

# Adam C. Lammert

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## Research & Teaching Interests

- Data analytics, machine learning, computational modeling, natural language processing
- Human-machine collaboration, interactive systems, virtual immersive environments
- Biomedical technologies for human health, enhanced biosensing & signal processing
- Human perception & motor control, speech & language, cognitive & neural science

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## Professional Experience

- 2019–Present **Assistant Professor**, *Worcester Polytechnic Institute*.  
Biomedical Engineering Department
- 2018–Present **Adjunct Assistant Professor**, *Massachusetts General Hospital Inst. of Health Professions*.  
Rehabilitation Sciences Program
- 2015–2019 **Technical Staff Scientist**, *MIT Lincoln Laboratory*.  
Bioengineering Systems & Technologies Group
- 2014–2015 **Visiting Assistant Professor**, *Swarthmore College*.  
Computer Science Department
- 2008–2014 **Research Assistant**, *University of Southern California*.  
Signal Analysis and Interpretation Laboratory (PI: Shrikanth Narayanan)  
Topic: Dynamics of Vocal Tract Shaping
- 2006–2008 **Lab Manager**, *Veterans Affairs Northern California Health Care System*.  
Speech and Hearing Research Laboratory (PI: Pierre Divenyi)  
Topic: Separating Speech from Speech Noise
- 2003–2004 **Research Assistant**, *Vassar College*.  
Biomechanics Advanced Research Laboratory (PI: John H. Long, Jr.)  
Topic: Biologically-Inspired Control of Perception-Action Systems
- 2001 **Research Intern**, *State University of New York at Buffalo*.  
Semantic Network Research Group (PI: William J. Rapaport)  
Topic: Computational Theories of Contextual Vocabulary Acquisition

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## Education

- 2014 **Ph.D. in Computer Science**, *University of Southern California*.
  - Thesis: Structure and Function in Speech Production
  - Awarded Best Dissertation in Computer Science
- 2006 **M.S. in Computer Science**, *North Carolina State University*.
  - Thesis: Artificial Intelligence Techniques to Automate Digital Design
- 2004 **A.B. in Cognitive Science**, *Vassar College*.
  - Thesis: Helical Klinotaxis Allows for Robust Stimulus Orientation
  - Cum Laude in Materia Subjecta

- Minor in Computer Science

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## Honors & Awards

- 2015 **Editor's Choice Paper Award.**  
Phonetica International Journal of Phonetic Science  
Topic: Gestural Control in the English Past Tense Suffix
- 2015 **Best Dissertation Award.**  
Computer Science Department, University of Southern California  
Topic: Structure & Function in Speech Production
- 2013 **Raymond H. Stetson Scholarship in Phonetics and Speech Science.**  
Acoustical Society of America
- 2011 **ARCS Foundation Research Scholarship.**  
Achievement Rewards for College Scientists Foundation
- 2011 **Best Student Paper (Northern Digital Inc. Excellence Award).**  
International Seminar on Speech Production 2011  
Topic: Morphological Variation in the Adult Vocal Tract
- 2010 **Best Paper Award (1 of the 20 best, top 3%).**  
INTERSPEECH 2010, Makuhari, Japan  
Topic: Estimating the Forward Kinematics of a Geometric Vocal Tract Model
- 2010 **Best Paper Award (1 of the 20 best, top 3%).**  
INTERSPEECH 2010, Makuhari, Japan  
Topic: Automatic Classification of Married Couples' Behavior using Audio Features

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## Fellowships & Funding

- 2017–2019 **US Army Medical Research & Materiel Command Grant (\$360k).**  
Project Number: MIT LL 2390-1 under Air Force Contract FA8721-05-C-0002  
Role: Principal Investigator  
Study Title: Multimodal Cognitive State Assessment Platform
- 2016–2019 **Assistant Secretary of Defense (R&E) Research Grant (\$1.92M).**  
Project Number: MIT LL 2232-2301 under Air Force Contract FA8721-05-C-0002  
Role: Principal Investigator  
Study Title: Sensorimotor Tracking of Neurological Disorders: Traumatic Brain Injury
- 2016–2019 **US Army Medical Research & Materiel Command Grant (\$600k).**  
Project Number: MIT LL 2922-1 under Air Force Contract FA8721-05-C-0002  
Role: Principal Investigator  
Study Title: Operational Pilot Fatigue Monitoring Through Voice
- 2015–2017 **US Army Medical Research & Materiel Command Grant (\$350k).**  
Project Number: MIT LL 2579-1 under Air Force Contract FA8721-05-C-0002  
Role: Principal Investigator

Study Title: Cognitive Change Detection in Traumatic Brain Injury Using Voice

- 2015–2019 **NSF Medium Collaborative Research Grant (S. Narayanan, Ph.D., P.I.).**  
Project Number: 1514544  
Role: Co-Investigator  
Study Title: Understanding Individual-Level Speech Variability
- 2015–2020 **NIH R01 Research Grant (S. Narayanan, Ph.D., P.I.).**  
Project Number: 5 R01 DC007124-12  
Role: Research Program Consultant  
Study Title: Dynamics of Speech Vocal Tract Shaping
- 2014–2015 **Faculty Research Support Grant.**  
Swarthmore College  
Topic: Implementation of a Novel Articulatory Synthesizer
- 2012–2013 **Diploma in Innovation Research Grant.**  
University of Southern California  
Study Title: Ultrasound Imaging and Quantification of Glottal Dynamics During Speech
- 2011–2012 **NIH Doctoral Training Fellowship.**  
Under NIH 2 T32 DC009975-06 (S. Bottjer, Ph.D. & N. Segil, Ph.D., Co-P.I.s)  
Location: House Research Institute & University of Southern California  
Study Title: Hearing & Communication Neuroscience
- 2008–2010 **Annenberg Foundation Graduate Fellowship.**  
University of Southern California
- 2008 **AFOSR Graduate Student Workshop Invitee.**  
Center for Biodynamics, Boston University  
Title: Brain Rhythms in Speech Perception and Production
- 2007 **NSF Joint Research Fellowship.**  
Under NSF Collaborative Research 0534841 (P. Divenyi, Ph.D., P.I.)  
Location: École Normale Supérieure, Paris, France  
Study Title: Separating Speech from Speech Noise to Improve Intelligibility
- 2003 **Undergraduate Research Fellowship.**  
Undergraduate Research Summer Institute, Vassar College  
Study Title: Biologically-Inspired Control of Perception-Action Systems

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## Memberships

- 2010–Present **International Speech Communication Association.**
- 2009–Present **The Acoustical Society of America.**
- 2003–Present **Psi Chi**, *The National Honor Society in Psychology.*

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## Teaching Experience

- 2019 **Instructor**, *MIT Beaverworks Summer Institute*.  
Medalytics: Data Science for Health & Medicine
- 2014–2015 **Instructor**, *Swarthmore College*.  
Data Structures & Algorithms (undergraduate level): S15  
Speech Synthesis Directed Reading (undergraduate level): S15  
Introduction to Computer Systems Lab (undergraduate level): F14  
Data Structures & Algorithms Lab (undergraduate level): F14
- 2009–2011 **Teaching Assistant**, *University of Southern California*.  
Hearing & Communication Neuroscience (graduate level): S14  
Artificial Intelligence (graduate level): F11, F12, S14  
Experimental Phonetics (graduate level): F09, F13
- 2005 **Teaching Assistant**, *North Carolina State University*.  
Architecture of Parallel Computers (graduate level): F05  
Computer Organization & Logic (undergraduate level): S05
- 2002–2004 **Teaching Assistant**, *Vassar College*.  
Perception & Action (undergraduate level): F02, F03  
Research Methods in Cognitive Science (undergraduate level): S04

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## Students Mentored

- 2015 **Tessa Jones & Martina Costagliola (undergraduate)**, *Development of a novel, region-based articulatory speech synthesizer*.
- 2014–2015 **Gautam Mohan, Katherine Hamilton & Andrew Grasberger (undergraduate)**, *Realtime voice activity and pitch modulation for laryngectomy transducers using head and facial gestures*.
- 2014 **Sohyun Kang & Chloe Acheampong (undergraduate)**, *Intensity normalization and spatial segmentation of real-time MR images*.
- 2013 **Nishit Malde (undergraduate)**, *Spatial registration of real-time and static MR images*.
- 2012–2013 **Simon Berman (undergraduate)**, *Interspeaker Variability in Hard Palate Morphology and Consonant Production*.
- 2012–2014 **Li Hsuan Lu (undergraduate)**, *Cross-Linguistic Analysis of Fricative Production using Real-Time MRI*.

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## Service

### Ad-Hoc Reviewer.

PLOS ONE

Computer, Speech and Language

Journal of Speech, Language and Hearing Research

Journal of the Acoustical Society of America

International Seminar on Speech Production

The Cleft Palate-Craniofacial Journal

The Handbook of Clicks

**Senior Program Committee Member.**

Affective Computing and Intelligent Interaction Conference, 2019

Affective Computing and Intelligent Interaction Conference, 2017

**Session Chair.**

Affective Computing and Intelligent Interaction Conference, 2017

Interspeech, 2016

2014–2015 **Organizer, Swarthmore Computer Science Seminar Series.**

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## Journal Articles

(\* denotes an award-winning paper).

- J21 **Hagedorn, C., Lammert, A., Bassily, M., Zu, Y., Sinha, U., Goldstein, L. & Narayanan, S. (in preparation)**, *Characterizing Post-Glossectomy Speech Using Real-time MRI*, For submission to the Journal of Speech, Language & Hearing Research.
- J20 **Ciccarelli, G., Nolan, M., O'Brien, A., Vergara-Diaz, G., Sherrill, D., McKindles, R.J., Bonato, P., Quatieri, T.F. & Lammert, A.C. (in preparation)**, *Models of sensory integration for static and dynamic balance control in traumatic brain injury*, For submission to IEEE Journal of Translational Engineering in Health and Medicine.
- J19 **Noufi, C., Lammert, A.C., Mehta, D., Williamson, J.R., Ciccarelli, G., Sturim, D.R., Green, J.R., Campbell, T. & Quatieri, T.F. (under review)**, *Tracking Acoustic Speech Changes Over Time Following Pediatric Traumatic Brain Injury*, Submitted to IEEE Journal of Selected Topics in Signal Processing.
- J18 **Rao, H.M., Ciccarelli, G.A., Nolan, M., O'Brien, A., Vergara-Diaz, G., Edwards, H., Zafonte, R., Palmer, J.S., Quatieri, T.F., Bonato, P., McKindles, R.J. & Lammert, A.C. (under review)**, *Sensorimotor Conflict Tests in an Immersive Virtual Environment Reveal Subclinical Impairments in Mild Traumatic Brain Injury*, Submitted to Science Translational Medicine.
- J17 **Lammert, A.C., Melot, J., Sturim, D.E., Hannon, D.J., DeLaura, R., Williamson, J.R., Ciccarelli, G. & Quatieri, T.F. (under review)**, *Analysis of Phonetic Balance in Standard English Passages*, Submitted to Journal of Speech, Language and Hearing Research.
- J16 **Lammert, A. & Parrell, B. (in revision)**, *Bridging Dynamical Systems and Optimal Trajectory Approaches to Speech Motor Control with Dynamic Movement Primitives*, Submitted to Frontiers in Psychology.
- J15 **Hagedorn, C., Sorensen, T., Lammert, A.C., Toutios, A., Goldstein, L.M., Byrd, D., & Narayanan, S.S. (2019)**, *Engineering Innovation in Speech Science: Data and Technologies*, Perspectives of the American Speech and Hearing Association Special Interest Groups, 4(2), 411-420.

- J14 **Lammert, A., Parrell, B., Ciccarelli, G. & Quatieri, T. (2019)**, *Current Models of Speech Motor Control: A Overview of Architectures & Properties*, *Journal of the Acoustical Society of America*, 145(3), 1456.
- J13 **Lammert, A., Shadle, C., Narayanan, S. & Quatieri, T. (2018)**, *Speed-Accuracy Tradeoffs in Human Speech Production*, *PLOS ONE* 13(9), e0202180.
- J12 **Li, M., Kim, J., Lammert, A., Ghosh, P.K., Ramanarayanan, V. & Narayanan, S. (2016)**, *Speaker verification based on the fusion of speech acoustics and inverted signals*, *Computer, Speech & Language*, 36: 196–211.
- J11 **Lammert, A., & Narayanan, S. (2015)**, *On Short-Time Estimation of Vocal Tract Length from Formant Frequencies*, *PLOS ONE* 10(7), e0132193.
- \*J10 **Lammert, A., Ramanarayanan, V., Goldstein, L. & Narayanan, S. (2014)**, *Gestural Control in the English Past-Tense Suffix: an Articulatory Study using Real-Time MRI*, *Phonetica*, 71(4): 229–248.
- J9 **Narayanan, S., Toutios, A., Ramanarayanan, V., Lammert, A., Kim, J., Nayak, K., Kim, Y.-C., Zhu, Y., Bresch, E., Goldstein, L., Byrd, D., Katsamanis, A. & Proctor, M. (2014)**, *Real-time magnetic resonance imaging and electromagnetic articulography database for speech production research (TC)*, *Journal of the Acoustical Society of America*, 136(3): 1307–1311.
- J8 **Ramanarayanan, V., Lammert, A., Goldstein, L. & Narayanan, S. (2014)**, *Do articulatory settings facilitate efficient postural motor control of vocal tract articulators?*, *PLoS ONE* 9(8), e104168.
- J7 **Kim, J., Lammert, A., Ghosh, P.K. & Narayanan, S.S. (2014)**, *Co-registration of Speech Production Datasets from Electromagnetic Articulography and Real-Time Magnetic Resonance Imaging*, *Journal of the Acoustical Society of America*, 135: EL115.
- J6 **Lammert, A., Proctor, M. & Narayanan, S. (2013)**, *Interspeaker Variability in Hard Palate Morphology and Vowel Production*, *Journal of Speech, Language and Hearing Research*, 56: S1924–S1933.
- J5 **Lammert, A., Proctor, M. & Narayanan, S. (2013)**, *Morphological Variation in the Adult Palate and Pharyngeal Wall*, *Journal of Speech, Language and Hearing Research*, 56: 521–530.
- J4 **Lammert, A., Goldstein, L., Narayanan, S. & Iskarous, K. (2013)**, *Statistical Methods for Estimation of Direct and Differential Kinematics of the Vocal Tract*, *Speech Communication*, 55: 147–161.
- J3 **Black, M.P, Katsamanis, A., Baucom, B.R., Lee, C.-C., Lammert, A.C., Christensen, A., Georgiou, P.G. & Narayanan, S.S. (2013)**, *Toward Automating a Human Behavioral Coding System for Married Couples' Interactions Using Acoustic Features*, *Speech Communication*, 55: 1–21.

- J2 **Long, J.H. Jr., Koob, T.J., Irving, K., Combie, K., Engel, V., Livingston, N., Lammert, A.C. & Schumacher, J. (2006)**, *Biomimetic Evolutionary Analysis: Testing the Adaptive Value of Vertebrate Tail Stiffness in Autonomous Swimming Robots*, *Journal of Experimental Biology*, 209: 4732–4746.
- J1 **Long, J.H. Jr., Lammert, A.C., Pell, C.A., Kemp, M., Strother, J., Crenshaw, H.C. & McHenry, M.J. (2004)**, *A Navigational Primitive: Biorobotic Implementation of Cycloptic Helical Klinotaxis in Planar Motion*, *IEEE Journal of Oceanic Engineering*, 29: 795–806.

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## Book Chapters

- B4 **Proctor, M., Zhu, Y., Lammert, A., Toutios, A., Sands, B. & Narayanan, S. (to appear)**, *Studying Clicks using Real-time MRI*, In *Handbook of Clicks*, B. Sands (Ed.). Leiden (Netherlands): Brill.
- B3 **Proctor, M., Zhu, Y., Lammert, A., Toutios, A., Sands, B. Hummel, U. & Narayanan, S. (2016)**, *Lingual Consonant Production in Khoekhoe: a Real-time MRI Study*, In *Khoisan Language and Linguistics: Proceedings of the 5th International Symposium*, S. Shah & M. Brenzinger (Eds.). Köln (Germany): Rüdiger Köppe Verlag.
- B2 **Divenyi, P., & Lammert, A. (2007)**, *The time course of listening bands*, In *Hearing - From sensory processing to perception*, B. Kollmeier, G. Klump, V. Hohmann, U. Langemann, M. Mauermann, S. Uppenkamp, & J. Verhey (Eds.). Berlin, Heidelberg (Germany): Springer Verlag.
- B1 **Wessel, D., Divenyi, P. & Lammert, A. (2006)**, *Dynamics of the Singing Voice*, Section Introduction In *Dynamics of Speech Production and Perception*, P.L. Divenyi & G. Meyer (Eds.), Amsterdam (Netherlands): IOS Press.

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## Technical Reports

- R3 **Lammert, A.C., Heaton, K.J. & Quatieri, T.F. (2019)**, *Novel Application of Vocal and Facial Markers for Evaluating Cognitive Status Following Exposure to Chemical Hazards*, Defense Health Program (DHP) Joint Program Committee 5 (JPC-5) Report for Project 19760 (in DTIC).
- R2 **Lammert, A., Chang, A., Chang, K., Sloboda, J., Palmer, J. & Claypool, K. (2018)**, *Mathematical Models for Pilot Fatigue Forward Prediction: Analysis of Current Practice at Air Mobility Command with Recommendations*, USTRANSCOM Report No. USTC-PM-047.
- R1 **Collins, P., Hachen, N., Hannon, D., Lacirignola, J., Lammert, A., McKindles, R., Mroszczyk, K., Nargi, F., Palmer, J., Petrovick, M., Quatieri, T., Swiston, A., Telfer, B., Vongsvarnrungruang, J. & Young, W. (2018)**, *Health Readiness and Performance System (HRAPS) Gap Analysis Study Final Report*, USAMMDA Report No. PSM-10.

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## Refereed Conference Publications

- C32 **Espy-Wilson, C., Lammert, A.C., Seneviratne, N. & Quatieri, T. (2019)**, *Assessing Neuro-motor Coordination in Depression Using Inverted Vocal Tract Variables*, In *INTERSPEECH-2019*.

- C31 **Noufi, C., Lammert, A.C., Williamson, J., Mehta, D., Ciccarelli, G., Sturim, D., Green, J., Campbell, T. & Quatieri, T.F. (2019),** *Vocal Biomarker Assessment Following Pediatric Traumatic Brain Injury: A Retrospective Cohort Study*, In INTERSPEECH-2019.
- C30 **Williamson, J., Quatieri, T., Lammert, A., Mitchell, K., Finkelstein, K., Ekon, N., Dillon, C., Kenefick, R. & Heaton, K. (2018),** *The Effect of Exposure to High Altitude and Heat on Speech Articulatory Coordination*, In INTERSPEECH-2018.
- C29 **Sloboda, J., Lammert, A., Williamson, J., Smalt, C., Mehta, D., Curry, I., Heaton, K., Palmer, J. & Quatieri, T. (2018),** *Vocal biomarkers for cognitive performance estimation in a working memory task*, In INTERSPEECH-2018.
- C28 **Lammert, A., Williamson, J., Hess, A., Patel, T., Quatieri, T., Liao, H.J., Lin, A. & Heaton, K. (2017),** *Noninvasive estimation of cognitive status in mild traumatic brain injury using speech production and facial expression*, In Affective Computing and Intelligent Interaction (ACII) 2017.
- C27 **Sorensen, T., Skordilis, Z., Toutios, A., Kim, Y.-C., Zhu, Y., Kim, J., Lammert, A., Ramanarayanan, V., Goldstein, L., Byrd, D., Nayak, K. & Narayanan, S. (2017),** *Database of volumetric and real-time vocal tract MRI for speech science*, In INTERSPEECH-2017.
- C26 **Lammert, A., Shadle, C., Narayanan, S. & Quatieri, T. (2016),** *Investigation of Speed-Accuracy Tradeoffs in Speech Production Using Real-Time Magnetic Resonance Imaging*, In INTERSPEECH-2016.
- C25 **Horwitz-Martin, R., Quatieri, T., Lammert, A., Williamson, J., Yunusova, Y., Godoy, E., Mehta, D. & Green, J. (2016),** *Relation of Automatically Extracted Formant Trajectories with Intelligibility Loss and Speaking Rate Decline in Amyotrophic Lateral Sclerosis*, In INTERSPEECH-2016.
- C24 **Proctor, M., Zhu, Y., Lammert, A., Toutios, A., Sands, B. & Narayanan, S. (2014),** *Articulatory Coordination in Nama Click Consonants*, In Proceedings of the Australasian International Speech Science & Technology Conference.
- C23 **Hagedorn, C., Lammert, A., Bassily, M., Zu, Y., Sinha, U., Goldstein, L. & Narayanan, S. (2014),** *Characterizing Post-Glossectomy Speech Using Real-time MRI*, In Proceedings of the 10th International Seminar on Speech Production.
- C22 **Li, M., Lammert, A., Kim, J., Ghosh, P.K. & Narayanan, S. (2013),** *Automatic Classification of Palatal and Pharyngeal Wall Shape Categories from Speech Acoustics and Inverted Articulatory Signals*, In the ISCA Workshop on Speech Production in Automatic Speech Recognition.
- C21 **Lammert, A., Ramanarayanan, V., Proctor, M. & Narayanan, S. (2013),** *Vocal Tract Cross-Distance Estimation from Real-Time MRI using Region-of-Interest Analysis*, In INTERSPEECH-2013.



- C20 **Smith, C. & Lammert, A. (2013)**, *Identifying consonantal tasks via measures of tongue shaping: a real-time MRI investigation of the production of vocalized syllabic /l/ in American English*, In INTERSPEECH-2013.
- C19 **Proctor, M., Goldstein, L., Lammert, A., Byrd, D., Toutios, A. & Narayanan, S. (2013)**, *Velic Coordination in French Nasals: a Real-time Magnetic Resonance Imaging Study*, In INTERSPEECH-2013.
- C18 **Ramanarayanan, V., Lammert, A., Goldstein, L. & Narayanan, S. (2013)**, *Articulatory settings facilitate mechanically advantageous motor control of vocal tract articulators*, In INTERSPEECH-2013.
- C17 **Hovy, D., Anumanchipalli, G.K., Parlikar, A., Vaughn, C., Lammert, A., Hovy, E. & Black, A. (2013)**, *Analysis and Modeling of "Focus" in Context*, In INTERSPEECH-2013.
- C16 **Kim, J., Lammert, A., Narayanan, S. & Ghosh, P. (2013)**, *Spatial and Temporal Alignment of Multimodal Human Speech Production Data: Real Time Imaging, Flesh Point Tracking and Audio*, In ICASSP-2013.
- C15 **Ramanarayanan, V., Ghosh, P.K., Lammert, A. & Narayanan, S. (2012)**, *Exploiting speech production information for automatic speech and speaker modeling and recognition - possibilities and new opportunities*, In APSIPA-2012.
- C14 **Georgiou, P., Black, M., Lammert, A., Baucom, B. & Narayanan, S. (2011)**, *"That's aggravating, very aggravating": Is it possible to classify behaviors in couple interactions using automatically derived lexical features?*, In ACII-2011, 87–96.
- C13 **Lammert, A., Proctor, M., Katsamanis, A. & Narayanan, S. (2011)**, *Morphological Variation in the Adult Vocal Tract: A Modeling Study of its Potential Acoustic Impact*, In INTERSPEECH-2011, 2813–2816.
- C12 **Narayanan, S., Bresch, E., Ghosh, P., Goldstein, L., Katsamanis, A., Kim, Y., Lammert, A., Proctor, M., Ramanarayanan, V., & Zhu, Y. (2011)**, *A Multimodal Real-Time MRI Articulatory Corpus for Speech Research*, In INTERSPEECH-2011, 837–840.
- C11 **Proctor, M., Lammert, A., Katsamanis, A., Goldstein, L., Hagedorn, C., & Narayanan, S. (2011)**, *Direct Estimation of Articulatory Kinematics from Real-time Magnetic Resonance Image Sequences*, In INTERSPEECH-2011, 281–284.
- \*C10 **Lammert, A., Proctor, M., & Narayanan, S. (2011)**, *Morphological Variation in the Adult Vocal Tract: A Study Using rtMRI*, In Proceedings of the 9th International Seminar on Speech Production.
- C9 **Lammert, A., Proctor, M., Goldstein, L., Pouplier, M., & Narayanan, S. (2011)**, *Automatic identification of stable modes and fluctuations in a repetitive task using real-time MRI*, In Proceedings of the 9th International Seminar on Speech Production.

- C8 **Ramanarayanan, V., Lammert, A., Byrd, D., Goldstein, L., & Narayanan, S. (2011)**, *Planning and Execution in Soprano Singing and Speaking Behavior: an Acoustic/Articulatory Study Using Real-Time MRI*, In Proceedings of the 9th International Seminar on Speech Production.
- C7 **Kumar, N., Lammert, A., Englot, B., Hover, F. & Narayanan, S. (2011)**, *Directional Descriptors Using Zernike Moment Phases for Object Orientation Estimation in Underwater Sonar Images*, In Proceedings of ICASSP 2011 in Prague, Czech Republic.
- \*C6 **Lammert, A., Goldstein, L., & Iskarous, K. (2010)**, *Locally-Weighted Regression for Estimating the Forward Kinematics of a Geometric Vocal Tract Model*, In INTERSPEECH-2010, 1604-1607.
- C5 **Lammert, A., Proctor, M., & Narayanan, S. (2010)**, *Data-Driven Analysis of Realtime Vocal Tract MRI using Correlated Image Regions*, In INTERSPEECH-2010, 1572–1575.
- \*C4 **Black, M., Katsamanis, A., Lee, C., Lammert, A., Baucom, B., Christensen, A., Panayiotis, G., & Narayanan, S. (2010)**, *Automatic Classification of Married Couples' Behavior using Audio Features*, In INTERSPEECH-2010, 2030–2033.
- C3 **Lee, C., Black, M., Katsamanis, A., Lammert, A., Baucom, B., Christensen, A., Panayiotis, G., & Narayanan, S. (2010)**, *Quantification of Prosodic Entrainment in Affective Spontaneous Spoken Interactions of Married Couples*, In INTERSPEECH-2010, 793–796.
- C2 **Lammert, A., Bresch, E., Goldstein, L., & Narayanan, S. (2010)**, *Gestural control in the English past-tense suffix: an articulatory study using real time MRI*, In Proceedings of the 12th Conference on Laboratory Phonology in Albuquerque, New Mexico.
- C1 **Lammert, A., Ellis, D. & Divenyi, P. (2008)**, *Data-driven articulatory inversion incorporating articulator priors*, In the ISCA Workshop on Statistical and Perceptual Audition, 29–34.

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## Other Conference Publications

- O28 **Ciccarelli, G.A., Nolan, M., Rao, H.M., O'Brien, A., Vergara-Diaz, G., Edwards, H., Zafonte, R., Palmer, J.S., Quatieri, T.F., Bonato, P., McKindles, R.J. & Lammert, A.C. (2018)**, *Sensorimotor phenotyping of mild traumatic brain injury and balance: models for mechanism identification*, Society for Neuroscience.
- O27 **Rao, H.M., Ciccarelli, G.A., Nolan, M., O'Brien, A., Vergara-Diaz, G., Edwards, H., Zafonte, R., Palmer, J.S., Quatieri, T.F., Bonato, P., McKindles, R.J. & Lammert, A.C. (2018)**, *Sensorimotor phenotyping of mild traumatic brain injury and balance: Feature-based Behavioral Characterization*, Society for Neuroscience.
- O26 **Ciccarelli, G., Rodriguez, A., Williamson, J., Hannon, D., DeLaura, R., Lammert, A., Sturim, S., Palmer, J., Talavage, T., Lin, A., Heaton, K., Brown, E., Dacanay, B. & Quatieri, T. (2018)**, *Validating Speech Algorithms on a Pooled mTBI Data Set for a Mobile Diagnostic Application*, Military Health Systems Research Symposium.

- O25 **Ciccarelli, G.A., Nolan, M., Rao, H.M., O'Brien, A., Vergara-Diaz, G., Edwards, H., Zafonte, R., Palmer, J.S., Quatieri, T.F., Bonato, P., McKindles, R.J. & Lammert, A.C. (2018)**, *Sensorimotor phenotyping of mild traumatic brain injury and balance: models for mechanism identification*, Military Health Systems Research Symposium.
- O24 **Palmer, J., Williamson, J., Lammert, A., McKindles, R., Yu, B., Nolan, M., Perricone, J. & Quatieri, T. (2018)**, *Neuromotor Incoordination Index as a Measure of Physical and Cognitive Fatigue*, 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society.
- O23 **Lammert, A., Williamson, J., Hess, A., Patel, T., Quatieri, T., Liao, H.J., Lin, A. & Heaton, K. (2017)**, *Noninvasive estimation of cognitive changes in mild traumatic brain injury using speech production and facial expression*, Military Health Systems Research Symposium.
- O22 **Costagliola, M., Jones, T.K. & Lammert, A. (2016)**, *A virtual vocal tract: a novel approach to articulatory speech synthesis*, Fifth Mid-Atlantic Student Colloquium on Speech, Language and Learning, University of Pennsylvania.
- O21 **Mohan, G., Hamilton, K., Grassberger, A., Lammert, A. & Waterman, J. (2015)**, *Realtime voice activity and pitch modulation for laryngectomy transducers using head and facial gestures*, Journal of the Acoustical Society of America.
- O20 **Lammert, A. & Narayanan, S. (2014)**, *Development of a parametric basis for vocal tract area function representation from a large speech production database*, Journal of the Acoustical Society of America. 135(4):2198.
- O19 **Blaylock, R., Lammert, A., Goldstein, L. & Narayanan, S. (2014)**, *Gestural coordination of the velum in singing can be different from coordination in speech*, Journal of the Acoustical Society of America. 135(4):2199.
- O18 **Parrell, B., Lammert, A., Narayanan, S. & Goldstein, L. (2013)**, *Simulations of Sound Change Resulting from Frequencies of Acoustic Realizations*, Journal of the Acoustical Society of America. 134(5):4167.
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- O12 **Kim, J., Lammert, A., Proctor, M. & Narayanan, S. (2012)**, *Co-registration of Articulographic and Real-Time MRI Data for Multimodal Analysis of Rapid Speech*, J. Acoust. Soc. Am., 132(3):2090.
- O11 **Lammert, A., Ramanarayanan, V., Goldstein, L., Iskarous, K., Saltzman, E., Nam, H. & Narayanan, S. (2011)**, *Statistical Estimation of Speech Kinematics from Real-Time MRI Data*, J. Acoust. Soc. Am., 130(4):2549.
- O10 **Goldstein, L., Proctor, M. & Lammert, A. (2011)**, *Analysis of Rhythmic Entrainment in Speech Production using Real-time Magnetic Resonance Imaging*, J. Acoust. Soc. Am., 130(4):2568.
- O9 **Parrell, B., Lammert, A., Goldstein, L., Byrd, D. & Narayanan, S. (2011)**, *Imaging and Quantification of Glottal Kinematics with Ultrasound During Speech*, J. Acoust. Soc. Am., 130(4):2548.
- O8 **Divenyi, P. & Lammert, A. (2011)**, *Perceptual Recovery of Phonetic Features in Blanked Segments of Disyllabic Words*, J. Acoust. Soc. Am., 130(4):2375.
- O7 **Proctor, M., Lammert, A., Goldstein, L. & Narayanan, S. (2010)**, *Temporal Analysis of Articulatory Speech Errors using Direct Image Analysis of Realtime MRI*, J. Acoust. Soc. Am., 128(4):2289.
- O6 **Divenyi, P., Livingston, N., Lammert, A., Hu, K. & Wang, D. (2010)**, *Age Effects in the Understanding of Noisy Speech Denoised by Estimated Ideal Binary Masks*, J. Acoust. Soc. Am., 127(3):1902.
- O5 **Lammert, A., Bresch, E., Byrd, D., Goldstein, L., & Narayanan, S. (2009)**, *An Articulatory Study of Lexicalized and Epenthetic Schwa Using Real Time Magnetic Resonance Imaging*, J. Acoust. Soc. Am., 125(4):2569.
- O4 **Divenyi, P., Lammert, A., & Shinn-Cunningham, B. (2008)**, *Perception of Gestural Information in Words with Deleted Sections*, In Proceedings of the 2008 MidWinter Meeting of the Association for Research in Otolaryngology in Phoenix AZ.
- O3 **Divenyi, P., & Lammert, A. (2008)**, *Do We Perceive Articulatory Gestures When We Listen to Speech?*, J. Acoust. Soc. Am., 123(5):3179.
- O2 **Schumacher, J.W., Lammert, A.C. & Long, Jr., J.H. (2005)**, *Evolutionary Robotics: Exploring the Origins of Early Vertebrates using Biomimetic Swimmers*, In Proceedings of the 2005 Meeting of the Society for Integrative and Comparative Biology in San Diego, California.
- O1 **Long, J.H. Jr., Lammert, A.C., Strother, J. & McHenry, M.J. (2003)**, *Biologically-Inspired Control of Perception-Action Systems: Helical Klinotaxis in 2D robots*, In Proceedings of the 13th International Symposium on Unmanned Untethered Submersible Technology in Lee, New Hampshire.

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## Guest Lectures

**Behavioral Analytics for Interactive Systems**, *Computer Science Department*, University of New Mexico, March 1, 2019.

**Behavioral Analytics for Neurocognitive Assessment**, *Biomedical Engineering Department*, Worcester Polytechnic Institute, February 26, 2019.

**Estimating Human States**, *Human Machine Collaboration for National Security Workshop*, MIT Lincoln Laboratory, November 6, 2018.

**Sensorimotor Tracking of Neurological Condition: Mild Traumatic Brain Injury**, *Signal Analysis & Interpretation Laboratory*, University of Southern California, August 1, 2018.

**Development of a behaviorally-relevant representation of vocal tract shape from a large speech production database**, *Speech Production & Articulation kNowledge Group*, University of Southern California, July 30, 2018.

**Noninvasive neurological assessment for warfighters**, *Invited seminar*, Defense Technology Seminar, Lexington, MA, April 26, 2018.

**Vocal markers of disease based on timing, coordination, and morphology of articulation**, *Invited seminar*, Pfizer Research and Technology Center, Cambridge, MA, April 24, 2018.

**Variability in Communication, Perception & Action: Understanding and Applications**, *Computer Science Department*, Middlebury College, March 21, 2018.

**Sensorimotor Tracking of Neurological Disorders: Mild Traumatic Brain Injury**, *Invited presentation*, MIT Advanced Research and Technology Symposium, March 6, 2018.

**Sensorimotor Tracking of Neurological Condition**, *Invited seminar*, MIT Lincoln Laboratory, February 1, 2017.

**Structure and Function in Speech Production**, *Guest of Dr. D.H. Whalen*, Haskins Laboratories, February 12, 2015.

**Introduction to Speech for Computer Scientists**, *For Computer Science 65: Natural Language Processing*, Swarthmore College, December 9, 2014.

**Structure and Function in Speech Production**, *Computer Science Department*, Swarthmore College, June 1, 2014.

**Structure and Function in Speech Production**, *Bioengineering Systems and Technologies Group*, MIT Lincoln Laboratory, April 11, 2014.

**Introduction to Speech for Computer Scientists**, *For Computer Science 561: Foundations of Artificial Intelligence*, University of Southern California, September 18, 2012.

**Finding Structure in Data: Methods and Applications to LSA**, *Guest of AI Division*, University of Southern California, Information Science Institute, May 28, 2010.

**The Human Vocal Instrument**, *Guest of Professor Sheila Woodward*, University of Southern California, Thornton School of Music, February 17, 2010.

**Articulatory Inversion: Improvements and Implications for Perception**, *Guest of Professor Nelson Morgan*, University of California, International Computer Science Institute, July 28, 2008.

**Interests and Computational Challenges of Earlab**, *Guest of Professor Dan Ellis*, Columbia University, February 2, 2007.

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## Public Media Attention

**Sensorimotor Tracking of Neurological Disorders**, Featured in the July, 2018 issue of National Geographic as part of an article entitled “How Technology and Smarts Help Athletes Push the Limits”.

**Sensorimotor Tracking of Mobile Robots**, Mentioned in the book “Darwin’s Devices: What Evolving Robots Can Teach Us About the History of Technology” (2012) by John H. Long, Jr..