

HYNEK BOŘIL

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Center for Robust Speech Systems
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RESEARCH INTERESTS

Automatic speech and speaker recognition: normalization of noise, channel, and speech variation mismatch; robust front-ends; online feature equalization; acoustic models for varying environments; limited resource speech recognition. Speech analysis: cognitive load/emotion/talking style assessment; longitudinal characteristics of speech production; statistical modeling of prosody.

EDUCATION

- JULY 2008 Ph.D. in ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY
Czech Technical University, Prague
Dissertation: “Robust Speech Recognition: Analysis and Equalization of Lombard Effect in Czech Corpora”
- MARCH 2003 M.S. in ELECTRICAL ENGINEERING
Czech Technical University, Prague
Master’s Thesis: “Guitar MIDI Converter”

RESEARCH & WORK EXPERIENCE

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| <i>Current</i> | RESEARCH ASSOCIATE |
| AUG 2007 | Center for Robust Speech Systems
Erik Jonsson School of Engineering and Computer Science
The University of Texas at Dallas |
| AUG 2007 | GRADUATE RESEARCH ASSISTANT |
| MARCH 2003 | Speech Processing Group
Department of Circuit Theory
Faculty of Electrical Engineering
Czech Technical University in Prague |

AWARDS

- JAN–SEPT 2006 PRINCIPAL INVESTIGATOR (PI), “Normalization of Lombard Effect”, Siemens Corporate Technology (Munich, Germany), (€10,000)
- 2006 POSTER’06 – 10th International Student Conference on Electrical Engineering, Prague – Paper Award
- 2005 INTERSPEECH’05 Student Travel Grant (ISCA)
- 2005 COMPREHENSIVE DOCTORAL EXAMINATION – Passed with Honors

PROFESSIONAL SERVICE – EXTERNAL REVIEWER

JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA (JASA)
EURASIP JOURNAL ON AUDIO, SPEECH, AND MUSIC PROCESSING
IEEE INTERNATIONAL CONFERENCES ON ACOUSTICS, SPEECH, AND SIGNAL PROCESSING (ICASSP)

IEEE WORKSHOPS ON AUTOMATIC SPEECH RECOGNITION AND UNDERSTANDING (ASRU)
BOOK REVIEWS: Machac, P. & Skarnitzl, R. (2009), Principles of Phonetic Segmentation, Epoque Publishing, Prague

PROFESSIONAL AFFILIATIONS (CURRENT/PAST)

IEEE

INTERNATIONAL SPEECH COMMUNICATION ASSOCIATION (ISCA)

EUROPEAN ASSOCIATION FOR SIGNAL PROCESSING (EURASIP)

EUROPEAN CENTER OF EXCELLENCE IN SPEECH SYNTHESIS (ECESS)

TEACHING EXPERIENCE

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|-----------|---|
| 2008–2009 | COURSE SUPPORT
Erik Jonsson School of Engineering and Computer Science
The University of Texas at Dallas
Course: EE6366 Speech and Speaker Recognition |
| 2005–2007 | COURSE DEVELOPMENT/INSTRUCTOR
Institute of Phonetics
Charles University in Prague
Course: Matlab Fundamentals |
| 2003–2007 | INSTRUCTOR
Faculty of Electrical Engineering
Czech Technical University in Prague
Courses: Circuit Theory I, Circuit Theory II, Electrical Circuits, Fundamentals of Electronic Circuits, Electrical Engineering for Informatics, Electrical Circuits in Communications |

PUBLICATIONS

JOURNAL ARTICLES

- J. H. L. Hansen, E. Ruzanski, H. Bořil, and J. Meyerhoff, “Stress assessment in speech using TEO based hybrid classification and tracking schemes: A case study,” *submitted to IEEE Transactions on Audio, Speech, and Language Processing*, 2010.
- H. Bořil and J. H. L. Hansen, “Unsupervised equalization of Lombard effect for speech recognition in noisy adverse environments,” *IEEE Transactions on Audio, Speech, and Language Processing*, vol. 18, no. 2, 15 pages, Feb. 2010.
- H. Bořil and P. Fousek, “Influence of different speech representations and HMM training strategies on ASR performance,” *Acta Polytechnica, Journal on Advanced Engineering*, vol. 46, no. 6, pp. 32–35, 2007.

CONFERENCE/WORKSHOP PROCEEDINGS

- H. Bořil, J. H. L. Hansen, D. Xu, G. Gilkerson, and J. Richards, “A longitudinal study of infant speech production parameters,” *will be submitted to Workshop on Child, Computer and Interaction WOCCI’10*, 2010.
- A. Sulyman, H. Bořil, A. Sangwan, and J. H. L. Hansen, “Limited resource speech recognition for nigerian english,” *Accepted to IEEE ICASSP’10*, Dallas, TX, March 2010.
- M. Mehrabani, H. Bořil, and J. H. L. Hansen, “Dialect distance assessment method based on comparison of pitch pattern statistical models,” *Accepted to IEEE ICASSP’10*, Dallas, TX, March 2010.

- T. Kleinschmidt, P. Boyraz, H. Bořil, S. Sridharan, and J. H. L. Hansen, “Assessment of speech dialog systems using multi-modal cognitive load analysis and driving performance metrics,” in *IEEE International Conference on Vehicular Electronics and Safety ICVES'09*, Pune, India, November 2009, pp. 167–172.
- H. Bořil and J. H. L. Hansen, “Reduced complexity equalization of Lombard effect for speech recognition in noisy adverse environments,” in *Proc. Interspeech'09*, Brighton, UK, September 2009.
- H. Bořil, P. Boyraz, and J. H. L. Hansen, “Towards multi-modal driver’s stress detection,” in *Proc. of 4th Biennial Workshop on DSP for In-Vehicle Systems and Safety*, Dallas, TX, 2009.
- H. Bořil, N. Krishnamurthy, and J. H. L. Hansen, “Online noise and Lombard effect compensation for in-vehicle automatic speech recognition,” in *Proc. of 4th Biennial Workshop on DSP for In-Vehicle Systems and Safety*, Dallas, TX, 2009.
- H. Bořil and J. H. L. Hansen, “Unsupervised equalization of Lombard effect for speech recognition in noisy adverse environment,” in *Proc. of IEEE ICASSP'09*, Taipei, Taiwan, April 2009, pp. 3937–3940.
- H. Bořil, P. Fousek, and H. Höge, “Two-stage system for robust neutral/Lombard speech recognition,” in *Proc. of Interspeech'07*, Antwerp, Belgium, 2007, pp. 1074–1077.
- H. Bořil, T. Bořil, and P. Pollák, “Methodology of Lombard speech database acquisition: Experiences with CLSD,” in *Proc. of LREC 2006 – 5th Conference on Language Resources and Evaluation*, Genova, Italy, 2006, pp. 1644 – 1647.
- H. Bořil, P. Fousek, and P. Pollák, “Data-driven design of front-end filter bank for Lombard speech recognition,” in *Proc. of ICSLP'06*, Pittsburgh, Pennsylvania, 2006, pp. 381 – 384.
- H. Bořil, P. Fousek, D. Sündermann, P. Červa, and J. Ždánský, “Lombard speech recognition: A comparative study,” in *Proc. 16th Czech-German Workshop on Speech Processing*, Prague, Czech Republic, 2006, pp. 141–148.
- H. Bořil, P. Fousek, “Influence of different speech representations and HMM training strategies on ASR performance,” in *POSTER'06 - 10th International Student Conference on Electrical Engineering*, Prague, Czech Republic, 2006.
- H. Bořil, “Automatic reconstruction of utterance boundaries time marks in speech database regrabbed from DAT recorder,” in *Proc. Digital Technologies 2005*, Zilina, Slovakia, 2005, pp. 13–16.
- H. Bořil and P. Pollák, “Comparison of three Czech speech databases from the standpoint of Lombard effect appearance,” in *ASIDE 2005, COST278 Final Workshop and ISCA Tutorial and Research Workshop*, Aalborg, Denmark, 2005.
- H. Bořil and P. Pollák, “Design and collection of Czech Lombard Speech Database,” in *Proc. of Interspeech'05*, Lisboa, Portugal, 2005, pp. 1577–1580.
- H. Bořil and P. Pollák, “Direct time domain fundamental frequency estimation of speech in noisy conditions,” in *Proc. EUSIPCO 2004*, vol. 1, Vienna, Austria, 2004, pp. 1003 – 1006.

LECTURES/ABSTRACTS/REPORTS

- H. Bořil, T. Kleinschmidt, P. Boyraz, and J. H. L. Hansen, “Impact of cognitive load and frustration on drivers’ speech,” *Accepted to the 159th Meeting of the Acoustical Society of America and NOISE-CON 2010*, Baltimore, Maryland, 2010.
- H. Bořil, “Attributes and recognition of Lombard speech,” Invited Lecture, Sound to Sense (S2S) Workshop – Speech in Adverse Conditions (Prague, Czech Republic), Sept. 2008.

- H. Bořil, “Normalization of Lombard effect,” CTU in Prague & Siemens Corporate Technology, Munich, Research Report No. R07-2, 52 pages, 2007.
- H. Bořil and P. Pollák, “Czech Lombard Speech Database (CLSD‘05),” CTU in Prague, Technical Report No. R07-1, 24 pages, 2006.
- H. Bořil and P. Pollák, “Pitch-marking based on the DFE algorithm,” 6th ECESS and TC-STAR WP3 Meeting (Berlin, Germany), Jan. 2006.