ICSLP 2002 Special Session

NOISE ROBUST RECOGNITION
Robust Algorithms and a Comparison of their Performance on the Aurora 2 & 3 Databases

This special session is an extension to a similar one held at Eurospeech 2001, Allborg, Denmark. There, many different techniques for noise robustness were compared on the same database (the Aurora 2 Noisy TI digits). For ICSLP, in addition to the Aurora 2 database, researchers are invited to evaluate their algorithms on the set of Aurora 3 databases. While Aurora 2 databases use the controlled addition of noise to clean speech, the Aurora 3 databases are collected in a real-world environment of the car. It is of interest to observe and learn whether algorithms behave differently on these two databases as well as comparing how and why they perform differently.

The objective of this special session is for researchers to present leading edge algorithms for noise robustness and their results measured on the same databases. It is hoped that not only will the research community benefit from comparing techniques and reviewing scientific progress but also the process of evaluating on a common database will stimulate new ideas.

What makes this special session different from the main conference is that **each paper will be required to submit results on the evaluation databases**. These databases have been prepared within the ETSI standards activity in the Aurora Distributed Speech Recognition working group [1] for the purpose of evaluating the performance of noise robust front-ends. They are available publicly through ELRA [8]. The Aurora 2 database has been described previously [2] [price: 250 Euro]. The Aurora 3 real-world noise databases make use of digits subsets of the Speechdat-Car project collections and have been prepared for 4 languages: Finnish, German, Spanish & Danish [a special price of 800 Euro for the set of all 4 languages is expected for non-profit organisations — 4000 Euro for with-profit organisations]. [3,4,5,6,7]

While these databases were designed for the evaluation of front-end algorithms, and there is a reference HMM back-end configuration of HTK [9] to enable this, they are also suitable for other noise robustness techniques including the back-end.

We invite submissions of papers on noise robust speech recognition including:
- Front-end feature extraction
- Pre-processing techniques
- Noise adaptation
- Noise modelling and compensation
- Missing data techniques
- Combinations of new front-ends with back-end compensation techniques

Papers will be reviewed and published as part of the ICSLP Proceedings. Each paper will be 4 pages long and there will be a recommended format for the presentation of results.

Preference will be given to papers evaluating on both the Aurora 2 and Aurora 3 databases, however, to encourage wide participation in the session, good papers that only evaluate on Aurora 2 will also be welcome. Please note that Aurora 3 results should be obtained on all 4 languages to be able to compare different approaches on the basis of the average result over the 4 languages.

Important dates:

Submission of full paper for publication:	1 May 2002
(results on Aurora databases must be included)	
Notification of acceptance:	10 June 2002
ICSLP Special Session:	17-20 Sept 2002 (day TBD)

Please send an email to David Pearce in advance if you intend to submit a paper so we can keep you informed of any updated information.
Papers should be submitted electronically in the same way as for the main conference using the web server.
http://www.icslp2002.org/papers/index.html

The published paper appearing in the conference proceedings will be that submitted by 1st May but there will be a web site for electronic copies of updated papers (deadline 3rd August) for the presentation of latest algorithms and results.

Organizing & Scientific committee:

David Pearce (chairman)	Motorola Labs	bdp003@email.mot.com
Wayne Ward	CSLR	
Ramalingam Hariharan	Nokia	
Hynek Hermansky	OGI	
Hans Guenter Hirsch	Niederrhein University	
Juan Huerta	IBM	
Borge Lindberg	Aalborg University	
Satoshi Nakamura	ATR	
Richard Rose	AT&T	

ICSLP-2002 web site: http://www.icslp2002.org

References

[1]   D Pearce, Enabling New Speech Driven Services for Mobile Devices: An overview of the ETSI standards activities for Distributed Speech Recognition Front-ends Applied Voice Input/Output Society Conference (AVIOS2000), San Jose, CA, May 2000

[2]   H G Hirsch & D Pearce, The AURORA Experimental Framework for the Performance Evaluations of Speech Recognition Systems under Noisy Conditions , ISCA ITRW ASR2000 Automatic Speech Recognition: Challenges for the Next Millennium ; Paris, France, September 18-20, 2000

[3]   AU/225/00 Baseline Results for subset of SpeechDat-Car Finnish Database for ETSI STQ WI008 Advanced Front-end Evaluation , Nokia, Jan 2000

[4]   AU/237/00 Description and baseline results for the SpeechDat-Car Italian Database , Alcatel, April 2000

[5]   AU/271/00   Spanish SDC-Aurora Database for ETSI STQ Aurora WI008 Advanced DSR Front-End Evaluation: Description and Baseline Results , UPC, Nov 2000

[6]   AU/273/00   Description and Baseline Results for the Subset of the Speechdat-Car German Database used for ETSI STQ Aurora WI008 Advanced DSR Front-end Evaluation , Texas Instruments, Dec 2001

[7]   AU/378/01 Danish SpeechDat-Car Digits Database for ETSI STQ-Aurora Advanced DSR , Aalborg University, Jan 2001.

[8]   http://www.icp.inpg.fr/ELRA/home.html the ELRA home page

[9]   http://htk.eng.cam.ac.uk/ the HTK home page

Contact David Pearce at bdp003@email.mot.com if you have any questions.