, Thai, Indonesian, Malay, Vietnamese, Hindi) and, additionally, the English language.

- Each member is provided a portion of the spoken language technologies: automatic speech recognition (ASR), machine translation (MT), and text-to-speech (TTS) through STML (Speech Translation Markup Language - similar to HTML, it is an extension of XML, which is used to develop the translation server) web servers. Currently, the system can perform ASR and TTS for 9 different languages, and MT for 72 different language combinations.

- The client applications are implemented on a handheld mobile terminal device (VAIO), which allows portable speech-to-speech translation.

- Any client user can access, in real time from anywhere in the world, provided they have the ASR/MT/TTS STML servers, can perform multi-party speech translation at the same time.

- The system domain covers 160,000 travel expressions, plus additional named entities (NE) from major Asian countries (e.g., tourist areas: Bulkuksa-Korea, Watprakaew-Thailand; attractions: Wayangkulit-Indonesia, Khatak-India, etc)

- The consortium is continuing their activities internationally and partners are still being sought for languages not only in Asia, but around the world. This is expected to accelerate the speed of research towards the realization of practical speech translation systems.
Background

About Institute for Infocomm Research

The Institute for Infocomm Research (I²R - pronounced as i-squared-r) is a member of the Agency for Science, Technology and Research (A*STAR) family. Established in 2002, our mission is to be the globally preferred source of innovations in `Interactive Secured Information, Content and Services Anytime Anywhere’ through research by passionate people dedicated to Singapore’s economic success.

I²R performs R&D in information, communications and media (ICM) technologies to develop holistic solutions across the ICM value chain. Our research capabilities are in information technology and science, wireless and optical communications, and interactive digital media.

We seek to be the infocomm and media value creator that keeps Singapore ahead. Website: www.i2r.edu.sg

About NICT Japan

In April 2004, the Communications Research Laboratory (CRL), an incorporated administrative agency, and the Telecommunications Advancement Organization of Japan (TAO), a chartered corporation, were merged and newly launched as the National Institute of Information and Communications Technology (NICT), an incorporated administrative agency.

NICT was established to carry out research and development in the field of information and communications technology, which supports the upcoming ubiquitous network society in an integrated manner from basis to application and also provides comprehensive assistance to the public and private organizations working in this field.

NICT newly started the 5 year medium-term plan in April, 2006. In this important turning point, NICT integrated the contents of research and development already performed up to now into 3 research domains such as "New Generation Network Architecture Technology", "Universal Communications Basic Technology" and "ICT for Safety and Security" and reviewed and very much improved the research organizations to promote these research domains.
Network-based Speech-to-Speech Translation System

- Provide a real-time, location-free, multi-party communication between different Asian language speakers -

**Hindi Client User**
(at Taj Mahal, India)

**Malay Client User**
(at Merlion Statue, Singapore)

**Japanese Client User**
(at Kyoto, Japan)

**Vietnamese Client User**
(at Chua Mot Cot, Vietnam)

Web-based STML Servers
(ASR, MT, TTS Engines)

*English meaning: “Where was the most interesting place you’ve visited?”*
Network-based Speech-to-Speech Translation System
- Provide real-time, location-free, multi-party communication between different Asian language speakers -

English meaning: “Where was the most interesting place you’ve visited?”