

EDITORIAL

Welcome to the first issue of the ASSTA Newsletter for 2007. In this issue you will find some conference reports from successful ASSTA travel awardees, the conference report on the recent Speech, Science and Technology Conference, SST-2006 by the conference chair, a young researcher spotlight, a lab profile of the HCC-NCBS Centre at the University of Canberra, new ASSTA leaflets, and information about upcoming conferences.

Thanks also to those members who have sent me conference reports for this issue. If you have received an ASSTA travel award, please be sure to send along your conference report. Remember, this newsletter is a forum for you to share information about your travels, research and labs. Please consider submitting something for the next issue.

This is the first issue of the newsletter for which I am the editor. I am very thankful to Michael Tyler for giving me the opportunity to fill in the role temporarily. I look forward to receiving and keep reporting interesting happenings, articles and reports in speech science and technology through this newsletter.

Girija Chetty

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PRESIDENT'S REPORT



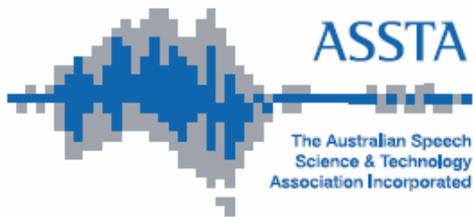
Prof. Denis Burnham

ASSTA has two special committees. One is the National Spoken Language Database (NSLD) committee which promotes the Australian spoken language data collection, and spawned the ANDOSL project over ten years ago. There may be more to discuss about that committee at a later stage. Now I want to talk about the other, the Forensic Speech Science Committee.

The Forensic Speech Science Committee (FSSC) evolved out of the earlier Forensic Speaker Identification Standards Committee, established in 1996. This new committee is headed up

by Phil Rose at ANU, and other committee members are Tony Alderman, Jennifer Elliott, Helen Fraser, John Ingram, Yuko Kinoshita and Michael Wagner (<http://assta.ics.mq.edu.au/committees/forensic/>). As you will see from their web bios, all members have case-work experience and/or have published on Forensic Speaker Recognition. It is planned to induct more members who can demonstrate their FSS expertise. Bernard Guillemin, from New Zealand, is the first such new appointment, nicely meshing with ASSTA's recent name change to Australasian.

Forensic Speech Science encompasses Forensic Speaker Recognition (FSR), Transcription (determining what was actually said), Recording Authentication (has a recording been tampered with?), Speaker Profiling (when there is a recording of a crime but no suspect), and the topical and contentious area of Language Identification (attempting to determine nationality from language). The first, and perhaps most important area, FSR, breaks down further into technical and



naïve recognition, one important aspect of which is voice line-ups.

Recently there has been a call for all areas of forensic identification science to emulate DNA methodology (Baldwin, 2005). In order for this to happen, two preconditions are essential. First, the correct logical framework must be adopted for the evaluation of evidence; and this is provided by Bayes Theorem (Rose, 2002) in which the odds in favour of the hypothesis being true, given the evidence, is the prior odds in favour of the hypothesis times the strength of that evidence. The strength of the evidence is given by a Likelihood Ratio, the ratio of the conditional probabilities of the evidence under the competing hypotheses. (That is what the FSR expert has to estimate.) Second, it must be testable, according to legal admissibility standards, and the error rate known. The error rate is determined by testing the discriminability of same-speaker speech samples vs. different-speaker speech samples. Such tests rely upon (a) good background research conducting such tests, and (b) an extensive database of speaker data.

Needless to say, it is essential that the court is helped to avoid miscarriage of justice due to false

positives, while still making sure that not too many false negatives occur. So it is vitally important that qualified experts are involved in evaluating forensic speech evidence, and that such experts are employed as expert witnesses in cases where voice evidence is used.

The ASSTA Forensic Speech Science Committee (FSSC) is responsible for monitoring and promoting Forensic Speaker Identification standards on behalf of the Association and is actively pursuing that goal. One of the main aims is to ensure that properly qualified experts using appropriate methods and assumptions are involved in Forensic Speech Science cases.

We are trying to push this agenda somewhat at the moment. One tangible step in this direction is an upcoming conference on Forensic Speech Science on December 7, 2007, that will be run by Phil Rose and the FSSC in conjunction with the Human Communication Science Research Network (HCSNet) as part of the HCSNet Summerfest meeting. The conference will involve local and international keynote speakers from a number of areas in forensic speech science, and possible



NEW ASSTA LEAFLETS

representatives from the legal profession, and the police. Moreover, again during Summerfest, there will be a 3-hour summer school on Forensic Speech Science, again run by Phil Rose and the FSSC, at which you will be able to get a good solid introduction to how speech science is done properly – prior to the conference later in the week.

Acknowledgments

Sincere thanks to Phil Rose for providing background information on Forensic Speech Science for the more specialist aspects of the above.

References

Baldwin, D.J. (2005) *Weight of evidence for forensic DNA profiles*. Chichester: Wiley

Rose, P. (2002) *Forensic speaker identification*. London & New York: Taylor & Francis.

Denis Burnham

ASSTA now has a new leaflet to advertise its activities and the benefits of membership. We suggest ASSTA members take these to national or international conferences, make them available in their department or school, or take them to appropriate events. If you would like a batch of ASSTA leaflets, please contact Ms Mel Gallagher m.gallagher@uws.edu.au to arrange for them to be posted. In your email please state your name; position, institution and postal address; the conference or purpose for the leaflets; and, if possible, the potential number of people for whom the leaflets would be available.



SST-2006 REPORT

The 11th Biennial Australasian International Conference on Speech Science and Technology was held in Auckland, New Zealand between 6th-8th Dec, 2006. A permanent record of the conference proceedings is hosted by ASSTA and can be found at <http://www.assta.org/sst/2006/index.html>. There were around 120 conference attendees over the three days, and the delegates came from 16 different countries around the globe. The largest number of delegates came from Australia (59), but there was a sizeable number from New Zealand (33). We also had a number of technical exhibitors. There were 31 people who attended at least one of four workshops that ran prior to the conference on Dec 5th.

The conference had 3 keynote speakers. Joe Perkell from MIT spoke on his work on sensorimotor control of speech production, Pat Keating from UCLA spoke on her work on linguistic voice quality, and Michael Corballis from the

University of Auckland spoke on his work on language as gesture. The slides from all three talks can be accessed from the above conference website. Pat Keating and Christina Esposito have written a paper on the same theme as the conference keynote talk, and we are very fortunate that this too is posted on the conference website.

At the conference, we had 101 papers presented (65 oral presentations and 36 posters), and ran three streams for each of the three days. We also had a very successful poster session on the 7th of Dec sessions, where plenty of lively discussions took place. As is the tradition with the SST conferences the atmosphere at the conference was very warm, encouraging and supportive. Both Pat Keating and Joe Perkell were impressed with the vitality of the SST conference, and the ASSTA community. They even attended the ASSTA AGM! It was pleasing that 50 of the delegates were students, which shows there

NEW RESEARCHER SPOTLIGHT

are plenty of new researchers entering the speech science and technology arena. A very enjoyable conference dinner was held on the 7th of Dec at Romfords, although the attendees found the spectrogram of Neil Armstrong's Moon recording a little hard to crack!

Finally, we would like to thank ASSTA for the SST conference series, our sponsors (listed on the conference website), the conference delegates for making the conference such a vibrant occasion, and the 2006 SST Conference committee for all the hard work they put in behind the scene to make the conference happen.

Catherine Watson
(Conference Chair)

Paul Warren
(Programme Director)

Mohaddeseh (Hadis) Nosratighods won the best paper award for her paper "A Novel Technique for the Selection of Speech Segments for Speaker Verification" at the SST 2006 conference in Auckland.



(Hadis) Nosratighods

Hadis was born in 1977 in Karaj, Iran. She received her B.E. degree in 1999 in Electronics Engineering, from Sharif University of Technology which is one of the most prestigious technical universities in Iran. She



received her M.E. degree in 2002 in Biomedical Engineering, from Tehran Polytechnic University, Iran. Her Masters thesis was focused on the recognition of plosives in the Persian language via wavelet transforms.

In 2004, she commenced her PhD at the School of Electrical Engineering and Telecommunications at the University of New South Wales. Her research interests include speaker recognition, speech enhancement and recognition, and biometric technology. She is currently working on 'Robust Speaker Verification' under the supervision of Associate Professor.

Eliathamby Ambikairajah, University of New South Wales. She also collaborates with Dr. Julien Epps, UNSW Asia and Professor Michael Carey, University of Birmingham.

Aside from her research, she is also interested in film making, writing film scripts and poetry. Her interests also extend to hiking, horse riding and mountain climbing.

CONFERENCE REPORTS

Marija Tabain
La Trobe University

The joint meetings between the Acoustical Society of America and the Acoustical Society of Japan are held every 10 years or so in Hawaii. The Hawaii conferences, not surprisingly, have a very high number of registrants and papers - but not a very high attendance rate at sessions! The papers in Speech Communication were mostly posters. I was kept busy at our poster on the articulation of coronal stops in Arrernte, with some QuickTime movies of the EMA transducers moving in real time being very popular.

As always with the acoustical society conferences, I particularly enjoyed sessions on aspects of acoustics other than speech. A keynote presentation on biomedical applications of



Doğu Erdener

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ultrasound taught me that cavitation (which is about bubbles - I didn't know that before) plays a role in the break-up of kidney stones by ultrasound, and that by slowing down the rate at which ultrasound pulses are presented, the break-up of the stones can be done more effectively since the bubbles have time to dissipate. Perhaps the most enjoyable session I attended was on vocalization in animals. A paper on vocalization by the Siberian tiger was just fascinating, since the larynx in this animal is about 3 times the size of a human larynx, and the modelling that was presented in the paper made very clear how the rate of airflow affects the modes of vibration of the vocal folds. I also finally understood that the syrinx in birds is part of the breathing system, rather than the digestive system as the larynx is for us. I was very impressed at the interactions that must occur between biologists, acousticians, veterinarians and so on, for this research to occur.

I would like to thank ASSTA for providing financial assistance for me to attend this conference.

The International Seminar on Speech Production (ISSP06) took place in Ubatuba, São Paulo, Brazil between 13 and 15 December 2006. The first ISSP was in Grenoble, France in 1988 and ISSP06 was the seventh of these series of seminars. ISSP06 was organised by Center for Research on Speech, Acoustics, Language and Music (CEFALA) at Universidade Federal de Minas Gerais. These seminars focus on various aspects of speech production attracting researchers from several different disciplines such as linguistics, engineering, psychology and computer science. Some of the topics covered by oral and poster presentations were prosody, biomechanical models of tongue, speech development, auditory-visual speech characteristics of speech production, co-articulation and vocal tract modelling.

I presented a poster reporting the last study of my doctoral thesis on the factors affecting the

development of auditory-visual speech perception in young children with speech production disorder. In general, this last conference I attended during my doctoral candidature proved to be a very useful experience as I was able to receive very valuable feedback from prominent researchers in the area of speech production. The feedback has been useful for both the thesis and the publications that will come out of it.

The poster and oral sessions reflected the diversity of research in speech production. An interesting presentation was by Carlos Busso and Shrikanth Narayanan from the University of Southern California. They investigated the link between articulatory processes and facial activeness during neutral and affective speech conditions. Their results revealed that facial activeness was mainly driven by articulatory process and the degree to activeness is affected by emotional modulation. Additionally, they also found that upper part of the face conveys significantly more non-verbal information than the lower part of the face, whose expressive



Poster session at ISSP07

degree of freedom is limited due to articulatory movements.

In another study Aude Noiray and her colleagues (Institute de la Communication Parlée, Grenoble, France) tested an auditory-visual speech production measurement model, the Movement Expansion Model (MEM), which was previously shown to reliably anticipate lip rounding in French speaking adults and children. Using an Optotrak system they recorded lip movements for several [iCu] context syllables by 4 American English and 4 Canadian French speakers, languages that differ on the degree of lip protrusion.

The findings showed that MEM anticipates reliably the lip rounding in English speakers as well as in French speakers. They attribute the previous failure of earlier models to reliably anticipate lip rounding in English speakers to the smaller amount of lip rounding the neglected role of constriction.



Sunset at Ipanema Beach, Rio de Janeiro

The conference venue was a resort situated on a beautiful beach by the Atlantic Ocean. Ubatuba is a small resort town 4 hours drive away from São Paulo, mostly frequented by paulistanos (people from São Paulo) on the weekends. Ubatuba is conveniently located halfway between São Paulo and Rio de Janeiro, giving the opportunity to visit both cities. São Paulo, with as many as 19 million paulistanos, is an absolute megapolis and is the cultural, intellectual and

business hub of Brazil. On the other hand Rio provides a much more different scenery.



View of Rio from Pão de Açucar

Cariocas (Rio-siders) pride themselves in running the largest party on earth, i.e., Rio de Janeiro. Rio is an unbelievable blend of mountains, skyscrapers, beaches, favelas, airports, the rich, the poor, all sorts of people, and many other contrasts.

View of the city from Pão de Açucar renders Rio undoubtedly the most beautiful city in the world under the arms of Cristo Redentor statue on top of the Corcovado (see picture above).

Those who are interested in speech production issues can find further information regarding ISSP06 and the papers presented at the seminar by visiting the conference website: www.cefala.org/issp2006/index.php



Review of ICASSP 2007

Mohaddeseh (Hadis)
Nosratighods

Monday, 16th April 2007

1. The ICASSP 2007 Welcome Reception was held on the Rooftop Garden of the Hawaiian Convention Centre on Monday, 16th April 2007. I attended the reception, where special student awards were presented by the ICASSP organising committee. Technical sessions were also held in 8 Poster areas and 6 lectures rooms in the Convention Centre.

Tuesday, 17th April 2007

On Tuesday, 17 April 2007, I attended the following poster presentations:

1. "SPE-P2: Acoustic Modeling I",
2. "SPE-P3: Acoustic Modeling II",
3. "Robust Features and Acoustic Modelings",
4. "Spoken Language Understanding".

Wednesday, 18th April 2007

I presented a poster entitled "Time and frequency domain methods for gene and exon prediction in Eukaryotes" on behalf of my colleague, Mahmoud Akhtar, on Wednesday 18th April 2007. I also had the opportunity to meet with Professor Asoke Nandi, Head of the Signal Processing and Communications Research group in the University of Liverpool, UK.

I also found some sessions such as "Language Modelling", "Biometrics I", and "Adaptation and Acoustic modelling" very interesting. In particular, the paper entitled "A Maximum Likelihood Approach to Unsupervised Online Adaptation of Stochastic Vector Mapping function for Robust Speech Recognition" was interesting in terms of using a new way of MAP adaptation which is less vulnerable to noise. I attended the conference banquet at the historic Royal Hawaiian Hotel on Wednesday evening, where I had the chance to meet the Chief Editor of the Signal Processing Journal, Professor Bjorn Otterson who gave me some valuable tips on how to write a good journal paper.



Thursday, 19th April 2007

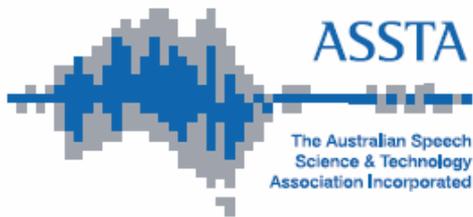
My main research area is in Speaker Identification and on Thursday a lecture and poster session was held to cover this field research. The MIT Lincoln Lab, Watson IBM Lab and Brno University (Czech Republic), who were awarded the best ranking in the NIST 2006 (National Institute of Standard and Technology) evaluation, are pioneers in speaker identification. Therefore, all the lectures were conducted by these three main laboratories. The following two papers were the highlights in the speaker identification category:

1. 1-STBU System for the NIST 2006 speaker recognition evaluation collaboration between 4 laboratories, 2 from South Africa, Brno University and The Netherlands).
2. The MIT-LL/IBM 2006 speaker recognition system: high-performance reduced complexity recognition.(a collaboration between IBM and MIT Lincoln lab).

LABORATORY PROFILE

University of Canberra:
HCC Lab & NCBS

The Human-Computer Communication Laboratory (HCC Lab) in the School of Information Sciences and Engineering has been involved in automatic speech and speaker recognition research since 1996 and more recently also in face recognition, multimodal pattern recognition and fusion, and human factors in speech technology applications. HCC Lab researchers are involved in the project From Talking Head to Thinking Head, funded under the ARC's recent thinking systems initiative. For this project, HCC Lab researchers will develop audiovisual speech recognition and the recognition of important speaker characteristics for the Thinking Head. One of the overall objectives of the Lab is the development of a comprehensive model of the human voice, which will describe the typical voice characteristics, as well as the variations associated with the



two genders, with the different dialects, idiolects and accents of a language, with a speaker's states of health and emotion, and with the speaker's communicative goals.

The National Centre for Biometric Studies (NCBS) is also part of the School of Information Sciences and Engineering of the University of Canberra. The purpose of the Centre is to conduct research, education, evaluation and development in the area of biometrics, and to provide consultancy and services on biometrics to government and industry.



Prof. Michael Wagner, Director of HCC Lab & NCBS

The Centre has been operational since 2004. It utilises the research expertise

in biometrics within the School of Information Sciences and Engineering as well as the expertise in the areas of forensics, law, ethics, governance and policy research within the University and outside of the University. In the past 3 years, the Centre has provided consultation and independent evaluations of commercial biometric systems, for the industry and for several Australian and United States government agencies, and it has provided consultation in several cases of forensic speaker verification.

RESEARCHERS

At present, the following researchers are staff members or adjunct staff members of HCC Lab & NCBS: Prof Michael Wagner (Director), Adjunct Prof. Clive Summerfield (Deputy Director, NCBS), Dr. Roland Goecke (New Adjunct), Dr Dat Tran, Dr Dave Davies, Dr Yuko Kinoshita, Dr Ben Kraal (now QUT/NICTA), Ms Girija Chetty (PhD Candidate), and Mr Joel Moss (Technical Support). The current visiting researchers in HCC Lab are Ms Mireia Farris, who is

visiting for 6 months from the Universitat Politècnica de Catalunya, and Dr Shunichi Ishihara, who is on a 6-month sabbatical from the ANU.



Visiting Researcher Mireia Farrus from UPC in Barcelona

CONFERENCE LOG

25-26 June 2007. Phonetics and Phonology in Iberia 2007 (PaPI 2007). University of Minho, Braga, Portugal.
<http://www2.ilch.uminho.pt/ventos/PaPI2007/>

27-28 June 2007. Schwa(s) - 5th Journées d'Études Linguistiques (JEL'2007). Nantes, France.
<http://www.lettres.univ-nantes.fr/ling/jel2007>

4-6 July 2007. Joint conference of the Linguistic Society of South Africa, the

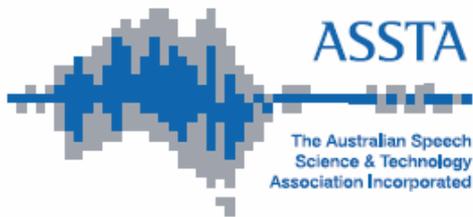
South African Applied Linguistics Association and the South African Association of Language Teaching. North-West University, South Africa.
<http://www.ctext.co.za/Kongres%20engels/Index.html>

6 - 8 July 2007. Workshop on Variation, Gradience and Frequency in Phonology, Stanford, CA, USA.
<http://www.stanford.edu/dept/linguistics/linginst/nsf-workshop/workshop-july-2007.html>

8-13 July 2007. Prosody and Pragmatics in Spoken Language corpora. Gothenburg, Sweden.
<http://userpage.fu-berlin.de/~ndehe/IPrA2007/hauptseite.html>

12 - 14 July 2007. From Oral Corpora to Phonological Theories: The Case of French, London, Ontario, Canada
<http://ling.uwo.ca/PFC2007>

22-25 July 2007. Annual Meeting of the International Association for Forensic Phonetics and Acoustics. Plymouth, UK.
<http://www.iafpa.net/conf.htm>



2-3 August 2007. ParaLing'07: International workshop on Paralinguistic speech - between models and data. Saarbrücken, Germany. <http://www.dfki.de/paraling07>

2-4 August 2007. Disfluency in Spontaneous Speech International Workshop (DiSS'07). Edinburgh, UK. <http://www.disfluency.org>

3 - 4 August 2007. Phonetics and Phonology in Third Language Acquisition. Freiburg, Germany. <http://www.phonetik.uni-freiburg.de/L3phonology>

4 August, 2007. Speaker Age. Saarbrücken, Germany. <http://w5/cs/uni-sb.de/%7Ecmueller/sa>

5 August 2007. Interdisciplinary Workshop on The Phonetics of Laughter. Saarbrücken, Germany. <http://www.coli.uni-saarland.de/conf/laughter-07>

5 August 2007. ICPHS 2007 Satellite Meeting. Workshop on Intonational Phonology: Understudied or Fieldwork Languages. Saarbrücken,

Germany. <http://www.linguistics.ucla.edu/people/jun/intonation.htm>

6-10 August 2007. 16th International Congress of Phonetic Sciences (ICPhS2007). Saarland University, Saarbrücken, Germany. <http://www.icphs2007.de>

22-24 August 2007. SSW-6: 6th ISCA Speech Synthesis Research Workshop. Bonn, Germany. <http://www.isca-speech.org/ssw6/>

24-26 August 2007. Phonetics Teaching and Learning Conference. London, England. <http://www.phon.ucl.ac.uk/ptlc/index.html>

27-31 August 2007. Interspeech 2007. Antwerp, Belgium. www.interspeech2007.org

31 August - 3 September 2007. International Conference on Auditory-Visual Speech Processing (AVSP 2007). Hilvarenbeek, The Netherlands. <http://foap.uvt.nl/avsp2007>

16-21 September 2007. Summer School: Cognitive

and physical models of speech production, perception, and perception-production interaction. Autrans, France.
http://www.zas.gwz-berlin.de/events/summerschool_2007/

19-20 September 2007. Phonological Words in South Asia and Southeast Asia Workshop. University of Leipzig, Germany.

1-3 October 2007. SLATE Workshop on Speech and Language Technology in Education. ISCA Tutorial and Research Workshop. The Summit Inn, Farmington, Pennsylvania USA.
www.sigslate.org/
http://www.cs.cmu.edu/~7E_max/mainpage_files/SLATE_files/SLaTE%20Call%20for%20Participation%20poster.doc

4-5 October 2007. International Conference: Where Do Features Come From? Phonological Primitives in the Brain, the Mouth, and the Ear. Sorbonne-nouvelle, Paris, France.
<http://phoneticbases.free.fr/>

8-10 October 2007. Phonetics Today 2007. Moscow, Russia.
<http://phoneticstoday.ruslang.ru/en/>

15 - 18 October 2007. XII International Conference "Speech and Computer" -- SPECOM 2007;
<http://specom2007.ru>

25 - 28 November 2007. New Sounds 2007: Fifth International Symposium on the Acquisition of Second Language Speech. Praia Hotel, Ingleses Beach, Florianopolis-SC, Brazil.
6-9 May 2008. Speech Prosody 2008. Campinas, Brazil. (12/06)
<http://www.sp2008.org/>

30 June - 2 July 2008. 11th Laboratory Phonology Conference. Victoria University of Wellington, New Zealand.
<http://www.vuw.ac.nz/labphon11>

22-26 September 2008. Interspeech 2008. Brisbane, Australia.
<http://www.interspeech2008.org/>

**interspeech
2008**




The Tenth International Conference on Spoken Language Processing (INTERSPEECH-2008 ~ ICSLP) will be held in Brisbane, Australia.

INTERSPEECH-2008 will cover all the scientific and technological aspects of speech. We are expecting more than 1000 participants from all over the world and more than 700 papers presented in oral and poster sessions. Several satellite workshops and exhibitions will further enrich the conference content.

The current programme of satellite workshops includes: Auditory-Visual Speech Processing, Australian Languages, Speech and Music Processing and the SST-2008 Student Conference.

Brisbane, the capital of Queensland, is a modern, dynamic, sophisticated and cosmopolitan city with a friendly and relaxed lifestyle. Australia's only sub-tropical capital city, Brisbane is located on the doorstep of the nation's premier tourist region, and within an hour of some of the world's most famous beaches, the legendary Australian Outback, and Barrier Reef Islands, making it the ideal destination for easy access to pre and post conference touring.

www.interspeech2008.org



**September 22 - 26, 2008
Brisbane, Australia**

 Local Organisers:
Australian Speech Science
and Technology Association

Chairing area:
Professor Denis Burnham,
University of Western Sydney



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