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EDUCATION

- Ph.D.** Computer Engineering, North Carolina State University 1995-1998
Minor in Artificial Intelligence
PhD dissertation: Signal Processing and Pattern Recognition for an Electronic Nose
Dissertation advisor: H. Troy Nagle
- M.S.** Computer Engineering, North Carolina State University 1993-1995
MS thesis: Modeling of Ultrasonic Sensors for Self-localization of Mobile Robots
Thesis advisor: Ren C. Luo
- B.S.** Industrial Engineering, Polytechnic University of Madrid (Spain) 1986-1992
Minor in Electronics and Control Systems (Electrical Engineering)

RESEARCH INTERESTS

Speech recognition and synthesis, machine learning. digital health, wearable sensors, chemical sensing, multimodal interfaces.

ACADEMIC EXPERIENCE

- Texas A&M University, College Station, TX**
Professor, Computer Science and Engineering Department 09/12-present
Associate Professor, Computer Science and Engineering Department 09/06-08/12
Assistant Professor, Computer Science Department 07/02-08/06
- University of Edinburgh, Scotland, UK**
Research Fellow (sabbatical leave) 07/09-12/09
- Wright State University, Dayton, OH**
Assistant Professor, Computer Science and Engineering Department 09/98-06/02
- North Carolina State University, Raleigh, NC**
Instructor, Electrical and Computer Engineering Department 06/98-08/98
Research Assistant, Biomedical Instrumentation Laboratory 09/96-05/98
Lecturer, The Graduate School, NCSU 01/97-05/97
Teaching Assistant, Electrical and Computer Engineering Department 01/96-05/96
Research Assistant, Center for Robotics and Intelligent Machines 01/94-12/95
- Nomadic Technologies, Inc., Mountain View, CA**
Research Assistant, Mobile Robotics Group 06/96-08/96

HONORS AND AWARDS

1. TEES Faculty Fellow Award, TAMU College of Engineering 2021
 2. TEES Faculty Fellow Award, TAMU College of Engineering 2018
 3. Dean of Engineering Excellence Award, TAMU College of Engineering 2017
 4. TEES Engineering Genesis Award for Multidisciplinary Research 2017
- 1/23

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| 5. Barbara and Ralph Cox '53 Faculty Fellow, TAMU College of Engineering | 2014 |
| 6. CSE Faculty Service Excellence Award | 2012 |
| 7. Association of Former Students College-Level Teaching Award, TAMU COE | 2009 |
| 8. Barbara and Ralph Cox '53 Faculty Fellow, TAMU College of Engineering | 2009 |
| 9. Tenneco Meritorious Teaching Award, TAMU College of Engineering | 2009 |
| 10. Graduate Faculty Teaching Excellence Award, TAMU Computer Science | 2007 |
| 11. Ramon y Cajal Award, Spain's Ministry of Education and Science | 2005-2010 |
| 12. NSF Faculty Early Career Development (CAREER) Award | 2000-2004 |
| 13. Preparing the Professoriate Fellow, North Carolina State University | 1996-1997 |
| 14. "La Caixa" Scholarship for Post-graduate Study Abroad (Spain) | 1993-1995 |

RESEARCH GRANTS AND CONTRACTS

1. Principal Investigator on TAMU subcontract with Honeywell as Lead, "Anonymous Real-Time Speech," IARPA ARTS program, \$9,130,340.87, 2024-2027 (start date pending).
2. Principal investigator (MPI) with M. McShane (PD/PI) and N.E.P. Deutz (MPI), "Minimally-invasive technology for personalized nutritional monitoring," National Institutes of Health, \$3.7M, Nov 2023 – Oct 2028.
3. Principal investigator on TAMU subcontract, "NSF Convergence Accelerator Track L: An Optoelectronic Nose for Toxic Gas Detection by First Responders," NSF, \$750,000, Feb-Nov 2024.
4. Principal Investigator, "NSF Convergence Accelerator Workshop - Chemical sensing with an olfaction analogue: high-dimensional, bio-inspired sensing and computation", NSF, \$99,988, 2022.
5. Co-Investigator, with A. MacNamara, T. Chaspari, M. Meagher, I. Liberzon and S. Scherr, "Design and Delivery of Personalized, AI-assisted, Accessible, Positive-affect Treatments for Depression," TAMU X Grant, \$1,283,542, September 2021 – August 2024.
6. Principal Investigator, "Feature selection of protein targets for early detection diagnostic of pancreatic cancer," National Science Foundation SECO award with ActivSignal, \$95,406, October 2021- September 2022.
7. Co-Investigator, with G. Cote (PI), D. DeSalvo, S. Mckay and M. Erraguntla, "SenSE: Multimodal noninvasive wearable sensors and machine learning for predicting critical glycemic events," National Science Foundation, \$750,000, September 2020-August 2023.
8. Co-Investigator, with J. Levis (PI) and E. Chukharev-Khudilaynen, "Collaborative Research: Adaptive explicit and implicit feedback in second language pronunciation training," National Science Foundation, \$500,000, September 2020-August 2023.
9. Co-Investigator with J. Mortazavi (PI) and D. Kerr, "SCH: INT: Personalized Models of Nutrition Intake from Continuous Glucose Monitors," National Science Foundation, \$1,198,162, October 2020-September 2024.
10. Principal Investigator, "Sensor data pre-processing and data de-convolution for building algorithms," National Science Foundation SECO award with Applied Biosensors, \$75,000, September 2020-February 2021.
11. Co-Investigator, with Anjel Marie Helms (PI) and Gregory A. Sword, "Signals In The Soil: Acoustic Detection Of Root-Feeding Insects," TAMU T3, \$30,000, January 2020-December 2021.
12. Principal Investigator, with Pao-Tai Lin, Svetlana , Svetlana Sukhishvili, Nicolaas Deutz, Gerard Cote, Roozbeh Jafari, Xiaohui Xu, and Sherecce Fields, "Point-of-care diagnosis and monitoring of respiratory disease through exhaled breath analysis," TAMU X Grant, \$1,383,657, June 2018-May 2021.

13. Co-Investigator, with Bala Haridas (PI), G. Cote, M. Lawley and A. Sabharwal, "RWE Demonstration Project for the Southwest Pediatric Devices Consortium," Federal Drug Administration, \$375,000, September 2018-August 2021.
14. Principal Investigator, with Pao-Tai Lin, "Chip-scale wearable chemical sensors based on tunable mid-infrared devices (Year 2)," CrucialTec, \$300,000, June 2017-May 2018.
15. Thrust co-Lead, with A. Sabharwal, "Engineering Research Center for Precise Advanced Technologies and Health Systems for Underserved Populations (PATHS-UP)", National Science Foundation ERC, G. Cote (PI), \$35,300,000, September 2017 - August, 2027.
16. Co-Investigator, with G. Cote (PI), M. Lawley, M. Grunlan, F. Sasangohar and S. Flores, "Transformative and Affordable Medical Technologies and Systems to Improve Diabetes Health," Kleberg Foudation, \$957,789 (direct costs), December 2017, November 2020.
17. Principal Investigator, with I. Pavlidis and G. Mark, "Managing Stress in the Workplace: Unobtrusive Monitoring and Adaptive Interventions," National Science Foundation, \$1,200,000, September 2017-August 2020.
18. Principal Investigator, "Tactile sparse anchor-based representation of speech (T-SABR)," Facebook, \$260,000, August 2017-May 2018.
19. Co-Investigator, with P.T. Lin (PI). "Low-cost sensors for black carbon using chip-scale microphotonic devices," TAMU Center for Translational Environmental Health Research. \$50,000. September 2017-August 2018.
20. Principal Investigator, with J. Levis, "Developing golden speakers for second-language pronunciation training," National Science Foundation, \$300,000, August 2016-June 2018.
21. Principal Investigator, with J. Levis and E. Chukharev-Khudilaynen, "Perception and production in second language: the roles of voice variability and familiarity," National Science Foundation, \$565,000, August 2016-June 2019.
22. Principal Investigator, with Pao-Tai Lin, "Chip-scale wearable chemical sensors based on tunable mid-infrared devices (Year 1)," CrucialTec, \$300,000, June 2016-May 2017.
23. Principal Investigator (on subcontract), "Passive Vital Sign Monitoring," Phase I SBIR, NASA, \$26,800, June-December 2016.
24. Co-Investigator, with B. Ahmed (PI) and K. Ballard, "Apraxia World: An interactive, technology-based comprehensive tool for remote speech therapy of CAS," Qatar National Research Fund, \$ 809,694, January 2016-December 2018.
25. Co-Investigator with R. Arroyave (PI) and R. Aramayo,"Development of Big Data Scientific Management Tools for the Materials Genome Initiative; Materials Galaxy," TAMU Big Data Initiative, \$50,000, February 2016-January 2017.
26. Principal Investigator (on subcontract), "Mobile Footprint Detection," Phase II SBIR, Department of Homeland Security, \$120,000, March 2015-September 2016.
27. Principal Investigator (on subcontract), "Mobile Footprint Detection," Phase I SBIR, Department of Homeland Security, \$30,000, May 2014-August 2014.
28. Principal Investigator, with E. Shipp and B. Ahmed (co-PI), "Promoting stress self-regulation with physiological training games," Qatar National Research Fund, \$ 1,035,534, December 2012-December 2015.
29. Co-Investigator, with L. Mandell (PI) and R. Furuta (co-PI), "OCR'ing Early Modern Text," Mellon Foundation, \$733,794, January 2013-December 2014.

30. Co-Investigator, with B. Ahmed (PI) and K. Ballard, "Mobile infrastructure and automated tools for the monitoring and treatment of childhood apraxia of speech," Qatar National Research Fund, \$1,043,499, November 2011-October 2014.
31. Co-Investigator with H. T. Nagle (PI) and S. S. Schiffman, "Replacing human odor assessments of cabin air quality by instrumental measurements," Hyundai-Kia America, \$69,000, September 2011, December 2011.
32. Principal Investigator with co-PIs Isaac Rudomin and Benjamin Hernandez, "Persuasive health games with wearable sensors," TAMU-Conacyt Collaborative Research Grant Program, \$24,000, September 2011-August 2012 (no-cost extended through August 2014).
33. Principal Investigator, "Integrated Sensing and Acting with Tunable Chemical Sensors," National Science Foundation, \$299,930, September 2010-August 2013.
34. Co-Investigator with F. Shipman (PI) and S. Smith, "EAGER: Creativity in the Wild: Insight and Discovery with Wearable Sensors," National Science Foundation, \$125,000, September 2010, August 2011.
35. Principal Investigator, with co-PI B. Ahmed (TAMU Qatar). "Stress monitoring with non-linear dynamical models and wearable sensors," National Priorities Research Program, Qatar National Research Fund, \$1,049,125, June 2009-May 2012.
36. Principal Investigator (on subcontract), "Miniature and Reliable Chemical Sensors for Cell Phones," Department of Homeland Security, \$142,787, September 2009-September 2011.
37. Co-Investigator with A. Ames, R. Murphy (PI), D. Song, and R. Stoleru, "MRI: Acquisition of Mobile, Distributed Instrumentation for Response Research (RESPOND-R)," NSF MRI, \$1,400,000, August 2009-July 2012.
38. Principal Investigator, with co-PI M. Carreira-Perpinan (UC Merced). "RI: Collaborative Research: Foreign accent conversion through articulatory inversion of the vocal-tract frontal cavity," National Science Foundation, \$450,000, September 2008-August 2011.
39. Principal Investigator, with co-PI S. Semancik (NIST), "Hypothesis generation for chemical threats through active perception with microsensor arrays," Department of Defense, National Geospatial Intelligence Agency, \$240,000, September 2006-August 2008.
40. Principal Investigator with co-PIs Isaac Rudomin and Heather Bortfeld, "Facial Caricaturing as a Training Tool for Security," TAMU-Conacyt Collaborative Research Grant Program, \$24,000, September 2005-August 2006.
41. Principal Investigator, "MSK parameter analysis tool," \$28,036, United Space Alliance, June 2005-December 2005.
42. Principal Investigator with co-PI Ismael Lopez-Juarez, "Design of an Electronic Nose for Hydrogen Measurement in Liquid Aluminum Alloys for the Casting Industry," TAMU-Conacyt Collaborative Research Grant Program, \$24,000, September 2004-August 2005.
43. Principal Investigator, "MSK parameter analysis tool," \$17,419, United Space Alliance, September 2004 – May 2005.
44. Principal Investigator, "Computational Models for Sensor-based Machine Olfaction," National Science Foundation CAREER, \$299,713, July 2000-June 2004 (no cost extension through August 2008).
45. Co-Investigator with O. N. Garcia (P.I.) and A. Goshtasby, "Speech Driven Facial Animation," National Science Foundation CISE, \$209,287, September 1999-August 2001.

46. Co-Investigator with R. Bhatnagar (U. Cincinnati), R. Machiraju and S. C. Zhu (Ohio State U.), "Generalized Metrics for Image Assessment and Synthesis," \$90,000, OBR Collaborative Grant, September 2000-August 2002.
47. Principal Investigator, "Portable Electronic Drug Detection and Identification Device," UES, Inc., Dayton (OH), \$20,000, August 1999-July 2000.
48. Principal Investigator, "Development of an Electronic Olfactory System for Autonomous Mobile Robots," Research Initiation Grant, Office of Research and Sponsored Programs, Wright State University, \$8,000, June 1999-May 2000.
49. Principal Investigator, "Pattern Recognition of Odors with an Array of Chemical Gas Sensors," Research Challenge Grant, Office of Research and Sponsored Programs, Wright State University, \$25,000, June 1999-May 2000.

PUBLICATIONS

** denotes students under my supervision*

JOURNAL ARTICLES

1. A. Das* and R. Gutierrez-Osuna, "Improving mispronunciation detection using speech reconstruction," *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, in press.
2. D. R. da C Silva* and R. Gutierrez-Osuna, "Does gamified breath-biofeedback promote adherence, relaxation, and skill transfer in the wild?," *IEEE Transactions on Affective Computing*, in press.
3. A. Silpachai, R. Neiriz, M. Novotny, R. Gutierrez-Osuna, J. M. Levis, and E. Chukharev-Hudilainen, "Corrective feedback accuracy and pronunciation improvement: Feedback that is 'good enough'," *Language Learning & Technology*, 28(1), 2024 (in press).
4. B. Mortazavi and R. Gutierrez-Osuna, "A review of digital innovations for diet monitoring and precision nutrition," *Journal of Diabetes Science and Technology*, 17 (1), 217-223, 2023.
5. D. Dave, K. Vyas*, K. Branan, S. McKay, D. J. DeSalvo, R. Gutierrez-Osuna, G. L. Cote, and M. Erraguntla, "Detection of hypoglycemia and hyperglycemia using noninvasive wearable sensors: electrocardiograms and accelerometry," *Journal of Diabetes Science and Technology*, 18(2), 351-362, 2024.
6. D. R. da C. Silva*, Z. Wang*, and R. Gutierrez-Osuna, "Towards Participant-Independent Stress Detection Using Instrumented Peripherals," *IEEE Transactions on Affective Computing*, 14(1), 773-787, 2023.
7. D. Al Hussein, P. T. Lin, S. A. Sukhishvili, J. Zhou, J. Li, P. T. Lin, R. Gutierrez-Osuna and G. L. Coté, "Silane-modified mesoporous silica nanocoatings for selective mid-infrared waveguide-based gas sensing," *Advanced Materials Interfaces*, 9, 2022.
8. J. Zhou, D. Al Hussein, J. Li, Z. Lin, S. Sukhishvili, G. L. Cote, R. Gutierrez-Osuna and P. T. Lin, "Mid-Infrared Serial Microring Resonator Array for Real-time Detection of Vapor Phase Volatile Organic Compounds," *Analytical Chemistry*, 94(31), 11008-11015, 2022.
9. D. Dave, K. Vyas*, K. Branan, S. McKay, D. J. DeSalvo, R. Gutierrez-Osuna, G. L. Cote and M. Erraguntla, "Detection of hypoglycemia and hyperglycemia using ECG and accelerometer based non-invasive wearable sensors," in *Journal of Diabetes Science and Technology*, 2022.
10. I. Lučić, A. Silpachai, J. Levis, G. Zhao* and R. Gutierrez-Osuna, "The English Pronunciation of Arabic Speakers - A Data-Driven Approach to Segmental Error Identification," *Language Teaching Research*, 26 (6), 1055-1081, 2022.

11. S. Paul*, R. Sharma, P. Tathireddy and R. Gutierrez-Osuna, "On-line drift-compensation for continuous monitoring with arrays of cross-sensitive chemical sensors," in *Sensors and Actuators B: Chemical*, 368, 2022,
12. J. Zhou, D. Al Hussein, J. Li, Z. Lin, S. Sukhishvili, G. L. Coté, R. Gutierrez-Osuna and P.-T. Lin, "Detection of Volatile Organic Compounds Using Mid-Infrared Silicon Nitride Waveguide Sensors," *Scientific Reports*, 12(1), pp. 1-11, 2022.
13. A. Das*, B. Mortazavi, S. Sajjadi, T. Chaspari, L. E. Ruebush, N. E. Deutz, G. L. Cote and R. Gutierrez-Osuna, "Predicting the macronutrient composition of mixed meals from dietary biomarkers in blood," *IEEE Journal of Biomedical and Health Informatics*, 26(6), pp. 2726-2736, 2022.
14. N. V. Chakravarthy*, D. R. Da Cunha Silva* and R. Gutierrez-Osuna, "Evaluating the role of breathing guidance on game-based interventions for relaxation training," *Frontiers in Digital Health*, vol. 3, 2021.
15. S. Ding*, G. Zhao* and R. Gutierrez-Osuna, "Accentron: Foreign accent conversion to arbitrary non-native speakers using zero-shot learning," *Computer Speech & Language*, vol 72, pp 101302, 2022.
16. B. J. Mortazavi and R. Gutierrez-Osuna, "A review of digital innovations for diet monitoring and precision nutrition," *Journal of Diabetes Science and Technology*, 1-7, 2021.
17. M. Hagve, S. Y. Simbo, L. E. Ruebush, M. P. K. J. Engelen, R. Gutierrez-Osuna, B. J. Mortazavi, G. L. Cote and N. E. P. Deutz, "Postprandial concentration of circulating branched chain amino acids are able to predict the carbohydrate content of the ingested mixed meal," *Clinical Nutrition*, 40(8), pp. 5020-5029, 2021.
18. G. Zhao*, S. Ding* and R. Gutierrez-Osuna, "Converting Foreign Accent Speech Without a Reference," *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 29, pp. 2367-2381, 2021.
19. A. Parnandi* and R. Gutierrez-Osuna, "Partial reinforcement in game biofeedback for relaxation training," *IEEE Transactions on Affective Computing*, 12 (1), pp. 141-153, 2021.
20. D. Al Hussein, Y. Karanth, J. Zhou, D. Willhelm, X. Qian, R. Gutierrez-Osuna, G. L. Coté, P.-T. Lin and S. A. Sukhishvili, "Surface Functionalization Utilizing Mesoporous Silica Nanoparticles for Enhanced Evanescent-Field Mid-Infrared Waveguide Gas Sensing," *Coatings*, vol. 11, no. 2, 2021.
21. A. Hair*, K. J. Ballard, C. Markoulli, P. Monroe, J. McKechnie, B. Ahmed and R. Gutierrez-Osuna, "A Longitudinal Evaluation of Tablet-Based Child Speech Therapy with Apraxia World," *ACM Transactions On Accessible Computing*, vol 14, no. 1, pp. 3:1-26, 2021.
22. D. Al Hussein, J. Zhou, D. Willhelm, T. Hastings, G. S. Day, H.-C. Zhou, G. L. Coté, X. Qian, R. Gutierrez-Osuna, P. T. Lin and S. Sukhishvili, "All-Nanoparticle Layer-by-layer Coatings for Mid-IR On-Chip Gas Sensing," *Chemical Communications*, vol. 56, pp. 14283-14286, 2020.
23. J. McKechnie, B. Ahmed, R. Gutierrez-Osuna, E. Murray, P. McCabe and K. Ballard, "The influence of type of feedback during tablet-based delivery of intensive treatment for childhood apraxia of speech," *Journal of Communication Disorders*, vol. 87, pp. 1-19, 2020.
24. S. Ding*, G. Zhao*, C. Liberatore* and R. Gutierrez-Osuna, "Learning Structured Sparse Representations for Voice Conversion," *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, 28, pp. 343-354, 2020.
25. M. A. Zafar, B. Ahmed, R. Al Rihawi and R. Gutierrez-Osuna, "Gaming away stress: Using biofeedback games to learn paced breathing," *IEEE Transactions on Affective Computing*, 11(3), 519-531, 2020.

26. G.* Zhao and R. Gutierrez-Osuna, "Using Phonetic Posteriorgram Based Frame Pairing for Segmental Accent Conversion," *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, 27 (10), pp. 1649-1660, 2019.
27. S. Ding*, C. Liberatore*, S. Sonsaat, I. Lučić, A. Silpachai, G. Zhao*, E. Chukharev-Hudilainen, J. Levis and R. Gutierrez-Osuna, "Golden Speaker Builder - An interactive tool for pronunciation training," *Speech Communication*, vol. 115, pp. 51-66, 2019.
28. S. Zaman, A. Wesley, D. Rodrigo Da Cunha Silva*, P. Buddharaju, F. Akbar, G. Gao, G. Mark, R. Gutierrez-Osuna and I. Pavlidis, "Stress and productivity patterns of interrupted, synergistic, and antagonistic office activities," in *Scientific Data*, 6(1): 264, 2019
29. C. D. D. Monteiro, F. M. Shipman, III, S. Duggina and R. Gutierrez-Osuna, "Tradeoffs in the Efficient Detection of Sign Language Content in Video Sharing Sites," *ACM Transactions on Accessible Computing*, 12(2): 5, pp. 1-16, 2019.
30. F. Akbar, G. Mark, I. Pavlidis and R. Gutierrez-Osuna, "An Empirical Study Comparing Unobtrusive Physiological Sensors for Stress Detection in Computer Work," in *Sensors*, 19, 2019.
31. A. Parnandi* and R. Gutierrez-Osuna, "Visual Biofeedback and Game Adaptation in Relaxation Skill Transfer," *IEEE Transactions on Affective Computing*, 10(2), 276-289, 2019.
32. J. McKechnie, B. Ahmed, R. Gutierrez-Osuna, P. Monroe, P. McCabe and K. J. Ballard, "Automated speech analysis tools for children's speech production: A systematic literature review," in *International Journal of Speech-Language Pathology*, 20(6), 583-598, 2018.
33. B. Ahmed, P. Monroe, A. Hair*, C.-T. Tan, R. Gutierrez-Osuna and K. J. Ballard, "Speech-driven mobile games for speech therapy: User experiences and feasibility", in *International Journal of Speech-Language Pathology*, 20(6), pp. 644-658, 2018
34. T. Jin, J. Zhou, Z. Wang*, R. Gutierrez-Osuna, C. Ahn, W. Hwang, K. Park and P.-T. Lin, "Real-time Gas Mixture Analysis Using Mid-infrared Membrane Microcavities," *Analytical Chemistry*, 90(7): 4348-4353, 2018.
35. Z. Wang*, A. Parnandi* and R. Gutierrez-Osuna, "BioPad: Leveraging off-the-Shelf Video Games for Stress Self-Regulation," in *Journal of Biomedical and Health Informatics*, 22(1):47-55, 2018.
36. M. Christy, A. Gupta*, E. Grumbach, L. Mandel, R. Furuta, and R. Gutierrez-Osuna, "Mass Digitization of Early Modern Texts with Optical Character Recognition," in *ACM Journal on Computing and Cultural Heritage*, 11(1):1-25, 2017.
37. A. Parnandi* and R. Gutierrez-Osuna, "Physiological modalities for relaxation skill transfer in biofeedback games," in *Journal of Biomedical and Health Informatics*, 21(2): 361-371, 2017.
38. J. Huang* and R. Gutierrez-Osuna, "Active wavelength selection for mixture identification with tunable mid-infrared detectors," *Analytica Chimica Acta*, 937: 11-20, 2016.
39. J. Li, R. Gutierrez-Osuna, R. D. Hodges, G. Luckey, J. Crowell, S. S. Schiffman, and H. T. Nagle, "Using Field Asymmetric Ion Mobility Spectrometry for Odor Assessment of Automobile Interior Components," *IEEE Sensors Journal*, 16(14): 5747-5756, 2016.
40. B. Ahmed, H. Ali, J. Choi* and R. Gutierrez-Osuna, "ReBreathe: A calibration protocol that improves stress/relax classification by relabeling deep breathing relaxation exercises," *IEEE Transactions on Affective Computing*, 7(2): 150-161, 2016.
41. S. Aryal* and R. Gutierrez-Osuna, "Data driven articulatory synthesis with deep neural networks," *Computer Speech and Language*, 36: 260-273, 2016.

42. J. Li, R. D. Hodges, R. Gutierrez-Osuna, G. Luckey, J. Crowell, S. S. Schiffman, and H. T. Nagle, "Odor Assessment of Automobile Cabin Air With Field Asymmetric Ion Mobility Spectrometry and Photoionization Detection," *IEEE Sensors Journal*, 16(2), 409-417, 2016.
43. A. Parnandi*, V. Karappa*, T. Lan*, M. Shahin, J. McKechnie, K. Ballard, B. Ahmed and R. Gutierrez-Osuna, "Development of a remote therapy tool for childhood apraxia of speech," *ACM Transactions on Accessible Computing*, 67(3), 10:1-10:23, 2015.
44. M. Shahin, B. Ahmed, A. Parnandi*, V. Karappa*, J. McKechnie, K. Ballard and R. Gutierrez-Osuna, "Tabby Talks: an automated tool for the assessment of childhood apraxia of speech," *Speech Communication*, 70, 49-64, 2015
45. S. Aryal* and R. Gutierrez-Osuna, "Reduction of non-native accents through statistical parametric articulatory synthesis," *Journal of the Acoustical Society of America*, 137(1), 433-446, 2015.
46. J. Huang* and R. Gutierrez-Osuna, "Active wavelength selection for mixture analysis with tunable infrared detectors," *Sensors and Actuators B: Chemical*, 208, 245-257, 2015.
47. A. Parnandi* and R. Gutierrez-Osuna, "A Comparative Study of Game Mechanics and Control Laws for an Adaptive Physiological Game," *Journal on Multimodal User Interfaces*, 9(1), 31-42, 2014.
48. A. Perera-Lluna, K. Manivannan, P. Xu, R. Gutierrez-Osuna, C. Benner, B. D. Russell, "Automatic Capacitor Bank Identification in Power Distribution Systems," *Electric Power Systems Research*, 111, 96-102, 2014.
49. F. M. Shipman, R. Gutierrez-Osuna, and C. D. D. Monteiro, "Identifying sign language videos in video sharing sites," *ACM Transactions on Accessible Computing*, 5(4): 9.1-9.14, 2014
50. R. Gosangi* and R. Gutierrez-Osuna, "Active classification with arrays of tunable chemical sensors," *Chemometrics and Intelligent Laboratory Systems*, 132, 91-102, 2014.
51. Y. Yu, Y. Choe and R. Gutierrez-Osuna, "Context-sensitive Intra-class Clustering," *Pattern Recognition Letters*, 37, 85-93, 2014.
52. R. Gosangi* and R. Gutierrez-Osuna, "Active temperature modulation of metal-oxide sensors for quantitative analysis of gas mixtures," *Sensors and Actuators B: Chemical*, 185, 201-210, 2013.
53. J. Huang*, R. Gosangi, and R. Gutierrez-Osuna, "Active Concentration-Independent Chemical Identification with a Tunable Infrared Sensor," *IEEE Sensors Journal* 12(11), 3135-3142, 2012.
54. D. Felps*, C. Geng, and R. Gutierrez-Osuna, "Foreign accent conversion through concatenative synthesis in the articulatory domain," *IEEE Transactions on Audio, Speech and Language Processing*, 20(8), 2301-2312, 2012.
55. J. Choi*, B. Ahmed, and R. Gutierrez-Osuna, "Development and evaluation of an ambulatory stress monitor based on wearable sensors," *IEEE Transactions on Information Technology in BioMedicine*, 16(2), 279-286, 2012.
56. J. Choi* and R. Gutierrez-Osuna, "Removal of respiratory influences from heart rate variability in stress monitoring," *IEEE Sensors Journal*, 11(11), 2649-2656, 2011.
57. MNK Boulos, B. J. Blanchard*, C. Walker*, J. Montero*, A. Tripathy* and R. Gutierrez-Osuna, "Web GIS in practice X: a Microsoft Kinect natural user interface for Google Earth navigation," *International Journal of Health Geographics*, 10, 45, 2011.
58. J. Rodriguez* and R. Gutierrez-Osuna, "Reverse caricatures effects on three-dimensional facial reconstructions," *Image and Vision Computing*, 29, 329-334, 2011.
59. N.-Y. Yu, T. Yamauchi, H.-F. Yang; Y.-L. Chen and R. Gutierrez-Osuna, "Feature selection for inductive generalization," *Cognitive Science*, 34, 1574-1593, 2010.

60. R. Gosangi* and R. Gutierrez-Osuna, "Active temperature programming for metal-oxide chemoresistors," *IEEE Sensors Journal*, 10(6), 1075-1082, 2010.
61. R. Gutierrez-Osuna and A. Hierlemann, "Adaptive microsensor systems," *Annual Review of Analytical Chemistry*, 3, 255-276, 2010.
62. D. Felps* and R. Gutierrez-Osuna. "Developing objective measures of foreign-accent conversion," *IEEE Transactions on Audio, Speech and Language Processing*, 18(5), 1030-1040, 2010.
63. D. Felps*, H. Bortfeld and R. Gutierrez-Osuna. "Foreign-accent conversion in computer assisted pronunciation training," *Speech Communication*, 51, 920-932, 2009.
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77. A. Parnandi*, Y. Son* and R. Gutierrez-Osuna, "A Control-Theoretic Approach to Adaptive Physiological Games," in *Proc. Humaine Association Conference on Affective Computing and Intelligent Interaction (ACII 2013)*.
78. A. Parnandi* and R. Gutierrez-Osuna, "Contactless Measurement of Heart Rate Variability from Fluctuations in Pupillary Dilation," in *Proc. Humaine Association Conference on Affective Computing and Intelligent Interaction (ACII 2013)*.
79. S. Aryal*, D. Felps* and R. Gutierrez-Osuna, "Foreign Accent Conversion through Voice Morphing," in *Proc. Interspeech 2013*.
80. H. Khan, B. Ahmed, J. Choi* and R. Gutierrez-Osuna, "Using an Ambulatory Stress Monitoring Device to Identify Relaxation Due to Untrained Deep Breathing," in *Proc. 35th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC'13)*.
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83. J. Lee*, R. Gutierrez-Osuna, and S. Young, "SILK: Scale-space integrated Lucas-Kanade image registration for super-resolution from video," in *ICASSP 2013*.
84. C. Monteiro, R. Gutierrez-Osuna and F. Shipman, "Design and Evaluation of Classifier for Identifying Sign Language Videos in Video Sharing Sites," in *Proc. 13th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS 2012)*.
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89. R. Gosangi* and R. Gutierrez-Osuna, "Quantification of gas mixtures with active recursive estimation," in *Proc. ISOEN, 2011*.
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93. R. Gosangi* and R. Gutierrez-Osuna, "Energy-Aware Active Chemical Sensing," in *Proc. IEEE Sensors, 2010*, pp. 1094-1099.
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97. A. Pazarloglou, M. George, R. Stoleru, R. Gutierrez-Osuna, "Demo Abstract: Signal Reconstruction with Sub-Nyquist Sampling using Wireless Sensor Networks," in *Proc. ACM/IEEE Information Processing in Sensor Networks (IPSN), 2009*.
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- 122.M. J. Mousavi, K. L. Butler-Purry, R. Gutierrez-Osuna and M. Najafi, "Classification of Load Change Transients and Incipient Abnormalities in Underground Cable Using Pattern Analysis Techniques," in *Proc. 2003 IEEE/PES Transmission and Distribution Conference*, Dallas, TX, September 7-12, 2003.
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- 129.R. Gutierrez-Osuna, A. Gutierrez-Galvez* and N. Powar*, "Transient Response Analysis for Temperature Modulated Chemoresistors," in *Proc. 9th Intl. Meeting on Chemical Sensors*, Boston, MA, 7-10 July 2002.
- 130.P. Kakumanu*, R. Gutierrez-Osuna, A. Esposito, R. Bryll, A. Goshtasby and O. N. Garcia, "Speech Driven Facial Animation", in *Proc. Workshop on Perceptive User Interfaces*, Disney's BoardWalk Inn Resort, November 15-16, 2001.
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- 134.R. Gutierrez-Osuna, S. Korah* and A. Perera*, "Multi-Frequency Temperature Modulation For Metal-Oxide Gas Sensors," in *Proc. 8th International Symposium on Olfaction and the Electronic Nose (ISOEN 01)*, pp. 212-218.
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- 136.S. S. Schiffman, R. Gutierrez-Osuna and T. Nagle, "Use of an Electronic Nose to Evaluate Odors from Swine Operations," in *Proc. ISOEN 01*, pp. 200-205.
- 137.R. Gutierrez-Osuna, "Drift Reduction For Metal-Oxide Sensor Arrays Using Canonical Correlation Regression And Partial Least Squares," in *Proc. 7th International Symposium On Olfaction & Electronic Nose (ISOEN 00)*, Brighton, UK, July 20-24, 2000, pp. 147-152.
- 138.S. S. Schiffman, D. W. Wyrick, R. Gutierrez-Osuna and H. T. Nagle, "Effectiveness of an Electronic Nose for Monitoring Bacterial and Fungal Growth," in *Proc. ISOEN 00*, pp. 173-180.
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RESEARCH SUPERVISION

PHD STUDENT CHAIR (IN PROGRESS)

1. Anurag Das
2. Waris Quamer
3. Md. Hasan Al Banna
4. Ghady Nasrallah

MS STUDENT CHAIR (IN PROGRESS)

1. Mu-Ruei Tseng

POST-DOCTORAL ADVISOR

1. T. Yamanaka, Neuromorphic signal processing for machine olfaction, 04/2004-03/2006.
2. A. Perera-Lluna, Signal processing in power distribution systems, 07/2003-12/2004.

PHD STUDENT CHAIR (COMPLETED)

1. Dennis Rodrigo Da Cunha Silva, Detecting and managing stress using off-the-shelf computing devices, Summer 2023.
2. Christopher Liberatore, Developing sparse representations for anchor-based voice conversion, Summer 2021
3. Shaojin Ding, Few-shot voice and foreign accent conversion and its applications in pronunciation training, Spring 2021
4. Adam Hair, Apraxia World: deploying a mobile game and automatic speech recognition for independent child speech therapy, Fall 2020
5. Guanlong Zhao, Foreign accent conversion with neural acoustic modeling, Spring 2020
6. Avinash Parnandi, Physiological self-regulation with biofeedback games, Spring 2017
7. Jin Huang, Active wavelength selection for chemical identification using tunable spectroscopy, Spring 2016
8. Sandesh Aryal, Statistical parametric methods for articulatory-based foreign accent conversion, Fall 2015
9. Rakesh Gosangi, Active control strategies for chemical sensors and sensor arrays, Spring 2013
10. Jongyoon Choi, Minimally-invasive wearable sensors and data processing methods for mental stress detection, Fall 2011
11. Daniel Felps, Articulatory-based speech processing methods for foreign accent conversion, Spring 2011
12. Jobany Rodriguez, Towards the development of training tools for face recognition, Spring 2011
13. Agustin Gutierrez-Galvez, Coding and learning of chemosensor array patterns in a neurodynamics

model of the olfactory system, Fall 2005

14. Barani Raman, Sensor-based Machine Olfaction with Neuromorphic Models of the Olfactory System, Fall 2005

MASTER'S STUDENT CHAIR (COMPLETED)

1. Sudip Paul, Multi-calibration based drift compensation for Chemical Sensor Arrays, Spring 2022.
2. Nitin Gummidela, Breathing based relaxation tools in an ambulatory setting, Fall 2020
3. Tian Lan, Health Ninjas: a personalized biofeedback game to teach children deep breathing and nutrition knowledge, Fall 2015
4. Anshul Gupta, Assessment of OCR quality and font identification in historical documents, Summer 2015
5. Rhushabh Bhandari, Effectiveness of music-based respiratory biofeedback in reducing stress during visually demanding tasks, Spring 2015
6. Virendra Karappa, Detection of sign-language content in video through polar motion profiles, Summer 2014
7. Felipe Nogueira, Development of an Infrared Absorption Spectroscope based on Linear Variable Filters, Summer 2006.
8. Marco Zavala, Visual Prosody in Speech-Driven Facial Animation: Elicitation, prediction, and perceptual evaluation, Spring 2005.
9. Steve Ortiz, Structure from Motion using Omni-directional Vision and Certainty Grids, Spring 2004.
10. Nishant Balan, Analysis and Evaluation of Factors Affecting Speech Driven Facial Animation, Summer 2003.
11. Jason Knapp, Monitoring Patient State through Electrocardiographic features, Fall 2002.
12. Ping Sun, A Biologically Plausible Computational Architecture for Sensor-Based Machine Olfaction, Fall 2002.
13. N. Powar, Temperature Modulation and Transient Analysis for Tin-Oxide Sensor Arrays, Fall 2002.
14. Shengli Fu, Audio/Visual Mapping Based on Hidden Markov Models, Summer 2002, (O. Garcia, co-Chair)
15. Praveen Kakumanu, Audio-Visual Processing for Speech Driven Facial Animation, Summer 2002.
16. Shino Korah, A Study of Modulating Excitation Techniques for Commercial Metal-Oxide Gas Sensors, Fall 2000.
17. Mohammed J. Uddin, Drift Reduction of Gas Sensor Array, Spring 2000.

COURSES TAUGHT

Intelligent Sensor Systems, Design of Computing Systems, Introduction to Pattern Recognition, Microprocessor-based System Design, Analog Control Theory, Computational Intelligence, Senior Design, Neural Networks, Speech and Face Recognition, Speech processing

PROFESSIONAL SERVICE

Editorial Board:

- IEEE/ACM Transactions on Audio, Speech and Language Processing (T-ASLP) (2023-present)
- Steering Committee, International Society for Olfaction and Chemical Sensing (2011-2018)
- IEEE Sensors Journal (Associate Editor; 2006-2013)
- Sensor Letters (2003-2005)

Program Committee:

- 2022, 2024 Affective Computing and Intelligent Interaction conference (ACII)
- 2024 Interspeech
- Program Chair: 2015 International Symposium on Olfaction and Electronic Nose (ISOEN)
- 2013 AAAI Conference on Artificial Intelligence
- 2013 IEEE Consumer Communications and Networking Conference (CCNC)
- Program Chair: 2011 International Symposium on Olfaction and Electronic Nose (ISOEN)
- 2010 IEEE Conference on Multisensor Fusion and Integration (MFI)
- 2009 IEEE International Conference on Robotics and Automation
- 2009 IEEE Symp Computational Intelligence for Multimedia Signal and Vision Processing
- 2008, 2009 International Joint Conference on Neural Networks
- 2007, 2008, 2009 IEEE Sensors Conference
- 2006 International Symposium on Artificial Brain with Emotion and Learning (ISABEL)
- 2006 Robotics: Systems and Science (RSS).
- 2005, 2006 IEEE International Conference on Autonomic and Autonomous Systems (ICAS)
- 2005 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- 2005 International Symposium on Olfaction and Electronic Nose (ISOEN)
- 2003, 2004 IEEE International Conference on Tools with Artificial Intelligence (ICTAI)
- 2001, 2003 IEEE International Symp. Bio-Informatics and Biomedical Engineering (BIBE)

Workshop/Special Session organization:

- Special Session on “Active sensing and chemosensory optimization,” *IEEE Sensors Conference 2010* (Hawaii). Organizers: R. Gutierrez-Osuna, A. Vergara (UCSD), K. Muezzinoglu (UCSD).
- Workshop on “Neurodynamics and Intentional Dynamic Systems,” *International Joint Conference on Neural Networks 2005* (Montréal, Canada). Organizers: P. Andras (U. Newcastle), R. Gutierrez-Osuna, W. J. Freeman (UC Berkeley), R. Kozma (U. Memphis)

PROFESSIONAL MEMBERSHIP

Senior Member, Institute of Electrical and Electronics Engineers (IEEE)