

CURRICULUM VITAE

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CURRICULUM VITAE

since 01/2014 Vice General Secretary of the Acoustical Society of Austria
since 10/2009 Project-senior scientist at the Signal Processing & Speech Communication Laboratory (SPSC) – Graz University of Technology (TU Graz)
06/2012–8/2012 Parental leave
12/2006 – 06/2011 Austrian delegate and country coordinator of the European COST action 2103 ‘Advanced Voice Function Assessment’
09/2005–11/2006 Parental leave
10/2003 - 09/2009 Doctoral study – electrical engineering at TU Graz
Thesis Title: *Enhancement for Disordered and Substitution Voices*
03/2002–09/2009 Research assistant at SPSC, TU Graz
02/2001–01/2002 Alternative civilian service in a refugee home in Graz,
10/1994–06/2001 Diploma study in electrical engineering – sound engineering at TU Graz

RESEARCH INTERESTS

Speech Signal Processing, Distant Speech Recognition, Disordered Voice Processing, Augmented Speech Communication, Hearing Aids, Medical Acoustics, Gender Aspects in Speech Processing

REVIEW ACTIVITIES

- International Journal of Speech Technology
- EURASIP Journal on Advances in Signal Processing
- Computer & Speech and Language
- Computers in Biology and Medicine
- Medical Engineering & Physics
- Research Letters in Signal Processing
- Speech Communication
- IEEE Transactions on Biomedical Engineering

PROJECTS (SELECTION)

Ongoing

- HumanEVoice (Consortium leader) [2015-2018]
FFG FemTech Forschungsprojekt 849824
- ASD – Acoustic Sensing & Design (WP Leader) [2013-2017]
COMET K-Project FFG 836632
- CULA – Computer Lung Sound Analysis [2014-2016]
- Electronic speech aid for laryngectomized people (Project manager) [2011-2018]
Cooperation with Heimomed, Kerpen, Germany

Completed

- DIRHA – Distant-speech Interaction for Robust Home Applications [2012-2014]
FP7-ICT-2011-7
- AAP – Advanced Audio Processing
COMET K-Project FFG 815085
- Acoustic Echo Control for VoIP
In framework of COAST – Competence network for speech technology
- Stress detection for air traffic controller by means of speech analysis
Cooperation with Eurocontrol Experimental Center, Brétigny, Frankreich and Frequentis Graz

SUPERVISED DIPLOMA AND MASTER'S THESES (SELECTION)

- 2016 Wake-up Word Detection using LSTM Neural Networks
Excitation Signal Analysis - Gender Differences
A hands-free electro-larynx device controlled by a Myo Gesture Control Armband
- 2015 Learning Effects for Electromyographically Controlled Electrolarynx Speech
Parametrization of a Transducer for Electro-Larynx Speech Production
- 2014 Electrolarynx Control using Electromyographic Signals
- 2013 Acoustic Source Localization with a Single Microphone using Reflected Signals
Differential Microphone Arrays
- 2012 Real-Time Enhancement of E-Larynx Speech Signals
- 2008 Comparison of Excitation Signals for an Electronic Larynx
- 2003 A Machine-Learning Approach to Recognition of Spoken German Variants

TEACHING AT TU-GRAZ

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| since 2011 | Speech Communication Laboratory |
| since 2009 | Digital Audio Engineering 2, Lecture class |
| 2002-04,08 | Digital Signal Processing, Problem class |
| since 2002 | Supervision of Student Projects and Master's Theses |

PUBLICATIONS OF LAST 5 YEARS

JOURNAL PAPERS

- [1] P. Aichinger, I. Roesner, B. Schneider-Stickler, M. Leonhard, D.-M. Denk-Linnert, W. Bigenzahn, A. K. Fuchs, M. Hagmüller, and G. Kubin, “Towards objective voice assessment: the diplophonia diagram,” *Journal of Voice*, vol. 31, no. 2, 253.e17–253.e26, 2017. DOI: 10.1016/j.jvoice.2016.06.021.
- [2] P. Aichinger, M. Hagmüller, I. Roesner, W. Bigenzahn, B. Schneider-Stickler, and J. Schoentgen, “Diplophonia disturbs jitter and shimmer measurement,” *Folia Phoniatr Logop*, vol. 68, no. 1, pp. 22–28, 2016, ISSN: 1021-7762. DOI: 10.1159/000447589.
- [3] P. Aichinger, I. Roesner, M. Leonhard, B. Schneider-Stickler, D. Denk-Linnert, W. Bigenzahn, A. K. Fuchs, M. Hagmüller, and G. Kubin, “Comparison of an audio-based and a video-based approach for detecting diplophonia,” *Biomedical Signal Processing and Control*, 2016, in Press. DOI: 10.1016/j.bspc.2014.10.001.
- [4] A. Fuchs, M. Hagmüller, and G. Kubin, “The new bionic electro-larynx speech system,” *IEEE Journal of Selected Topics in Signal Processing*, vol. 10, no. 5, pp. 952–961, 2016, ISSN: 1932-4553. DOI: 10.1109/JSTSP.2016.2535970.
- [5] H. Pessentheiner, M. Hagmüller, and G. Kubin, “Localization and characterization of multiple harmonic sources,” *IEEE/ACM Transactions on Audio, Speech and Language Processing*, vol. 24, no. 8, pp. 1348–1363, Aug. 2016. DOI: 10.1109/TASLP.2016.2556282.
- [6] P. Aichinger, M. Hagmüller, I. Roesner, B. Schneider-Stickler, J. Schoentgen, and F. Pernkopf, “Fundamental frequency tracking in diplophonic voices,” *Biomedical Signal Processing and Control*, In Print, 2016. DOI: 10.1016/j.bspc.2016.10.002.

PEER-REVIEWED CONFERENCE PAPERS

- [7] E. Messner, M. Hagmüller, P. Swatek, F.-M. Smolle-Jüttner, and F. Pernkopf, “Respiratory airflow estimation from lung sounds based on regression,” in *ICASSP*, 2017.
- [8] —, “Impact of airflow rate on amplitude and regional distribution of normal lung sounds,” in *Proceedings of the 10th International Joint Conference on Biomedical Engineering Systems and Technologies*, SCITEPRESS - Science and Technology Publications, 2017. DOI: 10.5220/0006134400490053.
- [9] P. A. Aichinger, B. Schneider-Stickler, M. Hagmüller, and J. Schoentgen, “Acoustic detection of diplophonia among other types of dysphonia,” in *ICVPB 10th International Conference on Voice Physiology and Biomechanics*, Viña del Mar, Mar. 2016, pp. 139–140.
- [10] P. Aichinger, B. Schneider-Stickler, and M. Hagmüller, “Terminology of voice phenomena related to diplophonia,” in *ICVPB 10th International Conference on Voice Physiology and Biomechanics*, Viña del Mar, Mar. 2016.
- [11] E. Messner, M. Hagmüller, P. Swatek, and F. Pernkopf, “A robust multichannel lung sound recording device,” in *Proceedings of the 9th International Joint Conference on Biomedical Engineering Systems and Technologies*, Scitepress, Jun. 26, 2017, pp. 34–39. DOI: 10.5220/0005660200340039.
- [12] H. Pessentheiner, T. Pichler, and M. Hagmüller, “AMISCO: the Austrian-German multi-sensor corpus,” in *Proceedings of the Tenth International Conference on Language Resources and Evaluation (LREC)*, Portorož, Slovenia, May 2016, pp. 760–766. [Online]. Available: http://www.lrec-conf.org/proceedings/lrec2016/pdf/375_Paper.pdf.
- [13] P. Aichinger, M. Hagmüller, I. Roesner, W. Bigenzahn, B. Schneider-Stickler, and J. Schoentgen, “Differentiating diplophonia from other types of severe dysphonia by acoustic analysis,” in *PEVOC*, abstract only, 2015.

- [14] P. Aichinger, M. Hagmüller, I. Roesner, W. Bigenzahn, B. Schneider-Stickler, J. Schoentgen, and F. Pernkopf, “Measurement of fundamental frequencies in diplophonic voices,” in *MAVEBA*, Firenze, Italy, 2015.
- [15] P. Aichinger, B. Schneider-Stickler, W. Bigenzahn, M. Hagmüller, A. Sontacchi, and J. Schoentgen, “Assessment and psychoacoustic modelling of auditory streams in diplophonic voice,” in *MAVEBA*, 2015.
- [16] A. Fuchs, M. Conter, R. Wehr, M. Hagmüller, and H. Pessentheiner, “Anwendung von beamforming für vorbeifahrtmessungen,” in *Fortschritte der Akustik - DAGA*, 2015, pp. 173–176.
- [17] A. K. Fuchs, C. Amon, and M. Hagmüller, “Speech/non-speech detection for electro-larynx speech,” in *Biosignals*, Lisbon, Portugal, Jan. 2015.
- [18] E. Messner, H. Pessentheiner, J. A. Morales-Cordovilla, and M. Hagmüller, “Adaptive differential microphone arrays used as a front-end for an automatic speech recognition system,” in *2015 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, IEEE, 2015. DOI: 10.1109/ICASSP.2015.7178459.
- [19] L. Pfeifenberger, T. Schrank, M. Zöhrer, M. Hagmüller, and F. Pernkopf, “Multichannel speech processing architectures for noise robust speech recognition: 3rd CHiME challenge results,” in *ASRU Workshop*, 2015. DOI: 10.1109/ASRU.2015.7404830.
- [20] L. Cristoforetti, M. Ravanelli, M. Omologo, A. Sosi, A. Abad, M. Hagmüller, and P. Maragos, “The DIRHA simulated corpus,” in *Proceedings of the Ninth International Conference on Language Resources and Evaluation (LREC’14)*, Reykjavik, Island, May 2014, pp. 2629–2634, ISBN: 978-2-9517408-8-4.
- [21] A. K. Fuchs, M. Hagmüller, and G. Kubin, “Artificial fundamental frequency contour for electro-larynx speech,” in *Fortschritte der Akustik – DAGA*, Deutsche Gesellschaft für Akustik (DEGA), Oldenburg, Germany, Mar. 2014, pp. 507–508.
- [22] J. A. Morales-Cordovilla, H. Pessentheiner, M. Hagmüller, and G. Kubin, “Distant speech recognition in reverberant noisy conditions employing a microphone array,” in *Proceedings of the European Signal Processing Conference (EUSIPCO)*, Lisbon, Portugal, Sep. 2014, pp. 2380–2384.
- [23] —, “Room localization for distant speech recognition,” in *Proceedings of Interspeech*, Singapore, Sep. 2014, pp. 2450–2453.
- [24] B. Schuppler, M. Hagmüller, J. A. Morales-Cordovilla, and H. Pessentheiner, “GRASS: the Graz corpus of Read And Spontaneous Speech,” in *Proceedings of the Ninth International Conference on Language Resources and Evaluation (LREC’14)*, Reykjavik, Island, May 2014, pp. 1465–1470, ISBN: 978-2-9517408-8-4. [Online]. Available: http://www.lrec-conf.org/proceedings/lrec2014/pdf/394_Paper.pdf.
- [25] A. Zehetner, M. Hagmüller, and F. Pernkopf, “Wake-up-word spotting for mobile systems,” in *EUSIPCO*, Lisbon, Portugal, Sep. 2014, pp. 1472–1476.
- [26] P. Aichinger, I. Roesner, B. Schneider-Stickler, W. Bigenzahn, F. Feichter, A. Fuchs, M. Hagmüller, and G. Kubin, “Spectral analysis of laryngeal high-speed videos: case studies on diplophonic and euphonic phonation,” in *8th International Workshop on Models and Analysis of Vocal Emissions for Biomedical Applications (MAVEBA)*, Firenze, Italy, Dec. 2013.
- [27] P. Aichinger, B. Schneider-Stickler, W. Bigenzahn, A. Fuchs, B. Geiger, M. Hagmüller, and G. Kubin, “Double pitch marks in diplophonic voice,” in *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2013, pp. 7437–7441. DOI: 10.1109/ICASSP.2013.6639108.
- [28] A. K. Fuchs and M. Hagmüller, “A German Parallel Electro-Larynx Speech – Healthy speech corpus,” in *8th International Workshop on Models and Analysis of Vocal Emissions for Biomedical Applications*, Firenze University Press, Florence, Italy: Firenze University Press, Dec. 2013, pp. 55–58.
- [29] A. K. Fuchs, J. A. Morales-Cordovilla, and M. Hagmüller, “ASR for electro-laryngeal speech,” in *Proceedings of the Automatic Speech Recognition and Understanding Workshop (ASRU)*, Olomouc, Czech Republic, Dec. 2013, pp. 234–238.

- [30] J. A. Morales-Cordovilla, H. Pessentheiner, M. Hagmüller, P. Mowlaee, F. Pernkopf, and G. Kubin, “A german distant speech recognizer based on 3d beamforming and harmonic missing data mask,” in *DAGA*, Mar. 2013.
- [31] P. Mowlaee, J. A. Morales-Cordovilla, F. Pernkopf, H. Pessentheiner, M. Hagmüller, and G. Kubin, “The 2nd chime speech separation and recognition challenge: approaches on single-channel speech separation and model-driven speech enhancement,” in *Proceeding of the 2nd CHiME Speech Separation and Recognition Challenge, IEEE Int. Conf. Acoustics, Speech, Signal Processing*, Vancouver, Canada, May 2013, pp. 59–64. [Online]. Available: http://spandh.dcs.shef.ac.uk/chime_workshop/papers/pP7_mowlaee.pdf.
- [32] A. K. Fuchs and M. Hagmüller, “Learning an artificial F0-contour for ALT speech,” in *Interspeech 2012*, Portland, Oregon, USA, 2012.