

List of Publications

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Current Hirsch-Index: 35 (google scholar)

Theses:

1. R. Schlüter: *Investigations on Discriminative Training Criteria*, Dissertation, Computer Science Department, RWTH Aachen University, http://publications.rwth-aachen.de/record/52111/files/Schlueter_Ralf.pdf, Aachen, Germany, September 2000.
2. R. Schlüter: *Monte-Carlo Simulation von Finite-Size-Effekten in Spinmodellen*, Diploma Thesis, Physics Department, RWTH Aachen University, Aachen, Germany, September 1995.

Patents:

1. R. Schlüter (Inventor): "Verfahren und Vorrichtung zur automatischen Spracherkennung," Patent DE10204325 B4, Feb. 2002.

Journals:

1. P. Dötsch, M. Hannemann, R. Schlüter, H. Ney: "Inverted Alignments for End-to-End Automatic Speech Recognition," accepted for publication in *IEEE Journal of Selected Topics in Signal Processing*, Sept. 2017.
2. M. Sundermeyer, H. Ney, and R. Schlüter: "From Feedforward to Recurrent LSTM Neural Networks for Language Modeling," in *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, Vol. 23, No. 3, pp. 517–529, March 2015.
3. G. Heigold, H. Ney, R. Schlüter: "Investigations on an EM-Style Optimization Algorithm for Discriminative Training of HMMs," in *IEEE Transactions on Audio, Speech, and Language Processing*, Vol. 21, No. 12, pp. 2616–2626, Dec. 2013.
4. D. Rybach, H. Ney, and R. Schlüter: "Lexical Prefix Tree and WFST: A Comparison of Two Dynamic Search Concepts for LVCSR," in *IEEE Transactions on Audio, Speech, and Language Processing*, Vol. 21, No. 6, pp. 1295–1307, June 2013.
5. G. Heigold, R. Schlüter, H. Ney, and S. Wiesler: "Discriminative Training for Automatic Speech Recognition: Modeling, Criteria, Optimization, Implementation, and Performance," in *IEEE Signal Processing Magazine*, Vol. 29, No. 6, pp. 58–69, Nov. 2012.
6. R. Schlüter, M. Nußbaum-Thom, and H. Ney: "Does the Cost Function Matter in Bayes Decision Rule?" *IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI)*, Vol. 34, No. 2, pp. 292–301, Feb. 2012.
- 6.a R. Schlüter, M. Nussbaum-Thom, and H. Ney: "Simulation of Fixed Length Word String Probability Distributions," Internal Report, Lehrstuhl für Informatik 6, RWTH Aachen University, Dec. 2010. (Supplement to 6.)
7. B. Hoffmeister, G. Heigold, D. Rybach, R. Schlüter, and H. Ney: "WFST Enabled Solutions to ASR Problems: Beyond HMM Decoding," *IEEE Transactions on Audio, Speech, and Language Processing*, Vol. 20, No. 2, pp. 551–564, February 2012.
8. R. Schlüter, M. Nussbaum-Thom, and H. Ney: "On the Relationship between Bayes Risk and Word Error Rate in ASR," *IEEE Trans. on Audio, Speech, and Language Processing*, Vol. 19, No. 5, pp. 1103–1112, July 2011.
9. G. Heigold, H. Ney, P. Lehnen, T. Gass, and R. Schlüter: "Equivalence of Generative and Log-Linear Models," in *IEEE Transactions on Audio, Speech, and Language Processing*, Vol. 19, No. 5, July 2011.

10. G. Heigold, P. Dreuw, S. Hahn, R. Schlüter, and H. Ney: "Margin-Based Discriminative Training for String Recognition," *IEEE Journal of Selected Topics in Signal Processing - Statistical Learning Methods for Speech and Language Processing*, Vol. 4, No. 6, pp. 917–925, December 2010.
11. A. Zolnay, D. Kocharov, R. Schlüter, H. Ney: "Using Multiple Acoustic Feature Sets for Speech Recognition," in *Speech Communication*, Vol. 49, No. 6, pp. 514–525, June 2007.
12. R. Schlüter, W. Macherey, B. Müller, H. Ney: "Comparison of Discriminative Training Criteria and Optimization Methods for Speech Recognition," *Speech Communication*, Vol. 34, pp. 287–310, May 2001.
13. R. Schlüter, H. Ney: "Model Based MCE Bound to the True Bayes' Error," *IEEE Signal Processing Letters*, Vol. 8, No. 5, pp. 131–133, May 2001.
14. F. Wessel, R. Schlüter, K. Macherey, H. Ney: "Confidence Measures for Large Vocabulary Continuous Speech Recognition," *IEEE Transactions on Speech and Audio Processing*, Vol. 9, No. 3, pp. 288–298, March 2001.

Invited Talks:

1. "Broadening the Perspective of Automatic Speech Recognition using Neural Networks," KITP Program: Physics of Hearing: From Neurobiology to Information Theory and Back, Kavli Institute for Theoretical Physics (KITP), University of California, Santa Barbara, CA, June 2017. <http://online.kitp.ucsb.edu/online/hearing17/>
2. "Automatic Speech Recognition: State-of-the-Art in Transition," KITP Program: Physics of Hearing: From Neurobiology to Information Theory and Back, Kavli Institute for Theoretical Physics (KITP), University of California, Santa Barbara, CA, June 2017. <http://online.kitp.ucsb.edu/online/hearing17/>
3. "On the Relation between Error Measures, Statistical Modeling, and Decision Rules," Speech Processing Group, Faculty of Information Technology, Brno University of Technology, Czech Republic, Aug. 2016.
4. "Automatic Speech Recognition based on Neural Networks," Keynote lecture at *Int. Conf. Speech and Computer (SPECOM)*, Budapest, Hungary, Aug. 2016.
5. "Automatic Speech Recognition using Neural Networks," Keynote lecture at *11. ITG Fachtagung Sprachkommunikation*, Erlangen, Germany, Sept. 2014.
6. "Error Measures, Training Criteria, and Decision Rules: Consistent?" IBM Thomas J. Watson Research Center, Yorktown Heights, NY, Jan. 2014.
7. "Matching Targets for Automatic Speech Recognition," M*Modal & Carnegie Mellon University, Pittsburgh, PA, Sept. 2012.
8. "Adaptive and Discriminative ASR at RWTH Aachen University," IDIAP Research Institute, Martigny, Switzerland, Mar. 2010.
9. "Log-Linear Approach to Discriminative Training," *NIPS 2008 Workshop "Speech and Language: Learning-based Methods and Systems"*, Whistler, BC, Canada, Dec. 2008.
10. "Speech Recognition and Statistical Machine Translation at RWTH Aachen University," NTT Communication Science Laboratories, Kyoto, Japan, Dec. 2007.

Book Chapters:

1. G. Heigold, T. Deselaers, R. Schlüter, H. Ney, G. Saon, D. Povey: "Integration of large margin concept into standard discriminative training criteria," in J. Olive, C. Christianson, and J. McCary (Eds.): *Handbook of Natural Language processing and Machine Translation: DARPA Global Autonomous Language Exploitation (GALE)*, pp. 445–452, Springer, New York, USA, 2011.
2. C. Plahl, B. Hoffmeister, R. Schlüter, H. Ney: "Multiple Feature Speech Recognition," in J. Olive, C. Christianson, and J. McCary (Eds.): *Handbook of Natural Language processing and Machine Translation: DARPA Global Autonomous Language Exploitation (GALE)*, pp. 415–421, Springer, New York, USA, 2011.
3. D. Vergyri, A. Mandal, W. Wang, A. Stolcke, J. Zheng, M. Graciarena, D. Rybach, C. Gollan, R. Schlüter, K. Kirchhoff, A. Faria, N. Morgan: "Development of the SRI/Nightingale Arabic ASR System," in J. Olive, C. Christianson, and J. McCary (Eds.): *Handbook of Natural Language processing and Machine Translation: DARPA Global Autonomous Language Exploitation (GALE)*, pp. 561–569, Springer, New York, USA, 2011.

4. S. Kanthak, A. Sixtus, S. Molau, R. Schlüter, H. Ney: "Fast Search for Large Vocabulary Speech Recognition," in Wolfgang Wahlster, editor: *Verbmobil: Foundations of Speech-to-Speech Translation*, pp. 63-78, Springer Verlag: Berlin, Heidelberg, New York, 2000.

Tutorials:

1. R. Schlüter: "Does the Cost Function Matter in Bayes Decision Rule?" Tutorial, Summer Workshop, EU Project SCALE, Sheffield, UK, June 2012.
2. R. Schlüter, G. Heigold: "Introduction to Discriminative Training in Speech Recognition," Tutorial, Winter School, EU Project SCALE, Saarbrücken, Germany, Jan. 2010.

Conference Proceedings:

1. P. Golik, Z. Tüske, K. Irie, E. Beck, R. Schlüter, H. Ney: "The 2016 RWTH Keyword Search System for Low-Resource Languages," in *Int. Conf. Speech and Computer (SPECOM)*, to be presented, Hatfield, UK, Sept. 2017.
2. Z. Tüske, W. Michel, R. Schlüter, H. Ney: "Parallel Neural Network Features for Improved Tandem Acoustic Modeling," in *Interspeech*, Stockholm, Sweden, August 2017.
3. A. Zeyer, E. Beck, R. Schlüter, H. Ney: "CTC in the Context of Generalized Full-Sum HMM Training," in *Interspeech*, Stockholm, Sweden, August 2017.
4. P. Dötsch, A. Zeyer, P. Voigtlaender, I. Kulikov, R. Schlüter, H. Ney: "RETURNN: The RWTH Extensible Training framework for Universal Recurrent Neural Networks," in *IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 5345–5349, New Orleans, LA, March 2017, (arXiv preprint arXiv:1608.00895).
5. K. Irie, P. Golik, R. Schlüter, H. Ney: "Investigations on Byte-Level Convolutional Neural Networks for Language Modeling in Low Resource Speech Recognition," in *IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 5740–5744, New Orleans, LA, March 2017.
6. A. Zeyer, P. Dötsch, P. Voigtlaender, R. Schlüter, H. Ney: "A Comprehensive Study of Deep Bidirectional LSTM RNNs for Acoustic Modeling in Speech Recognition," in *IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 2462–2466, New Orleans, LA, March 2017, (arXiv preprint arXiv:1606.06871).
7. A. Zeyer, I. Kulikov, R. Schlüter, H. Ney: "Faster Sequence Training," in *IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 5285–5289, New Orleans, LA, March 2017.
8. M. Nussbaum-Thom, R. Schlüter, V. Goel, H. Ney: "Noisy Objective Functions Based on the f -Divergence," in *IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 2327–2331, New Orleans, LA, March 2017.
9. P. Dötsch, S. Heggelmann, R. Schlüter, H. Ney: "Inverted HMM - a Proof of Concept," in *Neural Information Processing Systems (NIPS) End-to-end Learning for Speech and Audio Processing Workshop*, Barcelona, Spain, December 2016.
10. W. Michel, Z. Tüske, M. A. B. Shaik, R. Schlüter, and H. Ney: "The RWTH Aachen LVCSR System for IWSLT-2016 German Skype Conversation Recognition Task," in *Int. Workshop on Spoken Language Translation (IWSLT)*, Seattle, WA, Dec. 2016.
11. M. Kitzka, A. Zeyer, R. Schlüter, J. Heymann, R. Häb-Umbach: "Robust Online Multi-Channel Speech Recognition," in *12th VDE ITG Symposium Speech Communication*, pp. 1–5, Oct. 2016.
12. T. Menne, J. Heymann, A. Alexandridis, K. Irie, A. Zeyer, M. Kitzka, P. Golik, I. Kulikov, L. Drude, R. Schlüter, H. Ney, R. Häb-Umbach, A. Mouchtaris: "The RWTH/UPB/FORTH System Combination for the 4th CHiME Challenge Evaluation," in *4th Int. Workshop on Speech Processing in Everyday Environments*, pp. 39–44, San Francisco, CA, Sept. 2016.
13. R. Schlüter, P. Dötsch, P. Golik, M. Kitzka, T. Menne, K. Irie, Z. Tüske, A. Zeyer: "Automatic Speech Recognition Based on Neural Networks," in *Int. Conf. Speech and Computer (SPECOM)*, A. Ronzhin, R. Potapova, G. Néméth (Eds.), *Lecture Notes in Computer Science, Subseries Lecture Notes in Artificial Intelligence*, Vol. LNAI 9811, pp. 3–17, Budapest, Hungary, Aug. 2016.
14. K. Irie, Z. Tüske, T. Alkhouli, R. Schlüter, H. Ney: "LSTM, GRU, Highway and a Bit of Attention: An Empirical Overview for Language Modeling in Speech Recognition," in *Interspeech*, pp. 3519–3523, San Francisco, CA, Sept. 2016.
15. A. Zeyer, R. Schlüter, H. Ney: "Towards Online-Recognition with Deep Bidirectional LSTM Acoustic Models," in *Interspeech*, pp. 3424–3428, San Francisco, CA, Sept. 2016.
16. Z. Tüske, K. Irie, R. Schlüter, and H. Ney: "Investigation on Log-Linear Interpolation of Multi-Domain Neural Network Language Models," in *IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 6005–6009, Shanghai, China, March 2016.
17. Z. Tüske, P. Golik, R. Schlüter, H. Ney: "Speaker Adaptive Joint Training of Gaussian Mixture Models and Bottleneck Features," in *IEEE Automatic Speech Recognition and Understanding Workshop (ASRU)*, Scottsdale, AZ, Dec. 2015.

18. J. Cui, B. Kingsbury, B. Ramabhadran, A. Sethy, K. Audhkhasi, X. Cui, E. Kislal, L. Mangu, M. Nussbaum-Thom, M. Picheny, Z. Tuske, P. Golik, R. Schlüter, H. Ney, M.J.F. Gales, K.M. Knill, A. Ragni, H. Wang, P. Woodland "Multilingual Representations for Low Resource Speech Recognition and Keyword Search," *IEEE Automatic Speech Recognition and Understanding Workshop (ASRU)*, Scottsdale, AZ, Dec. 2015.
19. M.A.B. Shaik, Z. Tüske, M.A. Tahir, M. Nussbaum-Thom, R. Schlüter, H. Ney: "Improvements in RWTH LVCSR Evaluation Systems for Polish, Portuguese, English, Urdu, and Arabic," in *Proc. Interspeech*, pp. 3154–3157, Dresden, Germany, Sept. 2015.
20. P. Golik, Z. Tüske, R. Schlüter, H. Ney: "Convolutional Neural Networks for Acoustic Modeling of Raw Time Signal in LVCSR," in *Proc. Interspeech*, pp. 26–30, Dresden, Germany, Sept. 2015.
21. P. Golik, Z. Tüske, R. Schlüter, H. Ney: "Multilingual Features Based Keyword Search for Very Low-Resource Languages," in *Proc. Interspeech*, pp. 1260–1264, Dresden, Germany, Sept. 2015.
22. E. Beck, R. Schlüter, H. Ney: "Error Bounds for Context Reduction and Feature Omission," in *Proc. Interspeech*, pp. 1280–1284, Dresden, Germany, Sept. 2015.
23. K. Irie, R. Schlüter, H. Ney: "Bag-of-Words Input for Long History Representation in Neural Network-based Language Models for Speech Recognition," in *Proc. Interspeech*, pp. 2371–2375, Dresden, Germany, Sept. 2015.
24. Z. Tüske, M.A. Tahir, R. Schlüter, H. Ney: "Integrating Gaussian Mixture Models into Deep Neural Networks: Softmax Layer with Hidden Variable," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 4285–4289, Brisbane, Australia, April 2015.
25. M.A. Tahir, S. Wiesler, R. Schlüter, H. Ney: "Investigation of Mixture Splitting Concept for Training Linear Bottlenecks of Deep Neural Network Acoustic Models" in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 4614–4618, Brisbane, Australia, April 2015.
26. P. Voigtlaender, P. Dötsch, S. Wiesler, R. Schlüter, H. Ney: "Sequence-discriminative training of recurrent neural networks," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 2100–2104, Brisbane, Australia, April 2015.
27. S. Wiesler, P. Golik, R. Schlüter, H. Ney: "Investigations on Sequence Training of Neural Networks," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 4565–4569, Brisbane, Australia, April 2015.
28. J. Heymann, R. Häb-Umbach, P. Golik, R. Schlüter: "Unsupervised Adaptation of a Denoising Autoencoder by Bayesian Feature Enhancement for Reverberant ASR under Mismatch Conditions," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 5053–5057, Brisbane, Australia, April 2015.
29. M.A.B. Shaik, A. Mousa, S. Hahn, R. Schlüter, H. Ney: "Improved Strategies for a Zero OOV Rate LVCSR System," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 5048–5052, Brisbane, Australia, April 2015.
30. D. Nolden, R. Schlüter, H. Ney: "Word Pair Approximation for More Efficient Decoding with High-Order Language Models," in *Proc. Interspeech*, pp. NN–NN, Singapore, Sept. 2014.
31. M.A. B. Shaik, Z. Tüske, M.A. Tahir, M. Nussbaum-Thom, R. Schlüter, H. Ney: "RWTH LVCSR Systems for Quaero and EU-Bridge: German, Polish, Spanish and Portuguese," in *Proc. Interspeech*, pp. 973–977, Singapore, Sept. 2014.
32. M. Sundermeyer, R. Schlüter, H. Ney: "rwthlm - The RWTH Aachen University Neural Network Language Modeling Toolkit," in *Proc. Interspeech*, pp. 2093–2097, Singapore, Sept. 2014.
33. M. Sundermeyer, Z. Tüske, R. Schlüter, H. Ney: "Lattice Decoding and Rescoring with Long-Span Neural Network Language Models," in *Proc. Interspeech*, pp. 661–665, Singapore, Sept. 2014.
34. Z. Tüske, P. Golik, D. Nolden, R. Schlüter, H. Ney: "Data Augmentation, Feature Combination, and Multilingual Neural Networks to Improve ASR and KWS Performance for Low-resource Languages," in *Proc. Interspeech*, pp. 1420–1424, Singapore, Sept. 2014.
35. Z. Tüske, P. Golik, R. Schlüter, H. Ney: "Acoustic Modeling with Deep Neural Networks Using Raw Time Signal for LVCSR," in *Proc. Interspeech*, pp. 890–894, Singapore, Sept. 2014. ISCA best student paper award Interspeech 2014.

36. M. Kozielski, M. Matysiak, P. Dötsch, R. Schlüter, H. Ney: "Open-lexicon Language Modeling Combining Word and Character Levels," in *Proc. Intern. Conf. on Frontiers in Handwriting Recognition (ICFHR)*, pp. 343–348, Crete, Greece, Sept. 2014.
37. Z. Tüske, D. Nolden, R. Schlüter, H. Ney: "Multilingual MRASTA Features for Low-Resource Keyword Search and Speech Recognition Systems" in *Proc. IEEE Int. Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Florence, Italy, May 2014.
38. S. Wiesler, A. Richard, R. Schlüter, H. Ney: "Mean-Normalized Stochastic Gradient For Large-Scale Deep Learning" in *Proc. IEEE Int. Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 180–184, Florence, Italy, May 2014.
39. S. Wiesler, A. Richard, P. Golik, R. Schlüter, H. Ney: "RASR/ANN: The RWTH Neural Network Toolkit for Speech Recognition" in *Proc. IEEE Int. Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 3313–3317, Florence, Italy, May 2014.
40. S. Wiesler, C. Oberdörfer, K. Irie, R. Schlüter, H. Ney: "The RWTH Aachen University English Lecture Recognition System" in *Proc. IEEE Int. Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 3322–3326, Florence, Italy, May 2014.
41. M. Nussbaum-Thom, X. Cui, R. Schlüter, H. Ney, V. Goel: "A Family of Discriminative Training Criteria Based on the F-Divergence for Deep Neural Networks" in *Proc. IEEE Int. Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Florence, Italy, May 2014.
42. M.A.B. Shaik, Z. Tüske, S. Wiesler, M. Nussbaum-Thom, S. Peitz, R. Schlüter, and H. Ney: "The RWTH Aachen German and English LVCSR systems for IWSLT-2013," in *Proc. Int. Workshop on Spoken Language Translation (IWSLT)*, Heidelberg, Germany, Dec. 2013.
43. D. Nolden, R. Schlüter, H. Ney: "Efficient Nearly Error-Less LVCSR Decoding Based on Incremental Forward and Backward Passes," in *Proc. IEEE Automatic Speech Recognition and Understanding (ASRU) Workshop*, Olomouc, Czech Republic, Dec. 2013.
44. P. Golik, Z. Tüske, R. Schlüter, H. Ney: "Development of the RWTH Transcription System for Slovenian," in *Proc. Interspeech*, pp. 3107–3111, Lyon, France, Aug. 2013.
45. S. Hahn, P. Lehnen, S. Wiesler, R. Schlüter, H. Ney: "Improving LVCSR with Hidden Conditional Random Fields for Grapheme-to-Phoneme Conversion," in *Proc. Interspeech*, pp. 495–499, Lyon, France, Aug. 2013.
46. A. Mousa, M.A.B. Shaik, R. Schlüter, H. Ney: "Morpheme Level Hierarchical Pitman-Yor Class-based Language Models for LVCSR of Morphologically Rich Languages," in *Proc. Interspeech*, pp. 3409–3413, Lyon, France, Aug. 2013.
47. M. Nussbaum-Thom, E. Beck, T. Alkhoul, R. Schlüter, H. Ney: "Relative Error Bounds for Statistical Classifiers based on the f-Divergence," in *Proc. Interspeech*, pp. 2197–2201, Lyon, France, Aug. 2013.
48. M.A.B. Shaik, A. Mousa, R. Schlüter, H. Ney: "Feature-rich Sub-lexical Language Models using a Maximum Entropy Approach for German LVCSR," in *Proc. Interspeech*, pp. 3404–3408, Lyon, France, Aug. 2013.
49. M.A. Tahir, H. Huang, R. Schlüter, H. Ney, L. ten Bosch, B. Cranen, L. Boves: "Training Log-Linear Acoustic Models in Higher-Order Polynomial Feature Space for Speech Recognition," in *Proc. Interspeech*, pp. 3352–3356, Lyon, France, Aug. 2013.
50. Z. Tüske, R. Schlüter, H. Ney: "Multilingual hierarchical MRASTA features for ASR," in *Proc. Interspeech*, pp. 2222–2226, Lyon, France, Aug. 2013.
51. R. Schlüter, M. Nußbaum-Thom, E. Beck, T. Alkhoul, H. Ney: "Novel Tight Classification Error Bounds under Mismatch Conditions based on f-Divergence," in *IEEE Information Theory Workshop*, pp. 432–436, Sevilla, Spain, Sept. 2013.
52. J. Mamou, J. Cui, X. Cui, M.J.F. Gales, B. Kingsbury, K. Knill, L. Mangu, D. Nolden, M. Picheny, B. Ramabhadran, M. Saraclar, R. Schlüter, A. Sethy, P.C. Woodland: "Developing Keyword Search under the IARPA Babel Program," in *Proc. AFEKA Speech Processing Conference*, Tel Aviv, Israel, Jul. 2013.

53. M. Kozielski, D. Rybach, S. Hahn, R. Schlüter, H. Ney: "Open Vocabulary Handwriting Recognition using Combined Word-Level and Character-Level Language Models," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing*, pp. 8257–8261, Vancouver, Canada, May 2013. (IBM Research Spoken Language Processing Student Travel Grant Award)
54. D. Nolden, R. Schlüter, H. Ney: "Advanced Search Space Pruning with Acoustic Look-Ahead for WFST-based LVCSR," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing*, pp. 6734–6738, Vancouver, Canada, May 2013.
55. C. Plahl, M. Kozielski, R. Schlüter, H. Ney: "Feature Combination and Stacking of Recurrent and Non-recurrent Neural Networks for LVCSR," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing*, pp. 6714–6718, Vancouver, Canada, May 2013.
56. M. Sundermeyer, I. Oparin, J.-L. Gauvain, B. Freiberg, R. Schlüter, H. Ney: "Comparison of Feedforward and Recurrent Neural Network Language Models," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing*, pp. 8430–8434, Vancouver, Canada, May 2013.
57. Z. Tüske, R. Schlüter, H. Ney: "Deep hierarchical bottleneck MRASTA features for LVCSR," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing*, pp. 6970–6974, Vancouver, Canada, May 2013.
58. Z. Tüske, J. Pinto, D. Willett, R. Schlüter: "Investigation on cross- and multilingual MLP features under matched and mismatched acoustical conditions," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing*, pp. 7349–7353, Vancouver, Canada, May 2013.
59. S. Wiesler, A. Richard, R. Schlüter, H. Ney: "A Critical Evaluation of Stochastic Algorithms for Convex Optimization," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing*, pp. 6955–6959, Vancouver, Canada, May 2013.
60. J. Mamou, J. Cui, X. Cui, M.J.F. Gales, B. Kingsbury, K. Knill, L. Mangu, D. Nolden, M. Picheny, B. Ramabhadran, R. Schlüter, A. Sethy, P.C. Woodland: "System Combination and Score Normalization for Spoken Term Detection," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing*, pp. 8272–8276, Vancouver, Canada, May 2013.
61. B. Kingsbury, J. Cui, X. Cui, M.J.F. Gales, K. Knill, J. Mamou, L. Mangu, D. Nolden, M. Picheny, B. Ramabhadran, R. Schlüter, A. Sethy, P.C. Woodland: "A High-Performance Cantonese Keyword Search System," in *Proc. IEEE Intern. Conf. on Acoustics, Speech, and Signal Processing*, pp. 8277–8281, Vancouver, Canada, May 2013.
62. M. Ali Basha Shaik, R. Rybach, S. Hahn, R. Schlüter, Hermann Ney: "Hierarchical Hybrid Language models for Open Vocabulary Continuous Speech Recognition using WFST," in *Proc. SAPA - SCALE Conference 2012*, Portland, OR, Sept. 2012.
63. Z. Tüske, R. Schlüter, F.R. Drepper, H. Ney: "Non-Stationary Signal Processing and its Application in Speech Recognition," in *Proc. SAPA - SCALE Conference 2012*, Portland, OR, Sept. 2012.
64. M. Ali Basha Shaik, A. Mousa El-Desoky, R. Schlüter, H. Ney: "Investigation of Maximum Entropy Hybrid Language Models for Open Vocabulary German and Polish LVCSR," in *Proc. Interspeech*, Portland, OR, Sept. 2012.
65. Z. Tüske, R. Schlüter, H. Ney, M. Sundermeyer: "Context-Dependent MLPs for LVCSR: TANDEM, Hybrid or Both?" in *Proc. Interspeech*, Portland, OR, Sept. 2012.
66. M.A. Tahir, M. Nussbaum-Thom, R. Schlüter, H. Ney: "Simultaneous Discriminative Training and Mixture Splitting of HMMs for Speech Recognition," in *Proc. Interspeech*, Portland, OR, Sept. 2012.
67. A. El-Desoky Mousa, M. Ali Basha Shaik, R. Schlüter, H. Ney: "Morpheme Level Feature-based Language Models for German LVCSR," in *Proc. Interspeech*, Portland, OR, Sept. 2012.
68. M. Nussbaum-Thom, G. Heigold, R. Schlüter, H. Ney: "Posterior-Scaled MPE: Novel Discriminative Training Criteria," in *Proc. Interspeech*, Portland, OR, Sept. 2012.
69. S. Wiesler, R. Schlüter, H. Ney: "Accelerated Batch Learning of Convex Log-linear Models for LVCSR," in *Proc. Interspeech*, Portland, OR, Sept. 2012.
70. D. Nolden, R. Schlüter, H. Ney: "Search Space Pruning Based on Anticipated Path Recombination in LVCSR," in *Proc. Interspeech*, Portland, OR, Sept. 2012.

71. M. Sundermeyer, R. Schlüter, H. Ney: "LSTM Neural Networks for Language Modeling," in *Proc. Interspeech*, Portland, OR, Sept. 2012.
72. Z. Tüske, F.R. Drepper, R. Schlüter: "Phase difference of filter-stable part-tones as acoustic feature," in *Proc. IEEE Statistical Signal Processing Workshop (SSP)*, Ann Arbor, MI, Aug. 2012.
73. D. Nolden, R. Schlüter, H. Ney: "Extended Search Space Pruning in LVCSR," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 4429–4432, Kyoto, Japan, March 2012.
74. D. Nolden, D. Rybach, R. Schlüter, and H. Ney: "Joining Advantages of Word-conditioned and Token-passing Decoding," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 4425–4428, Kyoto, Japan, March 2012.
75. Z. Tüske, R. Schlüter, and H. Ney: "Comparison and combination of different CRBE based MLP features for LVCSR," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 4081–4084, Kyoto, Japan, March 2012.
76. D. Rybach, R. Schlüter, and H. Ney: "Silence is Golden: Modeling Non-speech Events in WFST-based Dynamic Network Decoders," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 4205–4208, Kyoto, Japan, March 2012.
77. A. El-Desoky Mousa, R. Schlüter, and H. Ney: "Investigations on the Use of Morpheme Level Features In Language Models for Arabic LVCSR," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 5021–5024, Kyoto, Japan, March 2012.
78. Y. Kubo, S. Watanabe, A. Nakamura, S. Wiesler, R. Schlüter, H. Ney: "Basis Vector Orthogonalization for an Improved Kernel Gradient Matching Pursuit Method," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Kyoto, Japan, pp. 1909–1912, March 2012.
79. L. Lamel, J.-L. Gauvain, I. Oparin, V.B. Le, N.T. Vu, T. Schlippe, T. Schultz, F. Kraft, S. Stüker, H. Ney, R. Schlüter, M. Nußbaum-Thom, M. Sundermeyer, J. Despres, Y. Josse, B. Vieru: "Speech recognition for machine translation in quaero," in *Proc. Int. Workshop on Spoken Language Translation (IWSLT)*, San Francisco, CA, Dec. 2011.
80. S. Wiesler, R. Schlüter, and H. Ney: "A Convergence Analysis of Log-Linear Training and its Application to Speech Recognition," in *Proc. IEEE Automatic Speech Recognition and Understanding Workshop (ASRU)*, Hawaii, USA, December 2011.
81. C. Plahl, R. Schlüter, and H. Ney: "Cross-lingual Portability of Chinese and English Neural Network Features for French and German LVCSR," in *Proc. IEEE Automatic Speech Recognition and Understanding Workshop (ASRU)*, pp. 371–376, Hawaii, USA, December 2011.
82. D. Rybach, S. Hahn, P. Lehnen, D. Nolden, M. Sundermeyer, Z. Tüske, S. Wiesler, R. Schlüter, and H. Ney: "RASR - The RWTH Aachen University Open Source Speech Recognition Toolkit," in *Proc. IEEE Automatic Speech Recognition and Understanding Workshop (ASRU)*, Hawaii, USA, December 2011.
83. M. A. Tahir, R. Schlüter, and H. Ney: "Discriminative Splitting of Gaussian/Log-Linear Mixture HMMs for Speech Recognition," in *Proc. IEEE Automatic Speech Recognition and Understanding Workshop (ASRU)*, Hawaii, USA, December 2011.
84. M. A. Basha Shaik, A. El-Desoky Mousa, R. Schlüter, and H. Ney: "Hybrid Language Models Using Mixed Types of Sub-lexical Units for Open Vocabulary German LVCSR," in *Proc. Interspeech*, pp. 1441–1444, Florence, Italy, August 2011.
85. A. El-Desoky Mousa, M. A. Basha Shaik, R. Schlüter, and H. Ney: "Morpheme Based Factored Language Models for German LVCSR," in *Proc. Interspeech*, pp. 1445–1448, Florence, Italy, August 2011.
86. D. Nolden, R. Schlüter, and H. Ney: "Acoustic Look-Ahead for More Efficient Decoding in LVCSR," in *Proc. Interspeech*, pp. 893–896, Florence, Italy, August 2011.
87. C. Plahl, R. Schlüter, and H. Ney: "Improved Acoustic Feature Combination for LVCSR by Neural Networks," in *Proc. Interspeech*, pp. 1237–1240, Florence, Italy, August 2011.
88. M. A. Tahir, R. Schlüter, and H. Ney: "Log-linear Optimization of Second-order Polynomial Features with Subsequent Dimension Reduction for Speech Recognition," in *Proc. Interspeech*, Florence, Italy, August 2011.

89. M. Nußbaum-Thom, A. El-Desoky Mousa, R. Schlüter, and H. Ney: "Compound Word Recombination for German LVCSR," in *Proc. Interspeech*, Florence, Italy, August 2011.
90. M. Sundermeyer, R. Schlüter, and H. Ney: "On the Estimation of Discount Parameters for Language Model Smoothing," in *Proc. Interspeech*, Florence, Italy, August 2011.
91. Z. Tüske, C. Plahl, and R. Schlüter: "A study on speaker normalized MLP features in LVCSR," in *Proc. Interspeech*, pp. 1089–1092, Florence, Italy, August 2011.
92. S. Wiesler, A. Richard, Y. Kubo, R. Schlüter, and H. Ney: "Feature Selection for Log-linear Models," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Prague, Czech Republic, May 2011.
93. M. A. Basha Shaik, A. El-Desoky Mousa, R. Schlüter, and H. Ney: "Using Morpheme and Syllable Based Sub-words for Polish LVCSR," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Prague, Czech Republic, May 2011.
94. D. Rybach, R. Schlüter, and H. Ney: "A Comparative Analysis of Dynamic Network Decoding," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 5184–5187, Prague, Czech Republic, May 2011.
95. M. Sundermeyer, M. Nußbaum-Thom, S. Wiesler, C. Plahl, A. El-Desoky Mousa, S. Hahn, D. Nolden, R. Schlüter, and H. Ney: "The RWTH 2010 Quaero ASR Evaluation System for English, French, and German," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 2212–2215, Prague, Czech Republic, May 2011.
96. D. Nolden, R. Schlüter, H. Ney: "Exploiting Sparseness of Backing-Off Language Models for Efficient Look-Ahead in LVCSR," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 4684–4687, Prague, Czech Republic, May 2011.
97. Z. Tüske, P. Golik, R. Schlüter, and F. R. Drepper: "Non-stationary feature extraction for automatic speech recognition," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 5204–5207, Prague, Czech Republic, May 2011.
98. Y. Kubo, S. Wiesler, R. Schlüter, H. Ney, S. Watanabe, A. Nakamura, and T. Kobayashi: "Subspace Pursuit Method for Kernel-Log-Linear Models," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Prague, Czech Republic, May 2011.
99. A. El-Desoky Mousa, M. A. Basha Shaik, R. Schlüter, and H. Ney: "Sub-lexical Language Models for German LVCSR," in *Proc. IEEE workshop on Spoken Language Technology (SLT)*, pp. 159–164, Berkeley, CA, December 2010.
100. J. Loof, D. Falavigna, R. Schlüter, R. Gretter, D. Giuliani, and H. Ney: "Evaluation of Automatic Transcription Systems for the Judicial Domain," in *Proc. IEEE Workshop on Spoken Language Technology (SLT)*, pp. 194–199, Berkeley, CA, December 2010.
101. S. Wiesler, G. Heigold, M. and Nußbaum-Thom, R. Schlüter, and H. Ney: "A Discriminative Splitting Criterion for Phonetic Decision Trees," in *Proc. Interspeech*, Makuhari, Japan, September 2010.
102. M. Nußbaum-Thom, S. Wiesler, M. Sundermeyer, C. Plahl, S. Hahn, R. Schlüter, and H. Ney: "The RWTH 2009 Quaero ASR Evaluation System for English and German," in *Proc. Interspeech*, Makuhari, Japan, September 2010.
103. R. Schlüter, M. Nußbaum-Thom, and H. Ney: "On the Relation of Bayes Risk, Word Error, and Word Posteriors in ASR," in *Proc. Interspeech*, pp. 230–233, Makuhari, Japan, September 2010.
104. D. Nolden, H. Ney, and R. Schlüter: "Time Conditioned Search in Automatic Speech Recognition Reconsidered," in *Proc. Interspeech*, Makuhari, Japan, September 2010.
105. N. Parihar, R. Schlüter, D. Rybach, and E. A. Hansen: "Parallel Lexical-tree Based LVCSR on Multi-core Processors," in *Proc. Interspeech*, pp. 1485–1488, Makuhari, Japan, September 2010.
106. D. R. Sanand, R. Schlüter, and H. Ney: "Revisiting VTLN Using Linear Transformation on Conventional MFCC," in *Proc. Interspeech*, pp. 538–541, Makuhari, Japan, September 2010.

107. C. Plahl, R. Schlüter, and H. Ney: "Hierarchical Bottle Neck Features for LVCSR," in *Proc. Interspeech*, pp. 1197–1200, Makuhari, Japan, September 2010.
108. J. Löff, R. Schlüter, and H. Ney: "Discriminative Adaptation for Log-linear Acoustic Models," in *Proc. Interspeech*, pp. 1648–1651, Makuhari, Japan, September 2010.
109. A. El-Desoky Mousa, R. Schlüter, H. Ney: "A Hybrid Morphologically Decomposed Factored Language Model for Arabic LVCSR," in *Proc. 11th Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL)*, Los Angeles, CA, June 2010.
110. G. Heigold, S. Wiesler, M. Nussbaum, P. Lehnen, R. Schlüter, and H. Ney: "Discriminative HMMs, Log-Linear Models, and CRFs: What is the Difference?" In *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 5546–5549, Dallas, Texas, USA, March 2010.
111. M. A. Tahir, G. Heigold, C. Plahl, R. Schlüter, and H. Ney: "Log-Linear Framework for Linear Feature Transformations in Speech Recognition," in *Proc. IEEE Automatic Speech Recognition and Understanding Workshop (ASRU)*, Merano, Italy, December 2009.
112. S. Wiesler, M. Nußbaum, G. Heigold, R. Schlüter, and H. Ney: "Investigations on Features for Log-Linear Acoustic Models in Continuous Speech Recognition," In *Proc. IEEE Automatic Speech Recognition and Understanding Workshop (ASRU)*, Merano, Italy, December 2009.
113. D. Falavigna, D. Giuliani, R. Gretter, J. Löff, C. Gollan, R. Schlüter, and H. Ney: "Automatic Transcription of Courtroom Recordings in the JUMAS project," in *Proc. 2nd International Conference on ICT Solutions for Justice (ICT4Justice)*, Skopje, Macedonia, September 2009.
114. D. Rybach, C. Gollan, G. Heigold, B. Hoffmeister, J. Löff, R. Schlüter, and H. Ney: "The RWTH Aachen University Open Source Speech Recognition System," in *Proc. Interspeech*, pp. 2111–2114, Brighton, U.K., September 2009.
115. N. Parihar, R. Schlüter, D. Rybach, and E. A. Hansen: "Parallel Fast Likelihood Computation for LVCSR using Mixture Decomposition," pp. 3047–3050, Brighton, U.K., September 2009.
116. G. Heigold, D. Rybach, R. Schlüter, and H. Ney: "Investigations on Convex Optimization Using Log-Linear HMMs for Digit String Recognition," in *Proc. Interspeech*, pp. 216–219, Brighton, U.K., September 2009.
117. B. Hoffmeister, R. Liang, R. Schlüter, and H. Ney: "Log-linear Model Combination with Word-dependent Scaling Factors," in *Proc. Interspeech*, pp. 248–251, Brighton, U.K., September 2009.
118. B. Hoffmeister, R. Schlüter, and H. Ney: "Bayes Risk Approximations Using Time Overlap with an Application to System Combination," in *Proc. Interspeech*, pp. 1191–1194, Brighton, U.K., September 2009.
119. A. El-Desoky, C. Gollan, D. Rybach, R. Schlüter, and H. Ney: "Investigating the Use of Morphological Decomposition and Diacritization for Improving Arabic LVCSR," in *Proc. Interspeech*, pp. 2679–2682, Brighton, U.K., September 2009.
120. C. Plahl, B. Hoffmeister, G. Heigold, J. Löff, R. Schlüter, and H. Ney: "Development of the GALE 2008 Mandarin LVCSR System," in *Proc. Interspeech*, pp. 2107–2110, Brighton, U.K., September 2009.
121. D. Rybach, C. Gollan, R. Schlüter, and H. Ney: "Audio Segmentation for Speech Recognition using Segment Features," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 4197–4200, Taipei, Taiwan, April 2009.
122. G. Heigold, R. Schlüter, and H. Ney: "Modified MPE/MMI in a Transducer-Based Framework," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 3749–3752, Taipei, Taiwan, April 2009.
123. F. R. Drepper, and R. Schlüter: "Non-Stationary, Filter-Stable Acoustic Objects as Atoms of Voiced Speech," in *Proc. 8. ITG-Fachtagung Sprachkommunikation (ITG 2008)*, Aachen, Germany, October 2008.
124. R. Schlüter, C. Gollan, S. Hahn, G. Heigold, B. Hoffmeister, J. Löff, C. Plahl, D. Rybach, and H. Ney: "Development of Large Vocabulary ASR Systems for Mandarin and Arabic," in *Proc. 8. ITG-Fachtagung Sprachkommunikation (ITG 2008)*, Aachen, Germany, October 2008.

125. D. Vergyri, A. Mandal, W. Wang, A. Stolcke, J. Zheng, M. Graciarena, D. Rybach, C. Gollan, R. Schlüter, K. Kirchhoff, A. Faria, and N. Morgan: "Development of the SRI/Nightingale Arabic ASR system," in *Proc. Interspeech 2008*, pp. 1437-1440, Brisbane, Australia, September 2008.
126. G. Heigold, P. Lehnen, R. Schlüter, and H. Ney: "On the equivalence of Gaussian and log-linear HMMs," in *Proc. Interspeech 2008*, Brisbane, Australia, September 2008. (ISCA best student paper award.)
127. C. Plahl, B. Hoffmeister, M. Hwang, D. Lu, G. Heigold, J. Löff, R. Schlüter, and H. Ney: "Recent Improvements of the RWTH GALE Mandarin LVCSR System," in *Proc. Interspeech 2008*, pp. 2426-2429, Brisbane, Australia, September 2008.
128. B. Hoffmeister, R. Schlüter, and H. Ney: "iCNC and iROVER: The Limits of Improving System Combination with Classification?" In *Proc. Interspeech 2008*, pp. 232-235, Brisbane, Australia, September 2008.
129. G. Heigold, T. Deselaers, R. Schlüter, H. Ney: "Modified MMI/MPE: A Direct Evaluation of the Margin in Speech Recognition," in *Proc. International Conference on Machine Learning (ICML)*, Helsinki, Finland, July 2008.
130. G. Heigold, T. Deselaers, R. Schlüter, H. Ney: "GIS-like Estimation of Log-Linear Models with Hidden Variables," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Las Vegas, NV, April 2008.
131. F.R. Drepper, R. Schlüter: "Non-stationary acoustic objects as atoms of voiced speech," in *Proc. 34. Jahrestagung für Akustik (DAGA)*, Dresden, Germany, March 2008.
132. D. Rybach, S. Hahn, C. Gollan, R. Schlüter, H. Ney: "Advances in Arabic Broadcast News Transcription at RWTH," in *Proc. IEEE Workshop on Automatic Speech Recognition and Understanding (ASRU) 2007*, Kyoto, Japan, December 2007.
133. B. Hoffmeister, C. Plahl, P. Fritz, G. Heigold, J. Löff, R. Schlüter, H. Ney: "Development of the 2007 RWTH Mandarin LVCSR System," in *Proc. IEEE Workshop on Automatic Speech Recognition and Understanding (ASRU) 2007*, Kyoto, Japan, December 2007.
134. J. Löff, C. Gollan, S. Hahn, G. Heigold, B. Hoffmeister, C. Plahl, D. Rybach, R. Schlüter, H. Ney: "The RWTH 2007 TC-STAR Evaluation System for European English and Spanish," in *Proceedings of the European Conference on Speech Communication and Technology (INTERSPEECH)*, pp. 2145-2148, Antwerp, Belgium, August 2007.
135. J. Löff, R. Schlüter, H. Ney: "Efficient Estimation of Speaker-specific Projecting Feature Transforms," in *Proceedings of the European Conference on Speech Communication and Technology (INTERSPEECH)*, pp. 1557-1560, Antwerp, Belgium, August 2007.
136. C. Gollan, S. Hahn, R. Schlüter, H. Ney: "An Improved Method for Unsupervised Training of LVCSR Systems," in *Proceedings of the European Conference on Speech Communication and Technology (INTERSPEECH)*, pp. 2101-2104, Antwerp, Belgium, August 2007.
137. H. Heigold, R. Schlüter, H. Ney: "On the Equivalence of Gaussian HMM and Gaussian HMM-like Hidden Conditional Random Fields," in *Proceedings of the European Conference on Speech Communication and Technology (INTERSPEECH)*, pp. 1721-1724, Antwerp, Belgium, August 2007.
138. F. Valente, J. Vepa, C. Plahl, C. Gollan, H. Hermansky, R. Schlüter: "Hierarchical Neural Networks Feature Extraction for LVCSR Systems," in *Proceedings of the European Conference on Speech Communication and Technology (INTERSPEECH)*, pp. 42-45, Antwerp, Belgium, August 2007.
139. D. Hillard, B. Hoffmeister, M. Ostendorf, R. Schlüter, H. Ney: "iROVER: Improving System Combination with Classification," in *Proc. Human Language Technology Conference (NAACL-HLT)*, Rochester, NY, April 2007.
140. R. Schlüter, I. Bezrukov, H. Wagner, H. Ney: "Gammatone Features and Feature Combination for Large Vocabulary Speech Recognition," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, submitted, Honolulu, Hawaii, April 2007.
141. B. Hoffmeister, D. Hillard, S. Hahn, R. Schlüter, M. Ostendorf, H. Ney: "Cross-Site and Intra-Site ASR System Combination: Comparisons on Lattice and 1-Best Methods," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, submitted, Honolulu, Hawaii, April 2007.

142. J. Löff, C. Gollan, B. Hoffmeister, G. Heigold, C. Plahl, M. Bisani, R. Schlüter, H. Ney: "The 2006 RWTH Parliamentary Speeches Transcription System," in *Proceedings of the 9th International Conference on Spoken Language Processing (ICSLP)*, pp. 105-108, Pittsburgh, PA, September 2006.
143. B. Hoffmeister, T. Klein, R. Schlüter, H. Ney: "Frame Based System Combination and a Comparison with Weighted ROVER and CNC," in *Proceedings of the 9th International Conference on Spoken Language Processing (ICSLP)*, pp. 537-540, Pittsburgh, PA, September 2006.
144. R. Schlüter, A. Zolnay, H. Ney: "Feature Combination using Linear Discriminant Analysis and its Pitfalls," in *Proceedings of the 9th International Conference on Spoken Language Processing (ICSLP)*, pp. 345-348 Pittsburgh, PA, September 2006.
145. J. Löff, C. Gollan, B. Hoffmeister, G. Heigold, C. Plahl, M. Bisani, R. Schlüter, H. Ney: "The 2006 RWTH Parliamentary Speeches Transcription System," in *Proc. TC-STAR Workshop on Speech-to-Speech Translation*, pp. 133-138, Barcelona, Spain, June 2006.
146. E. Matusov, H. Ney, and R. Schlüter: "Phrase-based Translation of Speech Recognizer Word Lattices Using Loglinear Model Combination," in *Proceedings of the IEEE Automatic Speech Recognition and Understanding Workshop (ASRU)*, pp. 110-115, San Juan, Puerto Rico, November-December 2005.
147. G. Heigold, W. Macherey, R. Schlüter, H. Ney: "Minimum Exact Word Error Training," in *Proceedings of the Automatic Speech Recognition and Understanding Workshop (ASRU)*, pp. 186-190, San Juan, Puerto Rico, November-December 2005.
148. R. Schlüter, T. Scharrenbach, V. Steinbiss, H. Ney: "Bayes Risk Minimization using Metric Loss Functions," in *Proceedings of the European Conference on Speech Communication and Technology (INTERSPEECH)*, pp. 1449-1452, Lisboa, Portugal, September 2005.
149. W. Macherey, L. Haferkamp, R. Schlüter, H. Ney: "Investigations on Error Minimizing Training Criteria for Discriminative Training in Automatic Speech Recognition," in *Proceedings of the 9th European Conference on Speech Communication and Technology (INTERSPEECH)*, pp. 2133-2136, Lisbon, Portugal, September 2005.
150. D. Kocharov, A. Zolnay, R. Schlüter, H. Ney: "Articulatory Motivated Acoustic Features for Speech Recognition," in *Proc. European Conference on Speech Communication and Technology (INTERSPEECH)*, pp. 1101-1104, Lisbon, Portugal, September 2005.
151. A. Zolnay, R. Schlüter, H. Ney: "Acoustic Feature Combination for Robust Speech Recognition," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vol. 1, pp. 457-460, Philadelphia, PA, March 2005.
152. C. Gollan, M. Bisani, S. Kanthak, R. Schlüter, H. Ney: "Cross Domain Automatic Transcription on the TC-STAR EPPS Corpus," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Philadelphia, PA, March, 2005.
153. W. Macherey, R. Schlüter, H. Ney: "Discriminative Training with Tied Covariance Matrices," in *Proceedings of the 8th International Conference on Spoken Language Processing (ICSLP)*, Vol. 1, pp. 681-684, Jeju Island, Korea, Oct. 2004.
154. A. Zolnay, R. Schlüter, H. Ney: "Extraction Methods of Voicing Feature for Robust Speech Recognition," in *Proc. European Conference on Speech Communication and Technology (INTERSPEECH)*, Vol. 1, pp. 497-500, Geneva, Switzerland, September 2003.
155. A. Zolnay, R. Schlüter, H. Ney: "Robust Speech Recognition using a Voiced-Unvoiced Feature," in *Proc. Int. Conf. on Spoken Language Processing (ICSLP)*, Denver, CO, Vol. 2, pp. 1065-1068, Sept. 2002.
156. M. Pitz, S. Molau, R. Schlüter, H. Ney: "Vocal Tract Normalization Equals Linear Transformation in Cepstral Space," in *Proc. European Conf. on Speech Communication and Technology (EUROSPEECH)*, Vol. 4, pp. 2653-2656, Aalborg, Denmark, September 2001.
157. S. Molau, M. Pitz, R. Schlüter, H. Ney: "Computing Mel-Frequency Cepstral Coefficients on the Power Spectrum," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vol. 1, pp. 73-76, Salt Lake City, UT, May 2001.
158. F. Wessel, R. Schlüter, H. Ney: "Explicit Word Error Minimization using Word Hypothesis Posterior Probabilities," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vol. 1, pp. 33-36, Salt Lake City, UT, May 2001.

159. R. Schlüter, H. Ney: "Using Phase Spectrum Information for Improved Speech Recognition Performance," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vol. 1, pp. 133–136, Salt Lake City, UT, May 2001.
160. S. Kanthak, A. Sixtus, S. Molau, R. Schlüter, H. Ney: "The RWTH Large Vocabulary Speech Recognition System for Spontaneous Speech," in *Proc. Konvens 2000 / Sprachkommunikation*, pp. 291–293, Ilmenau, Germany, October 2000.
161. R. Schlüter, F. Wessel, H. Ney: "Speech Recognition using Context Conditional Word Posterior Probabilities," in *Proc. Int. Conf. on Spoken Language Processing (ICSLP)*, Vol. 2, pp. 923–926, Beijing, China, October 2000.
162. A. Sixtus, S. Molau, S. Kanthak, R. Schlüter, H. Ney: "Recent Improvements of the RWTH Large Vocabulary Speech Recognition System on Spontaneous Speech," in *Proc. Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP)*, Vol. 3, pp. 1671–1674, Istanbul, Turkey, June 2000.
163. F. Wessel, R. Schlüter, H. Ney: "Using Posterior Word Probabilities for Improved Speech Recognition," in *Proc. Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP)*, Vol. 3, pp. 1587–1590, Istanbul, Turkey, June 2000.
164. R. Schlüter, B. Müller, F. Wessel, H. Ney: "Interdependence of Language Models and Discriminative Training," *Proc. of the IEEE Automatic Speech Recognition and Understanding (ASRU) Workshop*, Vol. 1, pp. 119–122, Keystone, CO, December 1999.
165. R. Schlüter, W. Macherey, B. Müller, H. Ney: "A Combined Maximum Mutual Information and Maximum Likelihood Approach for Mixture Density Splitting," in *Proc. European Conference on Speech Communication and Technology (EUROSPEECH)*, Vol. 4, pp. 1715–1718, Budapest, Hungary, September 1999.
166. M. Pitz, S. Molau, R. Schlüter, H. Ney: "Automatic Transcription Verification of Broadcast News and Similar Speech Corpora," in *Proc. DARPA Broadcast News Workshop*, pp. 157–159, Herndon, VA, February/March 1999.
167. J. Dahmen, R. Schlüter, H. Ney: "Discriminative Training of Gaussian Mixtures for Image Object Recognition," in *Proc. 21. DAGM Symposium Mustererkennung*, W. Förstner, J. Buhmann, A. Faber, P. Faber (eds.), pp. 205–212, Bonn, September 1999.
168. F. Wessel, K. Macherey, R. Schlüter: "Using Word Probabilities as Confidence Measures," in *Proc. Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 225–228, Seattle, USA, May 1998.
169. R. Schlüter, W. Macherey: "Comparison of Discriminative Training Criteria," in *Proc. Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP)*, Vol. 1, pp. 493–496, Seattle, WA, May 1998.
170. R. Schlüter, W. Macherey, S. Kanthak, H. Ney, L. Welling: "Comparison of Optimization Methods for Discriminative Training Criteria," in *Proc. Europ. Conf. on Speech Communication and Technology*, Vol. 1, pp. 15–18, Rhodes, Greece, September 1997.
171. R. Schlüter, H. Ney, L. Welling: "Diskriminatives Training für Spracherkennung bei kleinem Wortschatz," in *Proc. 9. Kolloquium Signaltheorie*, pp. 297–300, Aachen, Germany, March 1997.