Language Resources in the Asian Proper—A Decade of Oriental COCOSDA

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Outline

- 1. Necessity of Speech Corpora
- 2. Organizing the Creation and Utilization of Speech Corpora
- 3. Why COCOSDA and Oriental-COCOSDA?
- 4. Oriental-COCOSDA Functions and Flagship Events
- 5. Other Asian Activities since O-C
- 6. Visibility of O-C
- 7. Commemoration of 10 years of O-C

Language Resources—
Backbone of Speech Technology

- 1. Speech technology initiated methodology innovations in the 80’s
    - speech corpora
    - data-drive, statistically based modeling.
- 2. Critical issues of speech corpora
    - Design, annotation, platform, assessment
- 3. Language specific vs. cross-linguistic
    - What and how

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Necessity of Speech Corpus

Speech Research

↑

Speech Data

+ →

Related Information

↓

Preservation of Spoken Language

Objectivity of Research

↑

Openness to the Public

↓

Preserving Cultural Legacy

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Organizing Creation & Utilization of Speech Corpora

Creation of speech corpora needs some cost.
Utilization needs a system to distribute corpora.
Some activities started early in 1990s.

1991	COCOSDA
1992	LDC in U.S.A.
1995	ELRA in Europe

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COCOSDA International ***Co***mmittee for ***Co***ordination and ***S***tandardization of Speech ***Da***tabases

- Established in Europe in 1991
- Purpose
  - To promote the development of spoken language corpora for building and/or evaluating spoken language technology
  - To offer coordination of projects and research efforts to improve their efficiency.

COCOSDA Organization and Members

- 1 convener
  - Dr./Professor Dafydd Gibbon, Bielefeld University, Germany (2005--)
- 2. 11 areas
  - England, France, Germany, Holland, Italy, Japan, South Africa, Taiwan, U.S.A, China, Greece
- 3. Activities
  - Satellite meeting at major conferences, e.g., Eurospeech, Interspeech, REC..etc.

Back in 1993, in Asia……..

- Professor Hiroya Fujisaki, Tokyo University, Japan

1. Population 3.8 billion (http://en.wikipedia.org/wiki/)

2. Language varieties

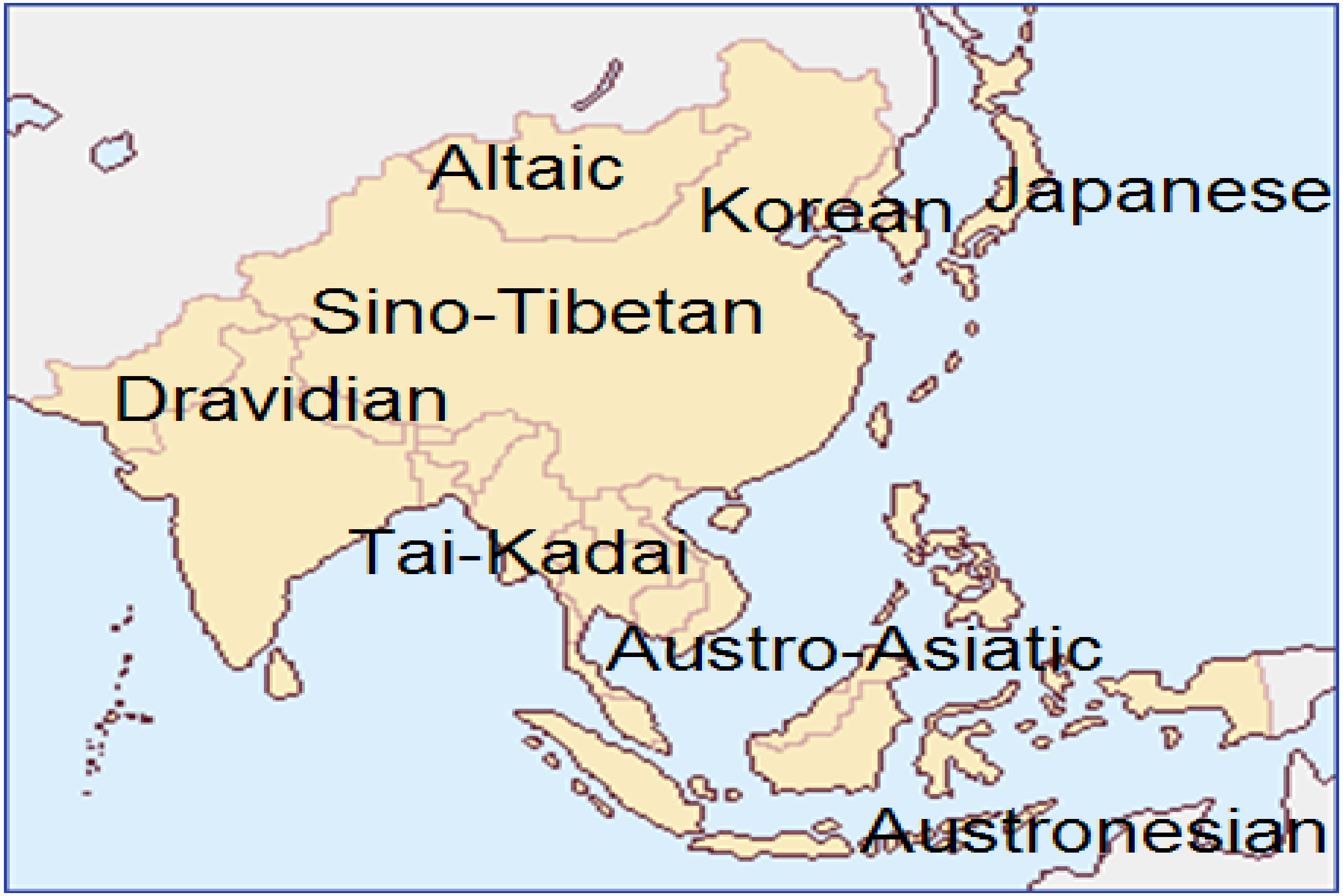
Altaic (Mongolia, Korea, Japan…)

Sino-Tibetan (China, Cambodia, Laos, Thailand, Vietnam…)

Austronesian (Taiwan, Philippines, Indonesia, Malaysia, and Oceanic islands)

Indian (Hindi, Bangali, Urdu…..)

Major Language Families in Asia Spoken by Population 3.8 billion (http://en.wikipedia.org/wiki/)



Language Families of Asian Languages (Ethnologue.com)

1. Austronesian (1268 languages): Malay, Indonesian, etc.
2. Sino-Tibetan (403): Chinese, Tibetan, Burmese, etc.
3. Austro-Asiatic (169): Khmer, Vietnamese, etc.
4. Tai-Kadai (76): Thai, Lao, etc.
5. Dravidian (73): Tamil, Telugu, etc.
6. Altaic (66): Mongolian, Turkic, Korean, etc.
7. Japanese (12): Japanese, Ryukyuan, etc.
8. *Indo-European (449)*

Asian Countries & Territories

- East Asia, South-East Asia, Indo-Tibetan area, Arabic area, NIS area (43+1) Country (as of 1990-1993)
- Area ($10^3 km^2$)
- Population (million)
- Density ($/km^2$)
- Major Languages

East Asia

Country	Area	Population	Density	Major Languages
	(10^3km^2)	(million)	(/km^2)	
China	9,597	1,155.80	120	Chinese
DPR of Korea	121	22.20	183	Korean
Japan	378	123.92	328	Japanese
Mongolia	1,567	2.25	1	Mongolian
Republic of Korea	99	43.27	437	Korean
Taiwan	36	2.68	74	Chinese

South-East Asia

Brunei	6	0.27	45	Malay, English
Cambodia	181	8.44	47	Cambodian
Indonesia	1,905	187.77	99	Indonesian
Laos	237	4.26	18	Laotian
Malaysia	330	18.33	56	Malay
Maldives	0.3	0.22	733	Divehi
Myanmar	677	42.56	63	Burmese
Singapore	0.62	2.76	4,450	Malay,Eng. Chin.Tamil
Thailand	513	56.92	111	Thai
The Philippines	300	62.87	210	Pilipino, English
Viet Nam	332	68.18	205	Vietnamese

Indo-Tibetan Area

Country	Area (10^3km^2)	Population (million)	Density (/km^2)	Major Languages
Afghanistan	652	16.43	25	Bashto, Dari
Bangladesh	144	118.75	825	Bengali
Bhutan	47	1.55	33	Dzongkha
India	3,288	849.64	258	Hindi+13, English
Nepal	141	19.61	139	Nepalese
Pakistan	796	115.52	145	Urdu, English
Sri Lanka	66	17.24	261	Singhalese, Tamil, Eng.

Arabic Area

Bahrain	0.68	0.52	765	Arabic
Cyprus	9	0.71	79	Greek,Turkish, English
Iran	1,648	57.73	35	Persian
Iraq	438	19.58	45	Arabic
Israel	21	4.98	237	Hebrew
Jordan	98	4.15	42	Arabic
Kuwait	18	2.10	117	Arabic
Lebanon	10	2.75	275	Arabic
Oman	212	1.56	7	Arabic
Qatar	11	0.38	35	Arabic
Saudi Arabia	2,150	16.93	8	Arabic
Syria	185	12.99	70	Arabic
United Arab Emeritus	84	1.63	19	Arabic
Yemen	528	11.28	21	Arabic
(Turkey	779	57.33	74	Turkish)

NIS Area

Country	Area (10^3km^2)	Population (million)	Density ($/km^2$)	Major Languages
Kazakhstan	2,717	(16.79)	6	Kazakh, Russian
Kyrgystan	199	4.45	22	Kyrgys
Tadzhikistan	143	5.47	37	Tadzhik
Turkmenistan	488	(3.71)	8	Turkmen
Uzbekistan	447	(20.71)	46	Uzbek

Features of Asian Languages

- **1. Language and Language families—Many varieties**
- **2. Orthographic systems--Large varieties of letters/characters**
- **3. Tonal vs. Non-tonal languages—Both type exist.**
- **4. Spacing between words—Only some languages keep space.**
- **5. Romanization--Non-unique systems are used.**
- **6. Many languages still do not have working writing system. Speech is the only linguistic mode.**

Letters, Tone & Word Order

- Proper letters
  - Burmese, Chinese, Japanese, Khmer, Korean, Thai, etc.
- Latin letters
  - Indonesian, Malay, Vietnamese, etc.
- Tonal languages
  - Burmese, Chinese, Lao, Thai, Vietnamese, etc.
  - Speaking population 1,552 million vs. African tone language population 840 million
- Word order
  - SOV, SVO, VSO, VOS

Word Boundary by Spacing in Text

- No space between words
  - Burmese, Chinese, Japanese, Khmer, Lao, Thai, etc.
- Space between words
  - Indonesian, Malay, Mongolian, Vietnamese, etc.

Necessity of Oriental COCOSDA

- **Asia is a multilingual region.**
- **Diversity of the languages is larger than Europe.**
- **Speech researches were emerging.**
- **Speech corpora were required.**
- **Cooperation among countries was necessary.**
- **Organizations for speech corpora were needed.**

Strategies of Oriental COCOSDA

1. Founding a forum of speech corpora

2. Establishing regional consortia:

   GSK,

   SITEC,

   Chinese LDC, CCC,

   NII-SRC

3. Promoting collaboration among the consortia

Oriental Chapter of COCOSDA

- Mission
  - To promote speech research on oriental languages via
    - 1. exchange ideas
    - 2. share information
    - 3. discuss regional matters on SLP related issues
      - Creation
      - Utilization
      - Dissemination of spoken language corpora of oriental languages
    - 4. assessment methods of speech input/output systems

History of Oriental COCOSDA

- Proposed in 1994
- Preparatory meeting in Hong Kong in 1997
- Annual workshops held since 1998.

Goals of Oriental COCOSDA

- 1. Initiating Speech Resources Consortium in each country.
- 2. Establishing Asian Network among the Consortia.
- 3. Creating multilingual corpus of semantically similar contents.

Organization

- Convener:
  - Dr. Chiu-yu TSENG (2006-)
  - Dr. Shuichi ITAHASHI (1998-2005)
- Advisory members:
  - 1 from China, Japan and Korea each
- 28 committee members from 14 region/country (2007):
  - China, Hong Kong, India, **Indonesia**, Japan, Korea, Malaysia, Mongolia, Nepal, Pakistan, Singapore, Taiwan, Thailand and Vietnam.

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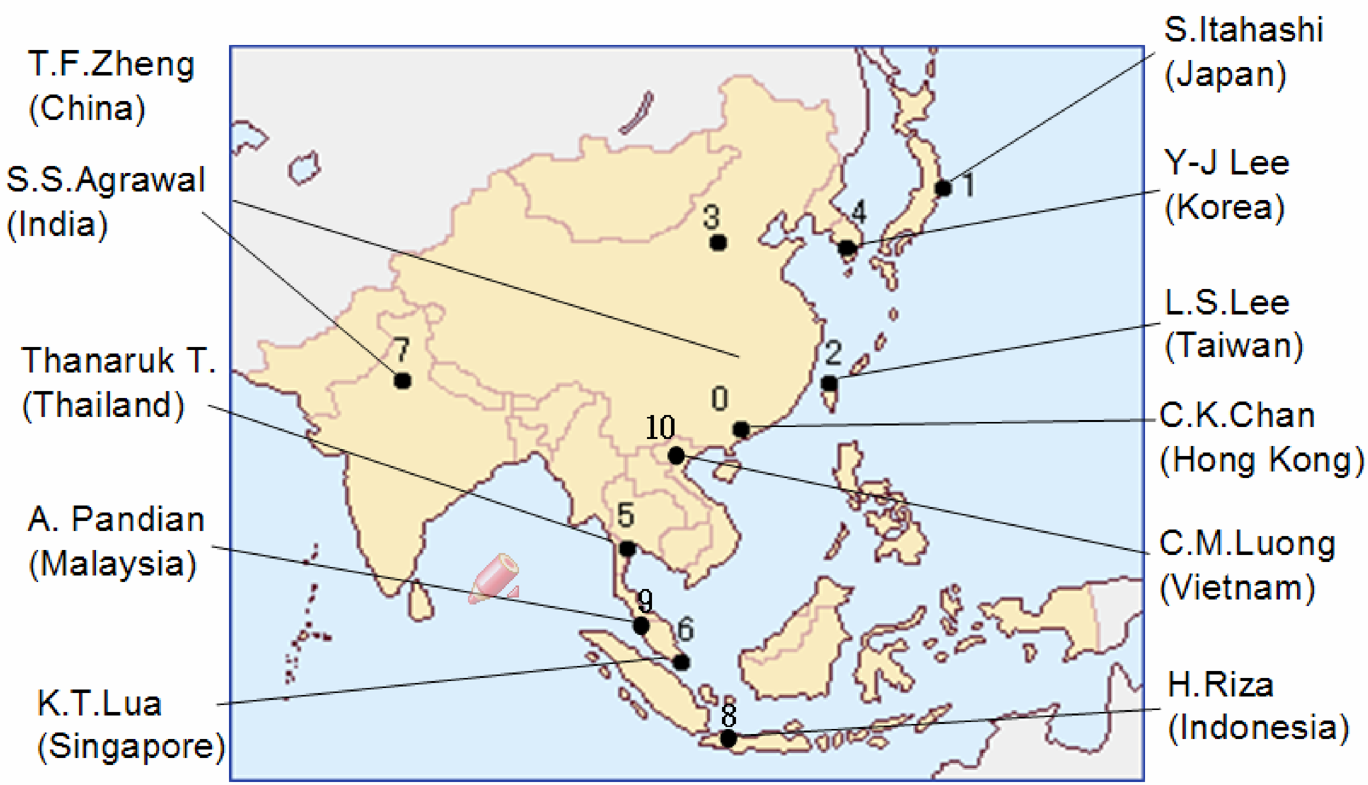
Major Functions and Flagship Events of Oriental-COCOSDA

- Major function
  - Networking among members
  - Attracting new members
- Flagship events
  - Annual international workshops since 1998

Oriental COCOSDA Venues and Organizers



● Around 30 papers with 60 participants

Oriental COCOSDA WORKSHOP— International Workshop on East-Asian Language Resources, Evaluation and Assessment

1998 1st Meeting, Tsukuba, Japan (30 papers, 54 participants)

1999 2nd Meeting, Taipei, Taiwan (44, 120)

2000 3rd Meeting, Beijing, China (8, 20)

2001 4th Meeting, Taejon, Korea (11, 25)

2002 5th Meeting, Hua Hin, Thailand (24, 96) + SNLP

2003 6th Meeting, Sentosa, Singapore (28, 60) + PACLIC

2004 7th Meeting, Delhi, India (55, 150) + iSTEPS

2005 8th Meeting, Jakarta, Indonesia (24, 65)

2006 9th Meeting, Penang, Malaysia (34, 60)

2007 10th Meeting, Hanoi, Vietnam (34, 75)

Future Oriental-COCOSDA Conferences

Oriental COCOSDA 2008

25-27 Nov. 2008

ATR Spoken Language Translation Res. Labs.

Kyoto, Japan

http://www.slc.atr.jp/o-cocosda/

Abstract submission: Aug. 29

Notification of acceptance: Sep. 19

Final manuscript: Oct. 24

Future Oriental-COCOSDA Conferences

- Oriental-COCOSDA 2009
  - Late August at Urumuqi, Xinjiang Autonomous Region of China, back-to-back with NCMMSC (National Conference on Man-Machine Speech Communication, China)
- Oriental-COCOSDA 2010
  - Katmandu, Nepal

Oriental-COCOSDA

- 1. Currently the flagship organization of COCOSDA
  - Euro-COCOSDA
  - Oriental-COCOSDA
  - African-COCOSDA (under preparation)

- 2. Differ from Write, WordNet…etc
  - Region oriented and uniquely Asian
  - Speech database focused vs. text corpora

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Other Asian Activities since Oriental-COCOSDA

1997 Oriental COCOSDA

1999 GSK (Language Resource Association) in Japan

2001 SITEC in Korea

(Speech Information Technology & Industry Promotion Center)

2002 Chinese LDC

CCC (Chinese Corpus Consortium) in China

2006 NII-SRC in Japan

(National Institute of Informatics, Speech Resources Consortium)

Japanese Activities

GSK: Language Resource Association

Launched in 1999

Renovated as an NPO in 2003

Project accepted in 2005 for 3 years

Emphasizing written text corpora

NII-**SRC** launched in 2006 for speech corpora

Standardization in Japan

1. Open Software Tools: Julius, Galatea, etc.

2. Standard of Speech Synthesis System Performance Evaluation Methods by JEITA (2003)

3. Standard of Symbols for Japanese Text-To-Speech Synthesizer by JEIDA (2000)

JEITA: Japan Electronics and Information Technology Industries Association

JEIDA: Japan Electronic Industry Development Association

Korea

SITEC (Speech Information Technology & Industry Promotion Center)

Founded in 2001 (Korean LDC/ELRA)

Wonkwang University as host organization

(7 full-time staffs)

Chinese **LDC**

Launched in 2002

- Creation of linguistic corpora
- Management & distribution of language resources
- Promotion of sharing language resources

*Chinese Corpus Consortium (**CCC**)

Future of Oriental COCOSDA

1. Long-Term collaboration among regional activities

2. Cooperative creation of speech corpora and planning of resource sharing

3. More promotion of speech research in Asia

- Future conference sites:

  Xinjiang Uygur Autonomous Region of China,
  Nepal,
  Mongolia, etc.

Time for Resource Sharing

- A-STAR
- AESOP
- Many more to be organized w.r.t. what to be included and how to construct cross-linguistic platforms

Future Prospects: Global Speech Corpus

Digits, digit strings, days of the week, months, time, salutations, yes/no, well-known proper nouns (person names, cities, companies), well-known stories, phonetically-balanced sentences, etc.

common to all languages.

Utterance Content

Items widely understood in the world:

10 Digits, 12 Months of the year,

7 Days of the week, 4 Words on Weather,

6 Phrases of Greetings, 3 Words of Replies,

4 Words on time.

“North Wind” from Aesop’s Fables

Features of the proposed corpus

Containing various Asian Languages

With the same semantic content

Recorded in a sound-proof room

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Visibility of O-C in Neighboring Communities (1/4)

- Holding O-C conferences with other local conferences
  - ○ 2000 3rd O-C Workshop, Beijing, China (8, 20) as satellite of ISCSLP2000
  - ○ 2002 5th O-C Workshop, Hua Hin, Thailand (24, 96) with SNLP
  - ○ 2003 6th , O-C Workshop Sentosa, Singapore (28, 60) with PACLIC
  - ○ 2004 7th , O-C Workshop Delhi, India (55, 150) + iSTEPS

Visibility of O-C in Neighboring Communities (2/4)

- 2. Other workshops held because of O-C conference—NII Symposium
  - International Symposium on Asian Language Resources 2008
  - (28 Nov. 2008, National Institute of Informatics (NII), Tokyo, Japan, http://www.slc.atr.jp/o-cocosda/

Visibility of O-C in Neighboring Communities (3/4)—2nd Int’l Workshop on Language and Speech Science, (Sept.4-5, 2008 Waseda U, Tokyo, Japan

- Sept 4
  - Phonetics in L2 English
  - Spoken Language Processing
  - Automatic Assessment of L2 English
  - L2 (French, German, Japanese)
- Sept 5
  - Japanese Timing and L2
  - English Timing and L2
  - L2 (Chinese)
  - L2-Education

Participating countries

Japan, USA, **Indonesia, Kong Kong**, Switzerland, **Thailand**

Visibility of O-C in Neighboring Communities (4/4)--NII Symposium, Tokyo (Nov. 29, 2008)

- 1. Speech and language resources of some Indian languages
  - Dr. S. S. Agrawal (KIIT College of Engineering, **India**),
- 2. Recent activities of Chinese Corpus Consortium (CCC)
  - Prof. T. Fang Zheng (Tsinghua University, **China**),
- 3. Recent activities of Speech Information Technology Promotion Center (SITEC) in Korea,
  - Prof. Y-J Lee (Wonkwang University/SITEC, **Korea**),
- 4. Speech and language resources of Indonesian languages
  - Dr. Hammam Riza (Agency for Assessment and Application of Technology (BPPT), **Indonesia**),
- 5. Some recent developments of speech resources for Vietnamese
  - Dr. Vu Tat Thang (Vietnamese Academy of Science and Technology (VAST), **Vietnam**),
- 6. Speech and language resources at NICT/ATR
  - Dr. S. Nakamura (National Institute of Communications Technology/ATR-SLC, **Japan**)
- Closing address
- Prof. S. Itahashi (NII/AIST, **Japan**)

O-C as One Community to Other International Activities

- 1. Organizing special session in neighboring conferenceISCSLP2006, Singapore after the 9th O-C, Malysia
  - Session: Multilingual Corpus Development
  - Participated by: Japan, Indian, Vietnam, Mongolia

- 2. Reporting O-C activities at LREC
  - LREC 2006, Italy
  - LREC 2008, Morocco

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Oriental COCOSDA Book Project
In Commemoration of the First Decade of Sustained Activities in Asia

- ***Resources and Standards of Spoken Language Systems – Advances in Oriental Spoken Language Processing –***Edited by
  - Shuichi ITAHASHI
    - National Institute of Informatics (NII), Japan
  - Chiuyu TSENG
    - Institute of Linguistics, Academia Sinica, Taiwan

Contents of the 500-page Book:

1. Introduction
2. Outline of Oriental languages
3. Data centers and corpora
4. Speech corpora of Oriental languages
5. Performance evaluation of synthesizers and recognizers
6. Annotation and labeling
7. Software tools
8. Orthographic transcription and Romanization
9. Conclusion

   Appendix: History of Oriental COCOSDA

Oriental COCOSDA

- ***The Future of Asian SLP and Speech Technology Development Depends on All of Us.***
- ***Your Sustained Participation and Contribution Is Our Lifeline.***

Thank you!