Curriculum Vitæ

Markus R. Iseli

Home Work

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# EDUCATION

University of California, Los Angeles

**Ph.D.**, Electrical Engineering, June 2007

Dissertation: Dependencies of Voice Source Measures on Age, Sex, Vowel Context, and Prosodic Features.

This study fosters the understanding of human speech production and will help in the estimation of a talker's age and sex, and the detection of prosodic events and emotion.

*Chair: Dr. Abeer Alwan.*

University of California, Los Angeles

**M.A.**, Electrical Engineering, June 2003

Swiss Federal Institute of Technology, ETH Zürich, Switzerland

**Diploma**, Electrical Engineering, March 1992

# LANGUAGES

Fluent in German, English, and French. Conversational Italian.

# RESEARCH COMMUNITY Memberships and Activities

* Member of IEEE Signal Processing Society: *Institute of Electrical and Electronics Engineers (IEEE)*.
* Member of the ASA Speech Technical Committee: *Acoustical Society of America (ASA)*.
* Invited speaker and guest lecturer for signal processing and applied acoustics: *Audio Engineering Society (AES)*.
* Reviewer for: *Speech Communications* Journal; *Computer Speech and Language* Journal, Elsevier; *Proc. IEEE ICASSP*; *Proc. ICSLP*; *Proc. Interspeech/Eurospeech*;

# TEACHING EXPERIENCE

Instructor – Undergraduate Course, Speech and Image Processing

Dept. of Electrical Engineering
University of California, Los Angeles
*Lecturer* for Winter Quarter 2008 and 2007

*Teaching Fellow* for Winter Quarter 2006 and Spring Quarter 2005

Taught speech processing part of upper-division engineering course entitled “Speech and Image Processing.” Speech part of course integrated design principles of speech processing systems including speech production, analysis, and modeling. Duties included curriculum design, lecture planning and implementation, test design, and evaluation of student progress.

Teaching Fellow – Undergraduate Courses, EE1, EE102, EE114

Dept. of Electrical Engineering
University of California, Los Angeles
2002 – 2007

*Teaching assistant* for EE1 (Electrical Engineering Physics), Teaching associate/fellow for EE102 (Systems and Signals) and EE114 (Speech and Image Processing Systems Design).

# PROFESSIONAL EXPERIENCE

Senior Researcher

CRESST

University of California, Los Angeles

October 2008 – now

Integration and application of artificial intelligence algorithms for technology-based learning and assessment systems. Digital signal processing, speech and pattern analysis, machine learning, dynamic Bayesian networks.

Postdoctoral Scholar

University of California, Los Angeles

September 2007 – August 2008

Multidisciplinary research in collaboration with the departments of head and neck surgery, linguistics, education, and engineering.

Project Coordinator and Supervisor Technology

Technology-Based Assessment of Language and Literacy (TBALL)

University of California, Los Angeles

June 2003 – now

The TBALL project, funded by the National Science Foundation, is an interdisciplinary study with collaboration of the departments of Electrical Engineering, Computer Science, Education, Neuroscience, and Psychology at UCLA, UC Berkeley, Univ. of Southern California. Designed technical specifications, coordinated and supervised the implementation. Project involves client-server architecture.

Programming Expert

Hughes Research Labs (HRL), Malibu, CA

July - Sept. 2001

Designed and implemented speaker adaptation algorithm using segment-based speech recognition SUMMIT System from Massachusetts Institute of Technology.

Consultant for speech processing applications

Siemens AG Austria

May 1998 - Dec. 2000

Acted as liaison between industry and academia. Gave numerous presentations at Siemens and Technical University of Vienna, Austria, on “Theory and Implementation of Speech Recognition Systems.”

Telecommunications and Software Engineer

Siemens AG Austria

Center for Electronics (1993 - 1995)

Center of Technology for Speech and Pattern Recognition (1995 - 1998)

June 1993 - April 1998

Designed and implemented digital signal processing and pattern recognition algorithms: echo compensation, noise reduction over telephone lines, multi-rate digital systems applications, speech recognition with neural networks and Hidden Markov Models (HMM), channel compensation, etc. Implemented and co-designed speech recognition firmware for German Telecom. Languages: German, British/American English, French, Italian, Spanish, and Portuguese. Designed and developed optical character recognition algorithm for SIEMENS “Pocket Reader”. Programmed data acquisition server for real-time speech recognition under Windows 95/NT

Audio Engineer

AKG Acoustics (now Harman Kardon), Vienna, Austria

May 1992 - May 1993

Implemented algorithms for room acoustics and programmed microprocessor for AKG "Binaural Audio Processor" device which was used for binaural transformation of stereo signals to headphone signals using the Head Related Transfer Function (HRTF).

Software Developer

UBS, Zürich, Switzerland

March 1992 - May 1992, intern

Implemented and tested database management algorithms according to specifications.

Project Manager

Balzano Informatik, now Evento (www.evento.ch), Zürich, Switzerland

September 1989 - February 1992, part-time

Planned, designed, and successfully implemented an accounting system for salary calculation. Worked closely with client to assure user satisfaction. Provided support for the use of the system and added upgrades using customer feedback. The client was a social service provider with about 30 employees. The system featured a graphical user interface and calculated overtime, holidays, employment level, tax deductions, etc.

# Publications

Iseli, M., Jha, R. (2016) Computational Issues in Modeling User Behavior in Serious Games”, in Using Games and Simulations for Teaching and Assessment: Key Issues. Routledge/Taylor & Francis.

Iseli, M. R.(2014). *On the use of state-space models in assessment and instruction of complex tasks*. Presentation at the 2014 annual meeting of the National Council on Measurement in Education, Philadelphia, PA.

Mousavi, H., Gao, S., Kerr, D., Iseli, M., & Zaniolo, C. (2014). Mining Semantic Structures from Syntactic Structures in Web Document Corpora. *International Journal of Semantic Computing*, *8*(4), 461–489. doi:10.1142/S1793351X14400157

Mousavi, H., Kerr, D., Iseli, M., & Zaniolo, C. (2014). Harvesting Domain Specific Ontologies from Text. In *IEEE International Conference on Semantic Computing* (pp. 211–218). Newport Beach, CA: IEEE. doi:10.1109/ICSC.2014.12

Mousavi, H., Kerr, D., Iseli, M., & Zaniolo, C. (2014). Mining Semantic Structures from Syntactic Structures in Free Text Documents. CSD Technical Report 14005. Los Angeles, CA.

Kerr, D., Mousavi, H., Iseli, M. (2013) Automatically scoring short essays for content. (CRESST Report 836). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Koenig, A., Iseli, M., Wainess, R., & Lee, J. J. (2013). Assessment Methodology for Computer-Based Instructional Simulations. *Military Medicine*, *178*(10), 47–55. doi:10.7205/MILMED-D-13-00217

Kerr, D., Mousavi, H., Iseli, M. (2013) *Automatic short essay scoring using natural language processing to extract semantic information in the form of propositions.* (CRESST Report 831). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Mousavi, H., Kerr, D., and Iseli, M. (2013) *Unsupervised ontology generation from unstructured text.* (CRESST Report 827). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Kerr, D., Mousavi, H., and Iseli, M. (2013) *Automatic short essay scoring using natural language processing to extract semantic information in the form of propositions*. Presentation at the 2013 annual meeting of the American Educational Research Association, San Francisco, CA.

Kreiman, J., Shue, Y.-L., Chen, G., Iseli, M., Gerratt, B., Neubauer, J., & Alwan, A.. (2012, October) Variability in the relationships among voice quality, harmonic amplitudes, open quotient, and glottal area waveform shape in sustained phonation. *Journal of the Acoustic Society of America.*

Munro, A., Surmon, D., Koenig, A., Iseli, M., Lee, J., & Bewley, W. (2012). Detailed Modeling of Student Knowledge in a Simulation Context. In V. G. Duffy (Ed.), *Advances in Applied Modeling and Simulation* (pp. 212–221). Boca Raton, FL: CRC Press, Taylor and Francis.

Delacruz, G. C., Iseli, M. R (Dec. 2011). *Assessment architectures to support development and validation of adaptive training.* Tutorial presented at the Interservice/Industry Training, Simulation and Education Conference, Orlando, FL.

Mousavi, H., Kerr, D., Iseli, M. (2011, September) A new framework for textual information mining over parse trees. *Proceedings of the IEEE International Conference on Semantic Computing*, 185-188. doi: 10.1109/ICSC.2011.19

Mousavi, H., Kerr, D., Iseli, M. (2011) *A new framework for textual information mining over parse trees.* (CRESST Report 805). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Kerr, D., Chung, G. K. W. K.,and Iseli, M. (2011, April) *The feasibility of using cluster analysis to examine log data from educational video games.* (CRESST Report 790). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Iseli, M. R., Wainess, R. & Jones B.(2011, April). *A computational framework for the assessment and instruction of complex tasks in educational games and simulations*. Presentation at the 2011 annual meeting of the American Educational Research Association, New Orleans, LA.

Iseli, M. R.(2011, April). *Automated evaluation of spoken responses: An engineering perspective*. Presentation at the 2011 annual meeting of the National Council on Measurement in Education, New Orleans, LA.

Iseli, M. R., Koenig, A. D., Lee, J. J., & Wainess, R. (2010). *Automatic assessment of complex task performance in games and simulations.* (CRESST Report 775). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Iseli, M., Koenig, A. D., Lee, J., Wainess, R. (2010). Automatic assessment of complex task performance in games and simulations. *Proceedings of the Interservice/Industry Training, Simulation and Education Conference*, Orlando, FL.

Wainess, R., Iseli, M. R., & Koenig, A. (in preparation). Why game mechanics and genres should be linked to instructional methods and strategies in games for learning. *CRESST report to the Department of Education, Institute for Education Sciences*.

Wainess, R., Iseli, M., Koenig, A., Choi, H., Wickline, V., & Vadlamani, L. (2010, May). *Why game mechanics and core mechanics should be linked to instructional methods and strategies in games for learning*. Presentation at the 2010 annual meeting of the American Educational Research Association, Denver, CO.

Koenig, A.D., Lee, J., Iseli, M.R., Wainess, R. (2009). A Conceptual Framework for Assessing Performance in Games and Simulations. *Proceedings of the Interservice/Industry Training, Simulation and Education Conference*, Orlando, FL.

Wainess, R., Koenig, A., Lee, J., Kang, T., Iseli, M., Delacruz, G., & Stigler, L. (2009, April). *Bayesian network drive*. Presentation at the 2009 annual meeting of the American Educational Research Association, San Diego, CA.

Price, P., Tepperman, J., Iseli, M., Duong, T., Black, M., Wang, S., Boscardin, C., Heritage, M., Pearson, D., Narayanan, S., Alwan, A. (2009).
Assessment of emerging reading skills in young native speakers and language learners.
*Speech Communication*, 51(10), Special 968–984. doi:10.1016/j.specom.2009.05.001

Kreiman, J., Gerratt, B. R., Neubauer, J., Iseli, M., Shue, Y.-L., Alwan, A. (2008). The relationship between open quotient and H1-H2. *Proc.* *International Conference on Voice Physiology and Biomechanics.*

Shue, Y.-L., Shattuck-Hufnagel, S., Iseli, M., Veilleux, N., Jun, S., and Alwan, A. (2008). Effects of intonational phrase boundaries on pitch-accented syllables in American English. *Proc. Interspeech*, Brisbane.

Shue, Y.-L. and Iseli, M. (2008). The role of voice source measures on automatic gender classification. *Proc. IEEE ICASSP*, Las Vegas, 4493-4496.

Shue, Y.-L., Iseli, M., Veilleux, N., and Alwan, A. (2007). [Pitch accent versus lexical stress: Quantifying acoustic measures related to the voice source](http://www.ee.ucla.edu/~spapl/paper/iseli_interspeech_2007.pdf). *Proc. Interspeech*, Belgium, 2625-2628.

Iseli, M., Shue, Y.-L., and Alwan, A. (2007). Age, sex, and vowel dependencies of acoustical measures related to the voice source. *Journal of the Acoustic Society of America*, 121 (4), 2283-2295.

Alwan, A., Bai, Y., Black, M., Casey, L., Gerosa, M., Heritage, M., Iseli, M., Jones, B., Kazemzadeh, E., Lee S., Narayanan, S., Price, P., Tepperman, J., Wang, S. (2007). A system for technology-based assessment of language and literacy in young children: The role of multiple information sources. *Proc. IEEE International Workshop on Multimedia Signal Processing*, Greece.

Iseli, M., Shue, Y.-L., Epstein, M., Keating, P., & Alwan, A. (2006). Voice source correlates of prosodic features in American English: a pilot study. *Proc. ICSLP*, Pittsburgh, PA, 2226-2229.

Iseli, M., Shue, Y.-L., & Alwan, A. (2006). Age- and gender-dependent analysis of voice source characteristics. *Proc. IEEE ICASSP*, Toulouse, France, vol. 1, 389-392.

Kazemzadeh, E., You, H., Iseli, M., Jones, B., Cui, X., Heritage, M., Price, P., Anderson, E., Narayanan, S., & Alwan, A. (2005). TBALL data collection: The making of a young children's speech corpus. *Proc. Eurospeech/Interspeech*, Lisbon, Portugal, 1581-1584.

Iseli, M. & Alwan, A. (2004). An improved correction formula for the estimation of harmonic magnitudes and its application to open quotient estimation. *Proc. IEEE ICASSP*, Montreal, Canada, 669-672.

Cui, X., Iseli, M., Zhu, Q., & Alwan, A. (2002). Evaluation of noise robust features on the Aurora databases, *Proc. ICSLP*, Denver, Colorado, vol.1, 481-484.

Zhu, Q., Iseli, M., Cui, X., & Alwan, A. (2001). Noise robust feature extraction for ASR using the Aurora 2 database. *Proc. EUROSPEECH 2001*, Aalborg, Denmark, vol. 1, 185-188.

Iseli, M. & Alwan, A. (2000). Inter- and intra-speaker variability of glottal flow derivative using the LF model. *International Conference on Spoken Language Processing*, vol. 1, 477-480.

# Abstracts

Kreiman, J., Iseli, M., Neubauer, J., Shue, Y.-L., Gerratt, B., & Alwan, A. (2008). The relationship between open quotient and H1\*-H2\*. *Journal of the Acoustic Society of America*, 124 (4), 2495.

Shue, Y.-L., Iseli, M., Shattuck-Hufnagel, S., Veilleux, N., Jun, S.-A., & Alwan, A. (2008). Effects of boundary tones on accent-related F0 peak alignment. *Journal of the Acoustic Society of America*, 123 (5), 3460.

Iseli, M., Shue, Y.-L., & Alwan, A. (2005). Analysis of vowel and speaker dependencies of source harmonic magnitudes in consonant-vowel utterances. *Journal of the Acoustic Society of America*, 117 (4), 2619.

Iseli, M. & Alwan, A. (2004). An improved correction formula for the estimation of voice source harmonic magnitudes. *Journal of the Acoustic Society of America*, 115 (5), 2610.

Kadambe, S., & Iseli, M. (2003). Fast on-line speaker/environment adaptation using modified maximum likelihood stochastic matching. *Proc. Congresso Nazionale dell'Associazione Italiana per l'Intelligenza Artificiale*,Pisa, Italy.

Kadambe, S., & Iseli, M. (2002). Fast on-line speaker/environment adaptation using modified maximum likelihood stochastic matching. *Journal of the Acoustic Society of America*, 112 (5), 2321.