Carlos Busso

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Education

University of Southern California, Los Angeles, CA 2003-2008
Ph.D. in Electrical Engineering
Advisor: Shrikanth Narayanan *Niki & C. L. Max Nikias Chair in Engineering*
Thesis: "Multimodal Analysis of Expressive Human Communication: Speech and gesture interplay"

University of Chile, Santiago, Chile 2001-2003
Master of Science in Electrical Engineering
Advisor: Néstor Becerra Yoma
Thesis: "Speech transmission over IP with a protocol based on the LMS algorithm" (Spanish)

University of Chile, Santiago, Chile 1996-2003
Electrical Engineer

University of Chile, Santiago, Chile 1996-2000
Bachelor in Electrical Engineering

Professional experience

University of Texas at Dallas, Richardson, TX, USA
Professor 2020-present
Associate Professor 2015-2020
Assistant Professor 2009-2015
Director of the Multimodal Signal Processing (MSP) lab [msp.utdallas.edu]

University of Southern California, Los Angeles, CA, USA 2008-2009
Mentor: Shrikanth Narayanan Postdoctoral Research Associate
Analysis of expressive human communication

Motorola, Austin, TX, USA Summer 2001
Mentor: Kate Stewart Summer Intern
Optimized and modified C code (project Media Stream Resource Module)

Telefónica Móvil, Santiago, Chile Summer 2000
Mentor: Andres Guerra Summer Intern
Analyzed and tested quality of service in wireless communication network

Adexus S.A., Santiago, Chile Summer 1999
Mentor: Aurelio Luco Summer Intern
Reported quality of service in optical communication networks

Research Interests

His research interest is in human-centered multimodal machine intelligence and applications. His current research includes the broad areas of affective computing, multimodal human-machine interfaces, in-vehicle active safety system, and machine learning methods for multimodal processing. His work has direct implication in many practical domains, including national security, health care, entertainment, transportation systems, and education.

Honors, Awards and Fellowships

Best Paper Award – AAAC Affective Computing and Intelligent Interaction (ACII) 2017
Recognition of Service Award from ACM 2016
Outstanding Reviewer for VCIP 2016 2016
Jonsson School Senior (Assoc. Professor) Research Award 2016
IEEE Access Best Multimedia Contest Winner 2015 2015
NSF CAREER award 2015
Third prize IEEE ITSS Best Dissertation Award 2015 (student: Nanxiang Li) 2015
ICMI Ten-Year Technical Impact Award – International conference on multimodal interaction (ICMI 2014) 2014
Quality Reviewer – IEEE International Conference on Multimedia and Expo 2013

Recognition for Excellence in Reviewing – IEEE Conference on Automatic Face and Gesture Recognition	2013
Best Paper Award – IEEE International Conference on Multimedia and Expo	2011
Provost's Fellowship, University of Southern California, Los Angeles, CA	2003-2005
Selected the best Electrical Engineer graduated in Chile by the Chilean School of Engineering	2003
Quality Reviewer – IEEE International Conference on Multimedia and Expo	2011
Co-author of the winner paper of the Classifier Sub-Challenge event at the Interspeech 2009 emotion challenge	2009
Fellowship in Digital Scholarship, University of Southern California, Los Angeles, CA	2007-2008

Professional Memberships

Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), Jan. 2002 - present
IEEE Signal Processing Society, Jan. 2002 - present
IEEE Computer Society, Jan. 2012 - present
IEEE Intelligent Transportation Systems Society, Jan. 2019 - present
International Speech Communication Association (ISCA), Aug. 2009 - present
Association for the Advancement of Affective Computing (AAAC), Oct. 2009 - present
Senior Member of the Association for Computing Machinery (ACM), Oct 2012 - present

Professional Activities

- ⋆ Senior editor of IEEE Signal Processing Letters (Aug. 2018-present)
- ⋆ Associated Editor for IEEE Transactions on Affective Computing (Mar.2020-present)
- ⋆ Associated Editor for IEEE/ACM Transaction on Audio,Speech, and Language (Mar.2016-Mar.2020)
- ⋆ General Chair of ACM ICMI 2021
- ⋆ Program Chair of IEEE ASRU 2021
- ⋆ Area Chair for Interspeech 2015, 2016, 2019 ("Analysis of Paralinguistics in Speech and Language")
- ⋆ Workshops/Tutorials Chair of FG 2020
- ⋆ Senior Program Chair for International Joint Conference on Artificial Intelligence (IJCAI-PRICAI2020) ("speech and language")
- ⋆ Session Chair of Interspeech 2019 ("Attention Mechanism for Speaker State Recognition")
- ⋆ Session Chair of ACII 2019 ("Ordinal Affective Computing")
- ⋆ Session Chair IEEE ITSC 2019 ("Advanced Driver Assistance Systems I")
- ⋆ Session Chair IEEE ITSC 2019 ("Advanced Driver Assistance Systems III")
- ⋆ Workshop Chairs of ACM International Conference on Multimodal Interaction (ICMI 2019)
- ⋆ Publication Chair of Int. Conf. on Affective Computing and Intelligent Interaction (ACII 2019)
- ⋆ Senior Program Committee (SPC) for ACM ICMI 2015, 2018 (area chair)
- ⋆ Session Chair IEEE ITSC 2018 ("Advanced Driver Assistance Systems I")
- ⋆ Session Chair ACM ICMI 2018 ("Sound and Interaction")
- ⋆ Session Chair Interspeech 2017 ("Emotion Modeling")
- ⋆ Organizer of International Workshop on Human Behavior Understanding (HBU 2018)
- ⋆ General Chair of Int. Conf. on Affective Computing and Intelligent Interaction (ACII 2017)
- ⋆ Program Chair for IEEE Int. Conf. on Visual Communications and Image Processing (VCIP2017)
- ⋆ Session Chair Interspeech 2017 ("Stance, Credibility and Deception")
- ⋆ Workshops/Tutorials Chair of FG 2017
- ⋆ Vice Chair of the IEEE-Dallas Chapter of SPS

- ⋆ Program Chair for ACM ICMI 2016
- ⋆ Publicity Chair of Interspeech 2016
- ⋆ Session Chair IEEE ICASSP 2016 (SP-L9: Emotion Recognition from Speech)
- ⋆ Session Chair Interspeech 2015 (Emotion)
- ⋆ Area Chair for IEEE FG 2015
- ⋆ Doctoral Spotlight Chair for ACM ICMI 2015
- ⋆ Session Chair IEEE FG 2015 (Facial Expression Analysis)
- ⋆ Workshop Chair of AAAC ACII 2015
- ⋆ Doctoral Consortium Chair of IEEE FG 2015
- ⋆ Publicity Chair of IEEE ICME 2014
- ⋆ Workshop Chair of ACM ICMI 2014
- ⋆ Session Chair DSP in Vehicle 2013, (Signal Processing for Human-Vehicle Interaction)
- ⋆ Doctoral Spotlight Chair for ACM ICMI 2013
- ⋆ Demonstrations and Retrieval Challenges Competition Chairs at ACM ICMR 2013
- ⋆ Doctoral Spotlight Chair for ACM ICMI 2012
- ⋆ Session Chair IEEE ICASSP 2010 (IFS-L1: Forensics)
- ⋆ Technical/Program Committee
  - Generation and Evaluation of Non-verbal Behaviour for Embodied Agents (GENEA 2020)
  - Multimodal Sentiment Analysis in Real-life Media Challenge and Workshop (MuSe 2020)
  - Multimodal Analyses enabling Artificial Agents in Human-Machine Interaction (MA3HMI 2018)
  - Emotion Recognition in the Wild (EmotiW) Challenge at ACM ICMI 2018.
  - Speech, Music and Mind: Detecting and Influencing Mental States with Audio (2018)
  - Affective Content Analysis (AffCon2018) at AAAI-2018
  - Automatic affect analysis and synthesis at ICIAP 2017
  - Fifth Emotion Recognition in the Wild (EmotiW) challenge at ACM ICMI 2017.
  - Deep Affective Learning and Context Modeling (DAL-COM 2017)
  - International Workshop on Context Based Affect Recognition (CBAR 2016)
  - NIPS workshop on Multimodal Machine Learning 2015
  - Third Emotion Recognition in the Wild (EmotiW) Challenge at ACM ICMI 2015.
  - Second Workshop on Computer Vision for Affective Computing (CV4AC) at ICCV 2015.
  - ICME 2015
  - The 3rd International Workshop on Context Based Affect Recognition (CBAR 2015)
  - The 3rd International Workshop on Emotion Representation, Analysis and Synthesis in Continuous Time and Space (EmoSPACE 2015)
  - ICME 2014
  - ACM Multimedia 2014
  - International Conference on Computational Linguistics (COLING 2014)
  - Inter. Workshop on Emotion, Social Signals, Sentiment & Linked open data (ES^3LOD 2014)
  - ICME 2013
  - International Workshop on Human Behavior Understanding (HBU 2013)

- International Workshop on Emotion Representations and Modelling for Human-Computer Interaction Systems (ERM4HCI 2013)
- The 6th Biennial Workshop on Digital Signal Processing for In-Vehicle Systems, 2013
- First Emotion Recognition In The Wild Challenge (EmotiW 2013)
- 5th International Workshop on Affective Interaction in Natural Environments (AFFINE 2013): Interacting with Affective Artefacts in the Wild
- 2nd International Workshop on Context Based Affect Recognition (CBAR 2013)
- EmoSPACE Workshop at FG 2013
- 10th IEEE International Conference on Automatic Face and Gesture Recognition (FG 2013)
- 1st International Workshop on Context Based Affect Recognition (CBAR 2012), (SocialCom12)
- Workshop What's in a Face?, European Conference on Computer Vision (ECCV 2012)
- 4th International Workshop on Corpora for Research on Emotion Sentiment & Social Signals (ES3 2012)
- Digital Signal Processing Workshop for In-Vehicle Systems, 2011.
- Machine Learning for Affective Computing (MLAC), 2011.
- Inferring cognitive and emotional states from multimodal behavioural measures, 2011.

⋆ Reviewer for International Journal

- IEEE/ACM Transactions on Audio, Speech and Language Processing
- IEEE Transactions on Affective Computing
- IEEE Transactions on Human-Machine Systems
- IEEE Transaction on Visualization and Computer Graphics
- IEEE Transactions on Intelligent Transportation Systems
- IEEE Transactions on Multimedia
- IEEE Signal Processing Letters
- IEEE Journal of Selected Topics in Signal Processing
- IEEE Transactions on Systems, Man, and Cybernetics, Part B
- IEEE Transactions on Information Forensics & Security
- Proceedings of the IEEE
- Journal of the Acoustical Society of America (JASA)
- ACM Transactions on Multimedia Computing, Communications, and Applications
- Speech Communication - Elsevier
- Pattern Recognition Letters - Elsevier
- Information Fusion - Elsevier
- International Journal of Human-Computer Studies - Elsevier
- Journal Computer Speech and Language - Elsevier
- Journal of Behaviour & Information Technology - Taylor & Francis
- Journal of Signal, Image and Video Processing
- Journal User Modeling and User-Adapted Interaction (UMUAI)
- Journal of Multimodal User Interfaces - Springer
- Human-centric Computing and Information Sciences - Springer
- APSIPA Transactions on Signal and Information Processing - Cambridge
- Image Communication - Elsevier

- Image and Vision Computing - Elsevier
- Journal of Visual Communication and Image Representation (JVCI) -Elsevier
- Journal of Multimedia Systems - Springer
- Computer Graphics Forum - Wiley

⋆ Reviewer for International conferences

- IEEE/Humaine Conference on Affective Computing and Intelligent Interaction (ACII)
- IEEE International Conference on Multimedia and Expo (ICME)
- IEEE International Conference on Intelligent Transportation Systems (ITSC)
- IEEE Int. Conf. on Visual Communications and Image Processing (VCIP)
- IEEE International Conference on Automatic Face and Gesture Recognition (FG)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- IEEE International Conference on Communications (ICC)
- ACM International Conference on Multimodal Interaction (ICMI)
- INTERSPEECH
- ACM Multimedia
- IEEE workshop on Automatic Speech Recognition and Understanding (ASRU)
- International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
- Annual Conference of the IEEE Industrial Electronics Society (IECON)
- Eurographics
- IEEE Intelligent Vehicles Symposium (IV)

⋆ NSF review panel (CISE) (2011, 2013, 2015, 2016, 2017, 2018, 2019, 2020)

Service at the University of Texas at Dallas

Member of the Ph.D. Program Committee	2019 - present
Chair of the Electrical Engineering Educational Assessment Committee	2018-2019
Chair of the Ad-Hoc committee for the Mid-Probationary review for a colleague	2018-2019
Member of the Electrical Engineering Educational Assessment Committee	2015-2018
Member of the Electrical Engineering TA Assignment Committee	2012-2015
Member of the Electrical Engineering Teaching Lab Committee	2014-2015
Member of the Electrical Engineering Faculty Search	2012-2013
Member of the Electrical Engineering Graduate Committee	2009-2012
Member of the PhD committee for 61 students	2009-present

Publications

Journal Articles

[1] F. Tao and C. Busso, "End-to-end audiovisual speech recognition system with multi-task learning," IEEE Transactions on Multimedia, vol. To appear, 2020.

[2] N. Sadoughi and C. Busso, "Speech-driven expressive talking lips with conditional sequential generative adversarial networks," IEEE Transactions on Affective Computing, vol. To appear, 2019. (ArXiv: 1806.00154).

[3] R. Lotfian and C. Busso, "Over-sampling emotional speech data based on subjective evaluations provided by multiple individuals," IEEE Transactions on Affective Computing, vol. To Appear, 2019.

[4] S. Parthasarathy and C. Busso, "Predicting emotionally salient regions using qualitative agreement of deep neural network regressors," IEEE Transactions on Affective Computing, vol. To appear, 2019.

[5] G.N. Yannakakis, R. Cowie, and C. Busso, "The ordinal nature of emotions: An emerging approach," IEEE Transactions on Affective Computing, vol. To appear, 2019.

[6] R. Lotfian and C. Busso, "Building naturalistic emotionally balanced speech corpus by retrieving emotional speech from existing podcast recordings," IEEE Transactions on Affective Computing, vol. To appear, 2019.
[7] A. Vidal, J. Silva, and C. Busso, "Discriminative features for texture retrieval using wavelet packets," IEEE Access, vol. 7, no. 1, pp. 148882-148896, December 2019.
[8] R. Lotfian and C. Busso, "Lexical dependent emotion detection using synthetic speech reference," IEEE Access, vol. 7, no. 1, pp. 22071-22085, December 2019.
[9] F. Tao and C. Busso, "End-to-end audiovisual speech activity detection with bimodal recurrent neural models," Speech Communication, vol. 113, pp. 25-35, October 2019. (arXiv:1809.04553)
[10] N. Sadoughi and C. Busso, "Speech-driven animation with meaningful behaviors," Speech Communication, vol. 110, pp. 90-100, July 2019.(ArXiv: 1708.01640).
[11] R. Lotfian and C. Busso, "Curriculum learning for speech emotion recognition from crowdsourced labels," IEEE/ACM Transactions on Audio, Speech, and Language Processing, vol. 27, no. 4, pp. 815-826, April 2019. (ArXiv: 1805.10339)
[12] M. Abdelwahab and C. Busso, "Domain adversarial for acoustic emotion recognition," IEEE/ACM Transactions on Audio, Speech, and Language Processing, vol. 26, no. 12, pp. 2423-2435, December 2018. (ArXiv: 1804.07690)
[13] F. Tao and C. Busso, "Gating neural network for large vocabulary audiovisual speech recognition," IEEE/ACM Transactions on Audio, Speech, and Language Processing, vol. 26, no. 7, pp. 1286-1298, July 2018.
[14] N. Li and C. Busso, "Calibration free, user independent gaze estimation with tensor analysis," Image and Vision Computing, vol. 74, pp. 10-20, June 2018.
[15] N. Sadoughi, Y. Liu, and C. Busso, "Meaningful head movements driven by emotional synthetic speech," Speech Communication, vol. 95, pp. 87?99, December 2017.
[16] J.H.L. Hansen, C. Busso, Y. Zheng, and A. Sathyanarayana, "Driver modeling for detection and assessment of driver distraction: Examples from the UTDrive test bed," IEEE Signal Processing Magazine, vol. 34, no. 4, pp. 130-142, July 2017.
[17] S. Mariooryad and C. Busso, "The cost of dichotomizing continuous labels for binary classification problems: Deriving a Bayesian-optimal classifier," IEEE Transactions on Affective Computing, vol. 8, no. 1, pp. 67-80 January-March 2017.
[18] C. Busso, S. Parthasarathy, A. Burmania, M. AbdelWahab, N. Sadoughi, and E. Mower Provost, "MSP-IMPROV: An acted corpus of dyadic interactions to study emotion perception," IEEE Transactions on Affective Computing, vol. 8, no. 1, pp. 119-130 January-March 2017.
[19] S. Parthasarathy, R. Cowie, and C. Busso, "Using agreement on direction of change to build rank-based emotion classifiers," EEE/ACM Transactions on Audio, Speech, and Language Processing, vol. 24, no. 11, pp. 2108-2121, November 2016.
[20] N. Li and C. Busso, "Detecting drivers' mirror-checking actions and its application to maneuver and secondary task recognition," IEEE Transactions on Intelligent Transportation Systems, vol. 17, no. 4, pp. 980-992, April 2016.
[21] A. Burmania, S. Parthasarathy, and C. Busso, "Increasing the reliability of crowdsourcing evaluations using online quality assessment," IEEE Transactions on Affective Computing, vol. 7, no. 4, pp. 374-388, October-December 2016.
[22] S. Mariooryad and C. Busso, "Facial expression recognition in the presence of speech using blind lexical compensation," IEEE Transactions on Affective Computing, vol. 7, no. 4, pp. 346-359, October-December 2016.
[23] F. Eyben, K. Scherer, B. Schuller, J. Sundberg, E. André, C. Busso, L. Devillers, J. Epps, P. Laukka, S. Narayanan, and K. Truong, "The Geneva minimalistic acoustic parameter set (GeMAPS) for voice research and affective computing," IEEE Transactions on Affective Computing, vol. 7, no. 2, pp. 190-202, April-June 2016.
[24] A. Metallinou, Z. Yang, C.-C. Lee, C. Busso, S. Carnicke, and S. Narayanan, "The USC CreativeIT database of multimodal dyadic interactions: From speech and full body motion capture to continuous emotional annotations," Journal of Language Resources and Evaluation, vol. 50, no. 3, pp. 497-521, September 2016.
[25] E. Mower Provost, Y. Shangguan, and C. Busso, "UMEME: University of Michigan emotional

McGurk effect data set," IEEE Transactions on Affective Computing, vol. 6, no. 4, pp. 395-409, October-December 2015.

[26] C. Poellabauer, N. Yadav, L. Daudet, S. Schneider, C. Busso, and P. Flynn, "Challenges in concussion detection using vocal acoustic biomarkers," IEEE Access, vol. 3, pp. 1143-1160, August 2015.

[27] S. Mariooryad and C. Busso, "Correcting time-continuous emotional labels by modeling the reaction lag of evaluators," IEEE Transactions on Affective Computing, vol. 6, no. 2, pp. 97-108, April-June 2015, **Special Issue Best of ACII 2013**.

[28] N. Li and C. Busso, "Predicting perceived visual and cognitive distractions of drivers with multimodal features," IEEE Transactions on Intelligent Transportation Systems, vol. 16, no. 1, pp. 51-65, February 2015.

[29] S. Mariooryad and C. Busso, "Compensating for speaker or lexical variabilities in speech for emotion recognition," Speech Communication, vol. 57, pp. 1-12, February 2014.

[30] J.P. Arias, C. Busso, and N.B. Yoma, "Shape-based modeling of the fundamental frequency contour for emotion detection in speech," Computer Speech and Language, vol. 28, no. 1, pp. 278-294, January 2014.

[31] C. Busso, S. Mariooryad, A. Metallinou, and S. Narayanan, "Iterative feature normalization scheme for automatic emotion detection from speech," IEEE Transactions on Affective Computing, vol. 4, no. 4, pp. 386-397, October-December 2013.

[32] S. Mariooryad and C. Busso, "Exploring cross-modality affective reactions for audiovisual emotion recognition," IEEE Transactions on Affective Computing, vol. 4, no. 2, pp. 183-196, April-June 2013.

[33] N. Li, J.J. Jain, and C. Busso, "Modeling of driver behavior in real world scenarios using multiple noninvasive sensors," IEEE Transactions on Multimedia, vol. 15, no. 5, pp. 1213-1225, August 2013.

[34] S. Mariooryad and C. Busso, "Generating human-like behaviors using joint, speech-driven models for conversational agents," IEEE Transactions on Audio, Speech and Language Processing, vol. 20, no. 8, pp. 2329-2340, October 2012.

[35] C.-C. Lee, E. Mower, C. Busso, S. Lee, and S. Narayanan, "Emotion Recognition Using a Hierarchical Binary Decision Tree Approach," Speech Communication, vol. 53, no. 9-10, pp. 1162-1171, November-December 2011.

[36] C. Busso, S. Lee, and S.S. Narayanan, "Analysis of emotionally salient aspects of fundamental frequency for emotion detection," IEEE Transactions on Audio, Speech and Language Processing, vol. 17, no. 4, pp. 582-596, May 2009.

[37] C. Busso, M. Bulut, C.C. Lee, A. Kazemzadeh, E. Mower, S. Kim, J.N. Chang, S. Lee, and S.S. Narayanan, "IEMOCAP: Interactive emotional dyadic motion capture database," Journal of Language Resources and Evaluation, vol. 42, no. 4, pp. 335-359, December 2008.

[38] C. Busso and S. Narayanan, "Interrelation between speech and facial gestures in emotional utterances: a single subject study," IEEE Transactions on Audio, Speech and Language Processing, vol. 15, no. 8, pp. 2331-2347, November 2007.

[39] C. Busso, Z. Deng, M. Grimm, U. Neumann, and S. Narayanan, "Rigid head motion in expressive speech animation: Analysis and synthesis," IEEE Transactions on Audio, Speech and Language Processing, vol. 15, no. 3, pp. 1075-1086, March 2007.

[40] C. Busso, Z. Deng, U. Neumann, and S.S. Narayanan, "Natural head motion synthesis driven by acoustic prosodic features," Computer Animation and Virtual Worlds, vol. 16, no. 3-4, pp. 283-290, July 2005.

[41] N.B. Yoma, C. Molina, J. Silva, and C. Busso, "Modeling, estimating, and compensating low-bit rate coding distortion in speech recognition," IEEE Transactions on Audio, Speech and Language Processing, vol. 14, no. 1, pp. 246-255, January 2006.

[42] N.B. Yoma, C. Busso, and I. Soto, "Packet-loss modelling in IP networks with state-duration constraints," Communications, IEE Proceedings, vol. 152, no. 1, pp. 1-5, Feb 2005.

[43] N.B. Yoma, J. Hood, and C. Busso, "A real-time protocol for the internet based on the least mean square algorithm," Transactions on Multimedia, IEEE, vol. 6, no. 1, pp. 174-184, Feb 2004.

[44] N.B. Yoma, J. Silva, C. Busso, and I. Brito, "Compensating additive noise and CS-CELP distortion in speech recognition using stochastic weighted Viterbi algorithm," Electronics Letters, IEE, vol. 39, no. 4, pp. 409-411, Feb 2003.

Book chapters

[1] S. Jha and C. Busso, "Head pose as an indicator of drivers' visual attention," in Vehicles, Drivers, and Safety, H. Abut, J.H.L. Hansen, G. Scmidt, and K. Takeda, Eds., Intelligent Vehicles and Transportation: Volume 2. DeGruyter, 2019.

[2] N. Li and C. Busso, "Driver mirror-checking action detection," in DSP for In-Vehicle Systems and Safety, H. Abut, J.H.L. Hansen, G. Schmidt, K. Takeda, and H. Ko, Eds., Intelligent Vehicles and Transportation. DeGruyter, July 2017.

[3] N. Sadoughi and C. Busso, "Head motion generation," in Handbook of Human Motion, B. Müller, S.I. Wolf, G.-P. Brueggemann, Z. Deng, A. McIntosh, F. Miller, and W. Scott Selbie, Eds., pp. 1-25. Springer International Publishing, January 2017.

[4] C.-C. Lee, J. Kim, A. Metallinou, C. Busso, S. Lee, and S.S. Narayanan, "Computational speech processing methods in affective computing: From scientific inquiry to engineering applications," in Handbook of Affective Computing, R. Calvo, S. D'Mello, J. Gratch, and A. Kappas, Eds. Oxford University Press. To appear 2014.

[5] N. Li and C. Busso, "Using perceptual evaluation to quantify cognitive and visual driver distractions," in Smart Mobile In-Vehicle Systems – Next Generation Advancements, G. Schmidt, H. Abut, K. Takeda, and J. H. L. Hansen, Eds., pp. 183-207. Springer, New York, NY, USA, January 2014.

[6] C. Busso, M. Bulut, and S.S. Narayanan, "Toward effective automatic speech emotion recognition systems," in Social emotions in nature and artifact: emotions in human and human-computer interaction, S. Marsella J. Gratch, Ed. pp. 110-127. Oxford University Press, New York, NY, USA, November 2013.

[7] C. Busso and J. Jain, "Advances in multimodal tracking of driver distraction," in DSP for In-Vehicle Systems & Safety, J. Hansen, P. Boyraz, K. Takeda, and H. Abut, Eds., p. In Press. Springer, New York, NY, USA, 2011.

[8] C. Busso, M. Bulut, S. Lee, and S.S. Narayanan, "Fundamental frequency analysis for speech emotion processing," in The Role of Prosody in Affective Speech, Sylvie Hancil, Ed., pp. 309-337. Peter Lang Publishing Group, Berlin, Germany, July 2009.

[9] C. Busso, Z. Deng, U. Neumann, and S.S. Narayanan, "Learning expressive human-like head motion sequences from speech," in Data-Driven 3D Facial Animations, Z. Deng and U. Neumann, Eds., pp. 113-131. Springer-Verlag London Ltd, Surrey, United Kingdom, 2007.

Conference Proceedings

[1] A. Vidal, A. Salman, W.-C. Lin, and C. Busso, "MSP-face corpus: A natural audiovisual emotional database," in ACM International Conference on Multimodal Interaction (ICMI 2020), Utrecht, The Netherlands, October 2020.

[2] W.-C. Lin and C. Busso, "An efficient temporal modeling approach for speech emotion recognition," in Interspeech 2020, Shanghai, China, October 2020.

[3] K. Sridhar and C. Busso, "Ensemble of students taught by probabilistic teachers to improve speech emotion recognition," in Interspeech 2020, Shanghai, China, October 2020.

[4] L. Martinez-Lucas, M. Abdelwahab, and C. Busso, "The MSP-conversation corpus," in Interspeech 2020, Shanghai, China, October 2020.

[5] A. N. Salman and C. Busso, "Style extractor for facial expression recognition in the presence of speech," in IEEE International Conference on Image Processing (ICIP 2020), Abu Dhabi, United Arab Emirates (UAE), October 2020.

[6] Y. Qiu, T. Misu, and C. Busso, "Use of triplet loss function to improve driving anomaly detection using conditional generative adversarial network," in Intelligent Transportation Systems Conference (ITSC 2020), Rhodes, Greece, September 2020.

[7] T. Hu, S. Jha, and C. Busso, "Robust driver head pose estimation in naturalistic conditions

from point-cloud data," in IEEE Intelligent Vehicles Symposium (IV2020), Las Vegas, NV USA, October 2020.

[8] A.N. Salman and C. Busso, "Dynamic versus static facial expressions in the presence of speech," in IEEE International Conference on Automatic Face and Gesture Recognition (FG 2020), Buenos Aires, Argentina, May 2020.

[9] K. Sridhar and C. Busso, "Modeling uncertainty in predicting emotional attributes from spontaneous speech" in IEEE international conference on acoustics, speech and signal processing (ICASSP 2020), Barcelona, Spain, May 2020.

[10] Y. Qiu, T. Misu, and C. Busso, "Analysis of the relationship between physiological signals and vehicle maneuvers during a naturalistic driving study," in Intelligent Transportation Systems Conference (ITSC 2019), Auckland, New Zealand, October 2019.

[11] Y. Qiu, T. Misu, and C. Busso, "Driving anomaly detection with conditional generative adversarial network using physiological and can-bus data," in ACM International Conference on Multimodal Interaction (ICMI 2019), Suzhou, Jiangsu, China, October 2019.

[12] K. Sridhar and C. Busso, "Speech emotion recognition with a reject option," in Interspeech 2019, Graz, Austria, September 2019.

[13] M. Abdelwahab and C. Busso, "Active learning for speech emotion recognition using deep neural network," in International Conference on Affective Computing and Intelligent Interaction (ACII 2019), Cambridge, UK, September 2019.

[14] M. Bancroft, R. Lotfian, J. Hansen, and C. Busso, "Exploring the intersection between speaker verification and emotion recognition," in International Workshop on Social & Emotion AI for Industry (SEAIxI), Cambridge, UK, September 2019.

[15] J. Harvill, M. AbdelWahab, R. Lotfian, and C. Busso, "Retrieving speech samples with similar emotional content using a triplet loss function," in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2019), Brighton, UK, May 2019.

[16] S. Jha and C. Busso, "Estimation of gaze region using two dimensional probabilistic maps constructed using convolutional neural networks," in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2019), Brighton, UK, May 2019.

[17] S. Jha and C. Busso, "Probabilistic estimation of the gaze region of the driver using dense classification," in IEEE International Conference on Intelligent Transportation (ITSC 2018), Maui, HI, USA, November 2018.

[18] S. Parthasarathy and C. Busso, "Ladder networks for emotion recognition: Using unsupervised auxiliary tasks to improve predictions of emotional attributes," in Interspeech 2018, Hyderabad, India, September 2018. (ArXiv:1804.10816)

[19] F. Tao and C. Busso, "Audiovisual speech activity detection with advanced long short-term memory," in Interspeech 2018, Hyderabad, India, September 2018.

[20] K. Sridhar, S. Parthasarathy, and C. Busso, "Role of regularization in the prediction of valence from speech," in Interspeech 2018, Hyderabad, India, September 2018.

[21] S. Parthasarathy and C. Busso, "Preference-learning with qualitative agreement for sentence level emotional annotations," in Interspeech 2018, Hyderabad, India, September 2018.

[22] R. Lotfian and C. Busso, "Predicting categorical emotions by jointly learning primary and secondary emotions through multitask learning," in Interspeech 2018, Hyderabad, India, September 2018.

[23] F. Tao and C. Busso, "Aligning audiovisual features for audiovisual speech recognition," in IEEE International Conference on Multimedia and Expo (ICME 2018), San Diego, CA, USA, July 2018.

[24] S. Jha and C. Busso, "Fi-Cap: Robust framework to benchmark head pose estimation in challenging environments," in IEEE International Conference on Multimedia and Expo (ICME 2018), San Diego, CA, USA, July 2018.

[25] N. Sadoughi and C. Busso, "Expressive speech-driven lip movements with multitask learning," in IEEE Conference on Automatic Face and Gesture Recognition (FG 2018), Xi'an, China, May 2018, pp. 409-415.

[26] M. Abdelwahab and C. Busso, "Study of dense network approaches for speech emotion recognition," in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP

2018), Calgary, AB, Canada, April 2018, pp. 5084-5088.
[27] N. Sadoughi and C. Busso, "Novel realizations of speech-driven head movements with generative adversarial networks," in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2018), Calgary, AB, Canada, April 2018, pp. 6169-6173.
[28] M. Bokshi, F. Tao, C. Busso, and J.H. L. Hansen, "Assessment and classification of singing quality based on audio-visual features," in IEEE Visual Communications and Image Processing (VCIP 2017), St. Petersburg, FL, USA, December 2017.
[29] R. Lotfian and C. Busso, "Formulating emotion perception as a probabilistic model with application to categorical emotion classification," in International Conference on Affective Computing and Intelligent Interaction (ACII 2017), San Antonio, TX, USA, October 2017, pp. 415-420.
[30] S. Parthasarathy and C. Busso, "Predicting speaker recognition reliability by considering emotional content," in International Conference on Affective Computing and Intelligent Interaction (ACII 2017), San Antonio, TX, USA, October 2017, pp. 434-436.
[31] G.N. Yannakakis, R. Cowie, and C. Busso, "The ordinal nature of emotions," in International Conference on Affective Computing and Intelligent Interaction (ACII 2017), San Antonio, TX, USA, October 2017, pp. 248-255.
[32] S. Jha and C. Busso, "Probabilistic estimation of the driver's gaze from head orientation and position," in IEEE International Conference on Intelligent Transportation (ITSC), Yokohama, Japan, October 2017, pp. 1630-1635.
[33] S. Jha and C. Busso, "Challenges in head pose estimation of drivers in naturalistic recordings using existing tools," in IEEE International Conference on Intelligent Transportation (ITSC), Yokohama, Japan, October 2017, pp. 1624-1629.
[34] N. Sadoughi and C. Busso, "Joint learning of speech-driven facial motion with bidirectional long-short term memory," in International Conference on Intelligent Virtual Agents (IVA 2017), J. Beskow, C. Peters, G. Castellano, C. O'Sullivan, I. Leite, S. Kopp, Eds., vol. 10498 of Lecture Notes in Computer Science, pp. 389-402. Springer Berlin Heidelberg, Stockholm, Sweden, August 2017.
[35] F. Tao and C. Busso, "Bimodal recurrent neural network for audiovisual voice activity detection," in Interspeech 2017, Stockholm, Sweden, August 2017, pp. 1938?1942.
[36] S. Parthasarathy and C. Busso, "Jointly predicting arousal, valence and dominance with multi-task learning," in Interspeech 2017, Stockholm, Sweden, August 2017, pp. 1103-1107. **Nominated for Best Student Paper at Interspeech 2017**.
[37] A. Burmania and C. Busso, "A stepwise analysis of aggregated crowdsourced labels describing multimodal emotional behaviors," in Interspeech 2017, Stockholm, Sweden, August 2017, pp. 152-157.
[38] M. Abdelwahab and C. Busso, "Incremental adaptation using active learning for acoustic emotion recognition," in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2017), New Orleans, LA, USA, March 2017, pp. 5160-5164.
[39] S. Parthasarathy and R. Lotfian and C. Busso, "Ranking emotional attributes with deep neural networks," in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2017), New Orleans, LA, USA, March 2017, pp. 4995-4999.
[40] M. Abdelwahab and C. Busso, "Ensemble feature selection for domain adaptation in speech emotion recognition," in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2017), New Orleans, LA, USA, March 2017, pp. 5000-5004.
[41] S. Parthasarathy, C. Zhang, J.H.L. Hansen, and C. Busso, "A study of speaker verification performance with expressive speech," in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2017), New Orleans, LA, USA, March 2017, pp. 5540-5544.
[42] S. Jha and C. Busso, "Analyzing the Relationship Between Head Pose and Gaze to Model Driver Visual Attention", in IEEE Conference on Intelligent Transportation Systems (ITSC 2016), Rio de Janeiro, Brazil, November 2016, pp. 2157-2162.
[43] N. Sadoughi and C. Busso, "Head motion generation with synthetic speech: a data driven approach," in Interspeech 2016, San Francisco, CA, USA, September 2016, pp. 52-56. **Nominated for Best Student Paper at Interspeech 2016**.
[44] F. Tao, L. Daudet, C. Poellabauer, S.L. Schneider, and C. Busso, "A portable automatic PA-

TA-KA syllable detection system to derive biomarkers for neurological disorders," in Interspeech 2016, San Francisco, CA, USA, September 2016, pp. 362-366.

[45] F. Tao, J.H. L. Hansen, and C. Busso, "Improving boundary estimation in audiovisual speech activity detection using Bayesian information criterion," in Interspeech 2016, San Francisco, CA, USA, September 2016, pp. 2130-2134.

[46] R. Lotfian and C. Busso, "Retrieving categorical emotions using a probabilistic framework to define preference learning samples," in Interspeech 2016, San Francisco, CA, USA, September 2016, pp. 490-494.

[47] S. Parthasarathy and C. Busso, "Defining emotionally salient regions using qualitative agreement method," in Interspeech 2016, San Francisco, CA, USA, September 2016, pp. 3598-3602.

[48] R. Lotfian and C. Busso, "Practical considerations on the use of preference learning for ranking emotional speech," in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2016), Shanghai, China, March 2016, pp. 5205-5209.

[49] A. Burmania, M. Abdelwahab, and C. Busso, "Tradeoff between quality and quantity of emotional annotations to characterize expressive behaviors," in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2016), Shanghai, China, March 2016, pp. 5190-5194.

[50] A. Jakkam and C. Busso, "A multimodal analysis of synchrony during dyadic interaction using a metric based on sequential pattern mining," in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2016), Shanghai, China, March 2016, pp. 6085-6089.

[51] T. Hasan, M. Abdelwahab, S. Parthasarathy, C. Busso, and Y. Liu, "Automatic composition of broadcast news summaries using rank classifiers trained with acoustic and lexical features," in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2016), Shanghai, China, March 2016, pp. 6080-6084.

[52] N. Sadoughi and C. Busso, "Retrieving target gestures toward speech driven animation with meaningful behaviors," in International conference on Multimodal interaction (ICMI 2015), Seattle, WA, USA, November 2015, pp. 115-122.

[53] A. Iqbal, C. Busso, and N. Gans, "Adjacent vehicle collision warning system using image sensor and inertial measurement unit," in International conference on Multimodal interaction (ICMI 2015), Seattle, WA, USA, November 2015, pp. 291-298.

[54] F. Tao, J. Hansen, and C. Busso, "An unsupervised visual-only voice activity detection approach using temporal orofacial features," in Interspeech 2015, Dresden, Germany, September 2015, pp. 2302-2306.

[55] N. Sadoughi, Y. Liu, and C. Busso, "MSP-AVATAR corpus: Motion capture recordings to study the role of discourse functions in the design of intelligent virtual agents," in 1st International Workshop on Understanding Human Activities through 3D Sensors (UHA3DS 2015), Ljubljana, Slovenia, May 2015, pp. 1-6.

[56] M. Abdelwahab and C. Busso, "Supervised domain adaptation for emotion recognition from speech," in International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2015), Brisbane, Australia, April 2015, pp. 5058-5062.

[57] R. Lotfian and C. Busso, "Emotion recognition using synthetic speech as neutral reference," in International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2015), Brisbane, Australia, April 2015, pp. 4759-4763.

[58] M. Abdelwahab and C. Busso, "Evaluation of syllable rate estimation in expressive speech and its contribution to emotion recognition," in IEEE Spoken Language Technology Workshop (SLT), South Lake Tahoe, CA, USA, December 2014, pp. 472-477.

[59] N. Sadoughi, Y. Liu, and C. Busso, "Speech-driven animation constrained by appropriate discourse functions," in International conference on multimodal interaction (ICMI 2014), Istanbul, Turkey, November 2014, pp. 148-155.

[60] N. Li and C. Busso, "User-independent gaze estimation by exploiting similarity measures in the eye pair appearance eigenspace," in International conference on multimodal interaction (ICMI 2014), Istanbul, Turkey, November 2014, pp. 335-338.

[61] F. Tao and C. Busso, "Lipreading approach for isolated digits recognition under whisper and neutral speech," in Interspeech 2014, Singapore, September 2014, pp. 1154-1158.

[62] S. Mariooryad, R. Lotfian, and C. Busso, "Building a naturalistic emotional speech corpus by

retrieving expressive behaviors from existing speech corpora," in Interspeech 2014, Singapore, September 2014, pp. 238-242.

[63] N. Li and C. Busso, "Evaluating the robustness of an appearance-based gaze estimation method for multimodal interfaces," in International conference on multimodal interaction (ICMI 2013), Sydney, Australia, December 2013, pp. 91-98.

[64] N. Li and C. Busso, "Driver mirror-checking action detection using multi-modal signals," in The 6th Biennial Workshop on Digital Signal Processing for In-Vehicle Systems, Seoul, Korea, September-October 2013.

[65] N. Li, A. Sathyanarayana, C. Busso, and J.H.L. Hansen, "Rear-end collision prevention using mobile devices," in The 6th Biennial Workshop on Digital Signal Processing for In-Vehicle Systems, Seoul, Korea, September-October 2013.

[66] S. Mariooryad and C. Busso, "Analysis and compensation of the reaction lag of evaluators in continuous emotional annotations," in Affective Computing and Intelligent Interaction (ACII 2013), Geneva, Switzerland, September 2013, pp. 85-90. **Nominated for Best Student Paper at ACII 2013**.

[67] J.P. Arias, C. Busso, and N.B. Yoma, "Energy and F0 contour modeling with functional data analysis for emotional speech detection," in Interspeech 2013, Lyon, France, August 2013, pp. 2871-2875.

[68] N. Li and C. Busso, "Analysis of facial features of drivers under cognitive and visual distractions," in IEEE International Conference on Multimedia and Expo (ICME 2013), San Jose, CA, USA, July 2013. **Nominated for Best Student Paper at ICME 2013**.

[69] T. Tran, S. Mariooryad, and C. Busso, "Audiovisual corpus to analyze whisper speech," in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2013), Vancouver, BC, Canada, May 2013, pp. 8101-8105.

[70] S. Mariooryad and C. Busso, "Feature and model level compensation of lexical content for facial emotion recognition," in IEEE International Conference on Automatic Face and Gesture Recognition (FG 2013), Shanghai, China, April 2013.

[71] C. Busso and T. Rahman, "Unveiling the acoustic properties that describe the valence dimension," in Interspeech 2012, Portland, OR, USA, September 2012, pp. 1179-1182.

[72] S. Mariooryad and C. Busso, "Factorizing speaker, lexical and emotional variabilities observed in facial expressions," in IEEE International Conference on Image Processing (ICIP 2012), Orlando, FL, USA, September-October 2012, pp. 2605-2608.

[73] D. Tick, T. Rahman, C. Busso, and N. Gans, "Indoor robotic terrain classification via angular velocity based hierarchical classifier selection," in IEEE International Conference on Robotics and Automation (ICRA 2012), St. Paul, MN, USA, May 2012, pp. 3594-3600.

[74] T. Rahman and C. Busso, "A personalized emotion recognition system using an unsupervised feature adaptation scheme," in International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2012), Kyoto, Japan, March 2012, pp. 5117-5120.

[75] J.J. Jain and C. Busso, "Assessment of driver's distraction using perceptual evaluations, self assessment and multimodal feature analysis," in 5th Biennial Workshop on DSP for In-Vehicle Systems, Kiel, Germany, September 2011.

[76] T. Rahman, S. Mariooryad, S. Keshavamurthy, G. Liu, J.H.L. Hansen, and C. Busso, "Detecting sleepiness by fusing classifiers trained with novel acoustic features," in 12th Annual Conference of the International Speech Communication Association (Interspeech-2011), Florence, Italy, August 2011.

[77] X. Fan, C. Busso, and J.H.L. Hansen, "Audio-visual isolated digit recognition for whispered speech," in European Signal Processing Conference (EUSIPCO-2011), Barcelona, Spain, August-September 2011.

[78] J. Jain and C. Busso, "Analysis of driver behaviors during common tasks using frontal video camera and CAN-Bus information," IEEE International Conference on Multimedia and Expo (ICME 2011), Barcelona, Spain, July 2011. **Hewlett Packard Best Paper Award at ICME 2011**.

[79] C. Busso, A. Metallinou, and S. Narayanan, "Iterative feature normalization for emotional speech detection," in International Conference on Acoustics, Speech, and Signal Processing (ICASSP

2011) Prague, Czech Republic, May 2011.

[80] A. Metallinou, C.-C. Lee, C. Busso, S. Carnicke, and S. Narayanan, "The USC CreativeIT database: A multimodal database of theatrical improvisation," in Workshop on Multimodal Corpora: Advances in Capturing, Coding and Analyzing Multimodality (MMC 2010), Valletta, Malta, May 2010.

[81] A. Metallinou, C. Busso, S. Lee, and S. Narayanan, "Visual emotion recognition using compact facial representations and viseme information," in International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2010), Dallas, TX, USA, March 2010.

[82] E. Mower, A. Metallinou, C.-C. Lee, A. Kazemzadeh, C. Busso, S. Lee, and S.S. Narayanan, "Interpreting ambiguous emotional expressions," in International Conference on Affective Computing and Intelligent Interaction (ACII 2009), Amsterdam, The Netherlands, September 2009.

[83] C.-C. Lee, C. Busso, S. Lee, and S.S. Narayanan, "Modeling mutual influence of interlocutor emotion states in dyadic spoken interactions," in Interspeech 2009, Brighton, UK, September 2009, pp. 1983-1986.

[84] C.-C. Lee, E. Mower, C. Busso, S. Lee, and S. Narayanan, "Emotion recognition using a hierarchical binary decision tree approach," in Interspeech 2009, Brighton, UK, September 2009, pp. 320-323.

[85] C. Busso and S.S. Narayanan, "Scripted dialogs versus improvisation: Lessons learned about emotional elicitation techniques from the IEMOCAP database," in Interspeech 2008 - Eurospeech, Brisbane, Australia, September 2008, pp. 1670-1673.

[86] C. Busso and S.S. Narayanan, "The expression and perception of emotions: Comparing assessments of self versus others," in Interspeech 2008 - Eurospeech, Brisbane, Australia, September 2008, pp. 257-260.

[87] C. Busso and S.S. Narayanan, "Recording audio-visual emotional databases from actors: a closer look," in Second International Workshop on Emotion: Corpora for Research on Emotion and Affect, International conference on Language Resources and Evaluation (LREC 2008), Marrakech, Morocco, May 2008, pp. 17-22.

[88] C. Busso and S.S. Narayanan, "Joint analysis of the emotional fingerprint in the face and speech: A single subject study," in International Workshop on Multimedia Signal Processing (MMSP 2007), Chania, Crete, Greece, October 2007, pp. 43-47.

[89] V. Rozgić, C. Busso, P.G. Georgiou, and S. Narayanan, "Multimodal meeting monitoring: Improvements on speaker tracking and segmentation through a modified mixture particle filter," in International Workshop on Multimedia Signal Processing (MMSP 2007), Chania, Crete, Greece, October 2007, pp. 60-65.

[90] C. Busso, S. Lee, and S.S. Narayanan, "Using neutral speech models for emotional speech analysis," in Interspeech 2007 - Eurospeech, Antwerp, Belgium, August 2007, pp. 2225-2228.

[91] C. Busso, P.G. Georgiou, and S. Narayanan, "Realtime monitoring of participants interaction in a meeting using audio-visual sensors," in International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2007), Honolulu, HI, USA, April 2007, vol. 2, pp. 685-688.

[92] C. Busso and S.S. Narayanan, "Interplay between linguistic and affective goals in facial expression during emotional utterances," in 7th International Seminar on Speech Production (ISSP 2006), Ubatuba-SP, Brazil, December 2006, pp. 549-556.

[93] M. Bulut, C. Busso, S. Yildirim, A. Kazemzadeh, C.M. Lee, S. Lee, and S. Narayanan, "Investigating the role of phoneme-level modifications in emotional speech resynthesis," in 9th European Conference on Speech Communication and Technology (Interspeech2005 - Eurospeech), Lisbon, Portugal, September 2005, pp. 801-804.

[94] C. Busso, S. Hernanz, C.W. Chu, S. Kwon, S. Lee, P.G. Georgiou, I. Cohen, and S. Narayanan, "Smart Room: Participant and speaker localization and identification," in International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2005), Philadelphia, PA, USA, March 2005, vol. 2, pp. 1117-1120.

[95] N.B. Yoma, C. Busso, J. Inzunza, and F. Huenupan, "Packet-loss modeling with state duration constraints and VoIP based on perceptual quality maximization," in 10th International Conference on Speech and Computer (SPECOM 2005), Patras, Greece, October 2005, pp. 757-760.

[96] C. Busso, Z. Deng, S. Yildirim, M. Bulut, C.M. Lee, A. Kazemzadeh, S. Lee, U. Neumann, and S.

Narayanan, "Analysis of emotion recognition using facial expressions, speech and multimodal information," in Sixth International Conference on Multimodal Interfaces ICMI 2004, State College, PA, October 2004, pp. 205-211, ACM Press. **ICMI Ten-Year Technical Impact Award**.

[97] Z. Deng, C. Busso, S. Narayanan, and U. Neumann, "Audio-based head motion synthesis for avatar-based telepresence systems," in ACM SIGMM 2004 Workshop on Effective Telepresence (ETP 2004), New York, NY, October 2004, pp. 24-30, ACM Press.

[98] C.M. Lee, S. Yildirim, M. Bulut, A. Kazemzadeh, C. Busso, Z. Deng, S. Lee, and S.S. Narayanan, "Emotion recognition based on phoneme classes," in 8th International Conference on Spoken Language Processing (ICSLP 04), Jeju Island, Korea, October 2004, pp. 889-892.

[99] S. Yildirim, M. Bulut, C.M. Lee, A. Kazemzadeh, C. Busso, Z. Deng, S. Lee, and S.S. Narayanan, "An acoustic study of emotions expressed in speech," in 8th International Conference on Spoken Language Processing (ICSLP 04), Jeju Island, Korea, October 2004, pp. 2193-2196.

[100] N.B. Yoma, J. Hood, and C. Busso, "An UDP-based real time protocol for the internet," in International Telecommunications Symposium(ITS 2002), Natal, Brazil, September 2002.

Abstracts

[1] S. Jha and C. Busso, "Analysis of head pose as an indicator of drivers' visual attention," in 7th Biennial Workshop on DSP for In-Vehicle Systems and Safety, Berkeley, CA, USA, October 2015.

[2] C.M. Lee, S. Yildirim, M. Bulut, C. Busso, A. Kazamzadeh, S. Lee, and S. Narayanan, "Effects of emotion on different phoneme classes," J. Acoust. Soc. Am., vol. 116, pp. 2481, 2004.

[3] M. Bulut, S. Yildirim, S. Lee, C.M. Lee, C. Busso, A. Kazamzadeh, and S. Narayanan, "Emotion to emotion speech conversion in phoneme level," J. Acoust. Soc. Am., vol. 116, pp. 2481, 2004.

[4] S. Yildirim, M. Bulut, C. Busso, C.M. Lee, A. Kazamzadeh, S. Lee, and S. Narayanan, "Study of acoustic correlates associate with emotional speech," J. Acoust. Soc. Am., vol. 116, pp. 2481, 2004.

ArXiv Papers

[1] V. Sethu, E. Mower Provost, J. Epps, C. Busso, N. Cummins, and S. Narayanan "The ambiguous world of emotion representation," ArXiv e-prints 1909.00360, pp. 1-19, September 2019.

[2] S. Parthasarathy and C. Busso, "Semi-Supervised Speech Emotion Recognition with Ladder Networks," ArXiv e-prints 1905.02921, pp. 1-13, May 2019.

[3] S.-F. Chang, A. Hauptmann, L.-P. Morency, S. Antani, D. Bulterman, C. Busso, J. Chai, J. Hirschberg, R. Jain, K. Mayer-Patel, R. Meth, R. Mooney, K. Nahrstedt, S. Narayanan, P. Natarajan, S. Oviatt, B. Prabhakaran, A. Smeulders, H. Sundaram, Z. Zhang, and M. Zhou, "Report of 2017 NSF workshop on multimedia challenges, opportunities and research roadmaps," ArXiv e-prints (arXiv:1908.02308), pp. 1-150, August 2019.

Invited talks & presentations

Busso, Carlos (2020). "Multimodal Assessment of Visual Attention and Driving Anomalies", Virtual Lunch & Learn seminar at Affectiva (Hosted by Dr. Taniya Mishra, 4/28/2020).

Busso, Carlos (2020). "Multimodal Emotion Analysis and Synthesis: From audiovisual interplay to contextual information in dyadic human interaction", Keynote at Multimodal Modeling (MMM 2020), Deajeon, South Korea (Hosted by Dr. Yong Man Ro, 1/8/2020).

Busso, Carlos (2019). "Driving Anomaly Detection With Conditional Generative Adversarial Network", Seminar at Texas Analog Center of Excellence at UT Dallas (Hosted by Ken O, 11/20/2019).

Busso, Carlos, Vidhyasaharan Sethu, Shrikanth Narayanan (2019). "The Ambiguous World of Emotion Representation", Tutorial at the International Conference on Affective Computing and Intelligent Interaction ACII 2019, Cambridge, UK (9/3/2019).

Busso, Carlos (2019). "Tracking the Behavior and Visual Attention of a Driver Using Multimodal Sensors in Naturalistic Scenarios", eSeminar hosted by Texas Analog Center of Excellence (Hosted by Ken O, 6/21/2019).

Busso, Carlos (2018). "Generating data-driven human-like behaviors for conversational agents",

Keynote at International Workshop on Multimodal Analyses enabling Artificial Agents in Human-Machine Interaction (MA3HMI 2018) (Hosted by Ronald Böck, 10/16/2018)

Busso, Carlos (2018). "Probabilistic estimation of visual attention", Seminar at Texas Analog Center of Excellence (TxACE) at UT Dallas (Hosted by Ken O, 10/10/2018)

Busso, Carlos (2018). "Deep Learning Architectures for Audiovisual Speech Recognition", Keynote at Multimodal HCI Workshop at Northwestern Polytechnical University (NPU) (Hosted by Dongmei Jiang, 05/14/2018)

Busso, Carlos (2018). "Novel Formulations and Deep Learning Structures for Robust Speech Emotion Recognition Systems", Keynote at Apple (Hosted by Vikramjit Mitra, 05/04/2018)

Busso, Carlos (2018). "Novel Formulations for Speech Emotion Recognition", Keynote at Cogito Presents: Behavioral Signal Processing and Machine Learning (Hosted by John Kane, 03/29/2018).

Busso, Carlos (2018). "Tracking Distractions and Visual Attention Using Multiple Noninvasive Sensors", Seminar at Texas Instrument (Hosted by Aish Dubey, 02/14/2018).

Busso, Carlos (2017). "Speech emotion recognition: are we there yet?", Keynote at 2nd International Workshop on Automatic Sentiment Analysis in the Wild (WASA 2017) (10/23/2017).

Busso, Carlos (2017). "Speech emotion recognition: Robustness and generalization", Seminar at Alibaba (Hosted by Gang Liu, 07/18/2017).

Busso, Carlos (2016). "Challenges in robust speech emotion recognition in mismatched conditions", Visit at the Matsuyama lab at Kyoto University, Tokyo, Japon (hosted by Dr. Hiroaki Kawashim and Rodrigo Verschae, 11/17/2016)

Busso, Carlos (2016). "Robust speech emotion recognition in mismatched conditions", Statistical Machine Learning Seminar, Richardson, Texas, USA (hosted by Dr. Richard Golden, 04/15/2016).

Busso, Carlos (2016). "Emotion in Group", Catalyzing Research in Multimodal Learning Analytics Workshop, Bloomington, Indiana (hosted by Dr. Marcelo Worsley and Dr. Cindy Hmelo-Silver, 02/21/2016).

Busso, Carlos (2016). "Multimodal Signal Processing: Current Research Directions", UTSW/UTD Medical Simulation and Training Workshop, Richardson, Texas, USA (hosted by Dr. Ann Majewicz, 01/22/2016).

Busso, Carlos (2015). "Feature normalization and model adaptation for robust speech emotion recognition in mismatched conditions", Seminar at The University of New South Wales, Advanced Signal Processing Workshop, Sydney, Australia (hosted by Dr. Julien Epps, 04/17/2015).

Busso, Carlos (2014). "Multimodal Analysis, Recognition and Synthesis of Expressive Human Behaviors", Seminar at Koç Üniversitesi, Istanbul, Turkey (hosted by Dr. Engin Erzin, 11/11/2014).

Carlos Busso (2014). "Tracking Driver Distractions Using Multiple Noninvasive Sensors", Seminar at Philips, Eindhoven, The Netherlands (hosted by Dr. Murtaza Bulut, 11/10/2014).

Provost, Emily Mower and Carlos Busso (2014). "Computational Models for Audiovisual Emotion Perception", TUTORIAL at INTERSPEECH 2014, Singapore (09/14/2014).

Busso, Carlos (2014). "Using Neutral Models and Contextual Information to Improve Speech Emotion Recognition Systems", Professorial talk at Columbia University, New York, NY 10027 (hosted by Dr. Julia Hirschberg, 07/02/2014).

Busso, Carlos (2014). "Multimodal Analysis, Recognition and Synthesis of Expressive Human Behaviors", VASC Seminar at Carnegie Mellon University, Pittsburgh, PA 15213 (hosted by Dr. Kris Kitani, 06/30/2014).

Busso, Carlos (2014). "Compensation of Lexical and Speaker variability for Emotional Recognition", Seminar at The University of Pennsylvania at Philadelphia, PA 19104, USA (hosted by Dr. Ani Nenkova, 01/27/2014).

Busso, Carlos (2013). "Improving the Robustness of Emotional Speech Detection Systems", Seminar at The University of Texas A&M, College Station, TX 77843, USA (hosted by Dr. Ricardo Gutierrez-Osuna, 11/18/2013).

Busso, Carlos (2013). "Improving the Robustness of Emotional Speech Detection Systems", Seminar at The University of Texas at San Antonio, San Antonio, TX 78249, USA (hosted by Dr. Ram Krishnan, 11/01/2013).

Busso, Carlos (2013). "Modeling of Driver Behavior in Real World Scenarios Using Multiple Non-invasive Sensors", AI Seminar at The University of Michigan, Ann Arbor, MI 48109, USA (hosted by Dr. Emily Mower Provost, 10/22/2013).

Busso, Carlos (2013). "Keep Your Eyes on the Road, Your Hands Upon the Wheel", Tech on Tap Seminars, Trinity Hall Irish Pub & Restaurant, Dallas TX 75206, USA (hosted by Beth Keithly, 03/06/2013).

Busso, Carlos (2012). "Improving the Robustness of Emotional Speech Detection Systems", Seminar at The University of Texas at Arlington, Arlington TX 76019, USA (hosted by Dr. Ioannis Schizas, 04/06/2012).

Busso, Carlos (2011). "Tracking expressive nonverbal behavior: a multimodal approach", FLASH (Friday Seminars in Speech, Language and Hearing) Brown Bag Series at the Callier Center, The University of Texas at Dallas, Dallas TX 75235, USA (hosted by Dr. William F. Katz, 10/21/2011).

Busso, Carlos (2011). "Recognition and synthesis of human behaviors: A multimodal approach", Seminar at Texas Instrument, Dallas, TX, USA (hosted by Dr. Branislav Kisacanin, 04/08/2011).

Busso, Carlos (2011). "Recognition and synthesis of human behaviors: A multimodal approach", Dallas Chapter of IEEE Signal Processing Society Seminar, The University of Texas at Dallas, Richardson, TX, USA (hosted by Dr. Nasser Kehtarnavaz, 02/23/2011).

Busso, Carlos, John H.L. Hansen (2010). "Advances in Human Assessment: (i) Tracking Nonverbal Behavior (ii) Speaker Variability for Speaker ID", 2010 Fall Seminar Series, The Center for Language and Speech Processing (CLSP) at Johns Hopkins University, Baltimore, MD, USA (hosted by Dr. Hynek Hermansky, 10/26/2010).

Busso, Carlos (2009). "New Directions in the Automatic Recognition of Emotion in Speech". Seminar at The University of Texas at El Paso, El Paso, TX, USA (hosted by Dr. David Novick and Nigel Ward, 10/21/2009).

Busso, Carlos (2009). "New directions on automatic emotion speech recognition", Seminar at The University of North Texas, Denton, TX, USA New directions on automatic emotion speech recognition (hosted by Dr. Oscar Garcia, 10/15/2009).

Busso, Carlos (2009). "Multimodal Analysis of Expressive Human Communication: Speech and gesture interplay", Seminar at The University of Texas at Dallas, Richardson, TX, USA (hosted by Dr. John Hansen and Hlaing Minn, 03/24/2009).

Busso, Carlos (2009). "Multimodal Processing of Human Behavior in Intelligent Instrumented Spaces: A Focus on Expressive Human Communication", Information Science Institute (ISI) Natural Language Seminar talks, Marina del Rey, CA, USA (hosted by Sujith Ravi, 02/27/2009)

Busso, Carlos (2009). "Multimodal Processing of Human Behavior in Intelligent Instrumented Spaces: A Focus on Expressive Human Communication" Seminar at Nokia, Santa Monica, CA, USA (hosted by Dr. Lance Williams, 01/08/2009).

Busso, Carlos (2008). "Multimodal Processing of Human Behavior in Intelligent Instrumented Spaces: A Focus on Expressive Human Communication" Microsoft, Redmond, WA, USA. (hosted by Dr. Zhengyou Zhang, 05/05/2008).

GRANTS & CONTRACTS:

2020-2023 National Science Foundation (NSF) - CNS: 2016719; $1,075,386
"CCRI: New: Creating the largest speech emotional database by leveraging existing naturalistic recordings"
PI: Carlos Busso
September 1, 2020 - August 31, 2023

2020-2023 National Science Foundation (NSF) - IIP: 1950249; $80,000
"STTR Phase I:A Self-Learning Approach for In-Vehicle Driver and Passenger Monitoring Through a Sensor Fusion Approach"
PI: Rajesh Narasimha, Senior personal: Naofal Al-dhahir and Carlos Busso
March 3, 2020 - November 30, 2020

2019-2020 Honda Research Institute (HRI) ; $97,227
"Driving anomaly detection based on multi-modal fusion of driver behavioral signals and external scene information"
PI: Carlos Busso
February 1, 2019 - May 21, 2021

2020-2021 NEC Foundation Research Grant ; $50,000
"Multimodal engagement analysis of students for online education"
PI: Carlos Busso
February 15, 2020 - February 14, 2021

2019-2023 National Institute of Health (NIH)- R01:1R01MH122367-01 ; $189,813
"SCH: INT: Collaborative Research: Passive Sensing of Social Isolation and Loneliness: a Digital Phenotyping Approach"
PI: Carlos Busso (UTD sub-contract, in collaboration with with Dr. Daniel Fulford (PI) at BU, David Gard at UCSC, Jukka-Pekka Onnela at Harvard)
September 23, 2019 - August 31, 2023

2018-2019 Honda Research Institute (HRI) ; $86,079.64
"Driver anomaly detection based on driver/vehicle sensor signals"
PI: Carlos Busso
September 17, 2018 - September 13, 2019

2018-2019 NEC Foundation Research Grant ; $50,000
"Tracking facial emotional variations on videos: separating lexical and emotional information with novel deep learning solutions"
PI: Carlos Busso
September 1, 2018 - August 30, 2019

2018-2020 National Science Foundation (NSF) - CNS: 1823166; $99,390
"CRI: CI-P: Creating the Largest Speech Emotional Database by Leveraging Existing Naturalistic Recordings"
PI: Carlos Busso
REU supplement, 2019-2020 ($8,000)
REU supplement, 2018-2019 ($8,000)
September 1, 2018 - February 28, 2021

2018-2023 National Institute of Health (NIH)- R01: ; $146,072
"Endogenous Fluorescence Lifetime Endoscopy for Early Detection of Oral Cancer/dysplasia"
PI: Carlos Busso (UTD sub-contract, in collaboration with Dr. Javier Jo at TAMU)
April 1, 2018 - March 31, 2023

2018-2020 SRC/Texas Analog Center of Excellence: Task 2810.014 ; $180,000
"Deep Learning Solutions for ADAS: From Algorithms to Real-World Driving Evaluations"
PI: Carlos Busso, co-PI: Naofal Al-dhahir
January 1, 2018 - December 31, 2020

2017-2020 National Science Foundation (NSF) - IIS: 1718944; $494,116
"RI: Small: Integrative, Semantic-Aware, Speech-Driven Models for Believable Conversational Agents with Meaningful Behaviors"
PI: Carlos Busso
REU supplement, 2019-2020 ($8,000)
REU supplement, 2018-2019 ($8,000)
REU supplement, 2017-2018 ($8,000)
September 1, 2017 - August 31, 2021

2017-2018 SRI / The Combating Terrorism Technical Support Office (CTTSO) ; $239,951
"Intrinsic Voice Variability Factors and Speaker Recognition: Detection and Assessment"
PI: John H.L. Hansen , Co-PI: Carlos Busso
January 2, 2018 - March 30, 2019

2017-2018 Biometric Center of Excellence (BCOE) ; $290,189
"Automatic Audio Stream Processing to Address Diverse Mismatch Scenarios for Speaker Verification"
PI: John H.L. Hansen , Co-PI: Carlos Busso
June 1, 2017 - November 30, 2018

2016-2017 Biometric Center of Excellence (BCOE) ; $202,264
"Speaker Variability - Advancements in Detection and Knowledge Integration of Emotion, Task Stress, Vocal Effort for Speaker Verification in Naturalistic Environments"
PI: John H.L. Hansen , Co-PI: Carlos Busso
March 1, 2016 - November 31, 2017

2015-2020 National Science Foundation (NSF) - IIS: 1453781; $495,853
"CAREER: Advanced Knowledge Extraction of Affective Behaviors During Natural Human Interaction"
PI: Carlos Busso
REU supplement, 2019-2020 ($8,000)
REU supplement, 2018-2019 ($8,000)
REU supplement, 2017-2018 ($8,000)
REU supplement, 2016-2017 ($8,000)
REU supplement, 2015-2016 ($8,000)
September 1, 2015 - August 31, 2021

2016-2017 Microsoft Research; $30,000
"Support for Data Collection"
PI: Carlos Busso
March 1, 2016 - February 28, 2017

2015-2016 National Science Foundation (NSF) - IIS: 1540944; $11,040
"FG 2015 Doctoral Consortium: Travel Support for Graduate Students"
PI: Carlos Busso
April 1, 2015 - March 31, 2016

2014-2016 Robert Bosch LLC; $30,000
"Detecting Emotionally Salient Speech Segments for Speech Summarization"
PI: Carlos Busso
September 1, 2014 - May 30, 2015

2014-2017 National Science Foundation (NSF) - IIS: 1450349; $19,732
"EAGER: Feasibility of Using Speech as Biomarker for Concussions"
PI: Carlos Busso (UTD sub-contract, in collaboration with Dr. Christian Poellabauer, PI at University of Notre Dame)
September 1, 2014 - August 31, 2017

2013-2014 Samsung Telecommunications America, LLC; $120,146
"SRA: Farsi Speech Recognition Project"
co-PI: Carlos Busso (PI: John Hansen)
January 1, 2014 - December 31, 2014

2013-2016 National Science Foundation (NSF) - IIS: 1352950; $82,552
"EAGER: Investigating the Role of Discourse Context in Speech-Driven Facial Animations"
PI: Yang Liu, co-PI: Carlos Busso
September 1, 2013 - February 28, 2016

2013-2016 National Science Foundation (NSF) - IIS: 1346655; $17,840
"WORKSHOP: Doctoral Consortium for the International Conference on Multimodal Interaction (ICMI 2013)"
PI: Carlos Busso
July 1, 2013 - June 30, 2016

2013-2014 National Science Foundation (NSF) - IIS: 1329659; $59,338
"EAGER: Exploring the Use of Synthetic Speech as Reference Model to Detect Salient Emotional Segments in Speech"
PI: Carlos Busso
March 15, 2013 - August 31, 2014

2012-2014 Samsung Telecommunications America, LLC; $441,898
"Advancements in Automatic Speech Recognition: Corpus Development, Model Training, Dialect/Accent, and Hands-Free Interaction"
co-PI: Carlos Busso (PI: John Hansen)
November 1, 2012 - December 31, 2014

2012-2016 National Science Foundation (NSF) - IIS: 1217104; $201,573
"RI: Small: Collaborative Research:Exploring Audiovisual Emotion Perception using Data-Driven Computational Modeling"
PI: Carlos Busso (Emily Mower Provost, University of Michigan, Ann Arbor, MI)
September 1, 2012 - August 31, 2016

2012-2014 National Science Foundation (NSF) - IIS:1249319; $14,587
"WORKSHOP: Doctoral Consortium for 14th International Conference on Multimodal Interaction"
PI: Carlos Busso
August 1, 2012 - July 31, 2014

2011-2012 Samsung Telecommunications America, LLC; $151,745
"Standardization of Advanced User Interface for Mobile Devices"
PI: Carlos Busso
September 15, 2011 - September 14, 2012

GRADUATE ADVISEE:

Current Students:

PhD Students
Sumit Jha ,"In-vehicle Active Safety Systems", August 2016 - present
Kusha Sridhar, "Emotion recognition from speech", August 2017 - present
Andrea Vidal, "Nonverbal behavior analysis", January 2018 - present
Ali N. Salman, "Nonverbal behavior analysis", August 2018 - present
Yuning Qiu, "Detecting anomalies in driving recordings", August 2018 - present
Wei-Cheng Lin, "Speech Emotion Recognition", August 2019 - present
Kayla Caughlin, "Oral cancer detection", August 2020 - present
Lucas Gonalves, "Audiovisual emotion recognition", August 2020 - present
Susmitha Gogineni, "In vehicle safety system", August 2020 - present
Seong-Gyun Leem, "Noisy Speech Processing", August 2020 - present

Undergraduate
Luz Martinez-Lucas, "Emotion recognition", May 2018 - present
Jarrod Luckenbaugh, "Speech analysis in noisy environment", May 2019 - present
Shruthi Subramanium, "Speech Emotion Recognition", April 2020 - present
Isaac Brooks, "In-vehicle Active Safety Systems", April 2020 - present

PhD Students Alumni:

[1] Srinivas Parthasarathy (2015-2019) – Amazon, Sunnyvale, CA
PhD Thesis: "Novel Frameworks for Attribute-Based Speech Emotion Recognition using Time-Continuous Traces and Sentence-Level Annotations"
[2] Mohammed AbdelWahab (2013-2019) –AT&T Labs Research, Bedminster, NJ
PhD Thesis: "Domain Adaptation for Speech Based Emotion Recognition."
[3] Fei Tao (2013-2018) – Uber, San Francisco, CA
PhD Thesis: "Advances in audiovisual speech processing for robust voice activity detection and automatic speech recognition"
[4] Reza Lotfian (2013-2018) – Cogito, Boston, MA
PhD Thesis: "Machine Learning Solutions for Emotional Speech: Exploiting the Information of Individual annotations."
[5] Najmeh Sadoughi (2013-2017) – EMR.AI, San Francisco, CA
PhD Thesis: "Synthesizing Naturalistic and Meaningful Speech-Driven Behaviors."
[6] Nanxiang (Sean) Li (2011-2015) – Honda Research Institute, Mountain View, CA
PhD Thesis: "Modeling of Driver Behavior in Real World Scenarios using Multiple Noninvasive Sensors."
[7] Soroosh Mariooryad (2010-2014) – Google, Mountain View, CA
PhD Thesis: "Improving Robustness of Emotion Recognition Systems: Continuous Emotion Descriptors, Contextual Information and Lexical Compensation."

Visiting Scholars and Post-Doctoral Researcher Alumni:

[1] Yakup Kutlu (2013) – Mustafa Kemal University, Hatay, Turkey
[2] Youngkwon Lim (2011-2012) – Samsung Telecommunications America, Richardson, TX
[3] Juan Pablo Arias (2010-2011) –Adexus, Santiago, Chile

Ms. Students Alumni:

[1] Alec Burmania (2016-2018) – Lennox International, , TX
Ms. Thesis: "Methods and experimental design for collecting emotional labels using crowdsourcing."
[2] Yunjie Zhang (2015-2017) – PhD student at UT Dallas, Richardson, TX
[3] Anil Jakkam (2015-2016) – Knowles Intelligent Audio, Mountain View, CA
Ms. Thesis: "A Multimodal Analysis of Synchrony during Dyadic Interaction Using a Metric Based on Sequential Pattern Mining."

[4] Sumit Jha (2015-2016) – PhD student at UT Dallas, Richardson, TX
Ms. Thesis: "Analysis and Estimation of Driver Visual Attention using Head Position and Orientation in Naturalistic driving Conditions."
[5] Srinivas Parthasarathy (2012-2014) – PhD student at UT Dallas Richardson, TX
Ms. Thesis: "Relation Between Emotion Classification Performance and Evaluator Agreement with Absolute and Relative Descriptors."
[6] Sheldon Dsouza (2012) – Apple, Cupertino, CA
[7] Tauhidur Rahman (2010-2012) – PhD student at Cornell University, Ithaca, NY
Ms. Thesis: "Improving robustness of emotional speech detection system."
[8] Shalini Keshavamurthy (2010-2011) – UtopiaCompression Corp, Los Angeles, CA
[9] Jinesh Jain (2010-2011) – Ford Motors Company, Palo Alto, CA
Ms. Thesis: "Driver Distraction: Multimodal analysis and modeling of driver behavior in real-world scenarios."
[10] Anand Batlagundu (2010) – Qualcomm, San Diego, CA
[11] Somu Palaniappan (2010) – NSN - Nokia Solutions and Networks, Irving Texas
[12] Premkumar Sridhar (2009) – Ericsson Inc, Dallas, TX

Undergraduate Alumni:

[1] Kayla Caughlin (2019-2020)
[2] Tiancheng Hu (2018-2020)
[3] John Harvill (2018-2019)
[4] Elizabeth Higgins (2018-2019)
[5] Asim Gazi (2017-2018)
[6] Dorothy Mantle (2017-2018)
[7] Michelle Bancroft (2016-2018)
[8] Alec Burmania (2012-2016)
[9] Jaejin Cho (2014 - 2015)
[10] Preston Luthy (2015)
[11] Zackary R Lindstrom (2013- 2014)
[12] Tam Tran (2011 - 2013)

CLASSROOM TEACHING:

2020	Fall	EE3302.003	Signals and Systems
2020	Spring	ENGR2300.HON	Linear Algebra for Engineers
2020	Spring	EESC6360.001	Digital Signal Processing I
2019	Fall	EE3302.002	Signals and Systems
2019	Spring	ENGR2300.HON	Linear Algebra for Engineers
2019	Spring	EESC6360.001	Digital Signal Processing I
2018	Fall	EE3302.002	Signals and Systems
2018	Spring	ENGR2300.502	Linear Algebra for Engineers
2018	Spring	EESC6368.001	Multimodal Signal Processing
2017	Fall	ENGR2300.006	Linear Algebra for Engineers
2017	Spring	ENGR2300.002	Linear Algebra for Engineers
2017	Spring	ENGR2300.502	Linear Algebra for Engineers
2016	Fall	EESC6360.502	Digital Signal Processing I
2016	Spring	ENGR2300.002	Linear Algebra for Engineers
2016	Spring	EESC6360.501	Digital Signal Processing I
2015	Fall	EESC6360.502	Digital Signal Processing I
2015	Summer	ENGR2300.0U1	Linear Algebra for Engineers

2015	Spring	EESC6368.001	Multimodal Signal Processing
2015	Spring	ENGR2300.002	Linear Algebra for Engineers
2014	Fall	EESC6360.001	Digital Signal Processing I
2014	Spring	ENGR2300.001	Linear Algebra for Engineers
2014	Spring	ENGR2300.002	Linear Algebra for Engineers
2013	Fall	EESC6349.001	Random Processes
2013	Spring	ENGR2300.001	Linear Algebra for Engineers
2013	Spring	ENGR2300.002	Linear Algebra for Engineers
2012	Fall	EESC6349.001	Random Processes
2012	Summer	ENGR2300.0U1	Linear Algebra for Engineers
2012	Spring	ENGR2300.002	Linear Algebra for Engineers
2012	Spring	EE7V85.501	Special Topics in Signal Proc. - Multimodal Signal Processing
2011	Fall	ENGR2300.003	Linear Algebra for Engineers
2011	Spring	ENGR2300.002	Linear Algebra for Engineers
2010	Fall	ENGR2300.001	Linear Algebra for Engineers
2010	Spring	EE7V85.501	Special Topics in Signal Proc.- Multimodal Signal Processing

Computer Skills

- Languages: C, some experience with C++, HTML and Perl
- Packages: Matlab, HTK, WEKA, SPSS, OpenCV
- Platforms: Window, Unix/Linux, Mac OS.
- Applications: LaTeX, Microsoft Office