Curriculum Vitae

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Behnaz Ghoraani, B.Sc., M.Sc., Ph.D.

EDUCATION

Postdoctoral Fellow
Faculty of Medicine, University of Toronto, Toronto, Canada
Project: *Developed advance signal and image processing methods to address challenges and opportunities in atrial fibrillation.*

Doctor of Philosophy
Department of Electrical and Computer Engineering, Ryerson University, Toronto, Canada
Thesis: *Developed Advanced Signal Processing Techniques in Multimedia and Biomedical Engineering.*

Master of Applied Science
Department of Electronics and Electrical Engineering, Amir Kabir University of Technology, Tehran, Iran
Thesis: *Developed Algorithms for Speech Synthesis and Voice Conversion.*

Bachelor of Applied Science
Department of Electronics and Electrical Engineering, Sharif University of Technology, Tehran, Iran
Thesis: *Designed and Implemented Level Meter System for Borehole Logging.*

RESEARCH INTERESTS

Biosensor and Biomedical signal analysis, Non-stationary Data Analytics, Machine Learning, Feature extraction and classification, Deep Learning, Time-frequency signal analysis, Pattern classification and recognition, Dictionary learning, Computer-aided clinical decision making

PROFESSIONAL AND ACADEMIC EXPERIENCE

Computer and Electrical Engineering at Florida Atlantic University, Boca Raton, FL   August 2016– present
Assistant Professor – Tenure track

Institute for Sensing and Embedded Network Systems Engineering, Boca Raton, FL   August 2016– present
Faculty Fellow

Biomedical Engineering at Rochester Institute of Technology (RIT), Rochester, NY   August 2012–August 2016
Assistant Professor – Tenure track

INTELLECTUAL PROPERTY

Systems and Methods for Localizing Signal Sources using Multi-Pole Sensors
U.S. Patent No. 10398346
Publication Date: September 3, 2019

Systems and Methods for Guiding a Multi-Pole Sensor Catheter to Locate Cardiac Arrhythmia Sources
U.S. Patent No. 10398338

EXTERNAL FUNDED RESEARCH PROPOSALS

National Science Foundation (NSF) 2019-2022
CCSS: Discovery of Individualized Disease Features for Personalized Health Monitoring $322K
Role: PI

Florida Department of Health 2019-2021
Technology-based Systems to Measure Dual-task (Motor-cognitive) Performance as $94K
a Biomarker for Early Detection of Alzheimer's Disease
Role: PI

National Institute of Health (NIH) Heart, Lung, and Blood Institute 2015-2019
Catheter Guidance Algorithm for Identification of Atrial Fibrillation Ablation Targets $456K
Role: PI

National Science Foundation CNS 2017-2019
REU Site: Sensing and Smart Systems $340K
Role: Principal Personnel

SELECTED HONOURS, AWARDS, AND RECOGNITIONS

Graduate Student received NSF travel award May 2019
Awarded for the development of a novel algorithm for automatic assessment of disease severity in patients with Parkinson's disease using wearable sensors

Graduate Student received NSF young professional award August 2016
Awarded for the development of a novel algorithm for automatic detection of medication states of patients with Parkinson's disease using wearable sensors

Graduate Student Selected as an IEEE EMBS Student Paper Competition Finalist July 2016
Awarded for the development of a novel probabilistic algorithm for localization of rotors during atrial fibrillation
15 students were selected as finalists out of 258 nominations and will compete at the IEEE EMBC conference

Kate Gleason College of Engineering 2015 Award Certificate 2015
Awarded by the KGCOE at RIT for Exemplary Performance in Engaging Students in Dissemination.

Kate Gleason College of Engineering 2015 Award Certificate 2015
Awarded by the KGCOE at RIT for Exemplary Performance in Peer-Reviewed Journals.

Graduate Student Received the Gordon K. Moe Young Investigator Award November 2015
Awarded by the Upstate New York Cardiac Electrophysiology Society for the research toward improving atrial fibrillation therapy.

Kate Gleason College of Engineering 2013 Award Certificate 2013
Awarded by the KGCOE at RIT for Exemplary Performance in Externally Disseminated Works.

Senior Member of the Institute of Electrical and Electronics (IEEE) 2012
Elevated by the IEEE for the extensive experience, which reflects professional maturity and documented achievements of significance.

Mitacs Elevate Industrial Fellowship ($65,000 for one year) 2012

Awarded by the Mitacs Inc., Canada.

The G. Gordon M. Sterling Engineering Intern Award   2011
Awarded by the Professional Engineers Ontario, Canada.

Appreciation of the extraordinary service to the IEEE Women in Engineering Society   2011
Awarded by the IEEE Toronto Section.

Ontario Graduate Scholarship in Science and Technology   2007-2010
Awarded by the Natural Sciences and Engineering Research Council of Canada.

Best Teaching Assistant Award   2008-2009
Awarded by the department of Electrical and Computer Engineering, Ryerson University.

Best Teaching Assistant Award   2008-2009
Awarded by the Faculty of Engineering, Architecture and Science, Ryerson University.

Outstanding New Leader Award In appreciation to excellent service   2008-2009
Awarded by the IEEE Toronto Section.

REVIEW DUTIES FOR GOVERNMENT PROPOSALS AND AWARDS

External Grant Reviewer - Medical Research Council of UK

External Grant Reviewer – Swiss National Science Foundation

External Grant Reviewer - French Fourth University Hospital Research Evaluation Committee

NSF Review Panel

National Institute of Health (NIH) Review Panel

Austrian Science Funding Reviewer

Committee of the Sheehan's Scholarship for Exceptional Women @ FAU   February 2017, 2019

AdvanceRIT Faculty Connect Grants Steering and Review Committee   2015–2016

Review Committee, ASEE WIED Mara H. Wasburn Early Engineering Educator Award   2013

TELUS Innovation Award Competition IEEE Canada   2008 and 2009

TECHNICAL PROGRAM COMMITTEE (TPC) MEMBER

IEEE Engineering in Medicine and Biology Conference ('20), Montreal, Canada   2020

IEEE Life Sciences Conference, Sydney, Australia ('17) Montreal, Canada ('18)   2017, 2018

IEEE International Symposium on Computer-based Medical Systems (CBMS)   2017, 2018
Thessaloniki, Greece ('17) Sweden ('18)

Western New York Image and Signal Processing Workshop   2013–2016

The Healthcare Innovations and Point-of-care Technologies Conference   2014
of the IEEE Engineering in Medicine and Biology Society

IEEE Canada International Humanitarian Technology Conference   2014

The 27th Queen's Biennial Symposium on Communications   2014

The International Conference on Information Sciences, Signal Processing and their Application	ISSPA2012
International Conference on Digital Signal Processing	2009 and 2013
IEEE Canadian Conference on Electrical and Computer Engineering	2008 and 2011
The IEEE Toronto Inter Conference Science and Technology for Humanity	2009

REVIEW DUTIES FOR JOURNALS

IEEE Transactions on Signal Processing, IEEE Transactions on Biomedical Engineering, IEEE Biomedical Health and Informatics, Digital Signal Processing, Medical Engineering & Physics, Biomedical Signal Processing and Control, Transactions on Neural Systems & Rehabilitation Engineering, International Journal of Entropy, Cardiovascular Engineering and Technology, Neural Computing and Applications, International Journal of Advancements in Computing Technology, International Journal of PLOS ONE, Journal of Healthcare Engineering, Computers in Biology and Medicine, Numerical Methods in Biomedical Engineering, Journal of Signal, Image and Video Processing, International Journal of Computer Science and System Biology, International Journal of Molecular Sciences, British Journal of Applied Sciences and Technology, EP EuroPace, Computer Methods and Programs in Biomedicine, Computers in Biology and Medicine, Journal of Entropy, The IEEE Transactions on Audio, Speech and Language Processing, The Journal of European Association for Signal Processing (EURASIP), The Elsevier journal on Biomedical Signal Processing and Control, Metabolites (ISSN 2218-1989; CODEN: METALU), The Canadian Journal of Electrical and Computer Engineering (CJECE), MPDI Entropy, MPDI Sensors, MPDI Energies, Knowledge-based Systems, Annals of Biomedical Engineering

PROFESSIONAL AFFILIATION

Heart Rhythm Society	2015–present
Senior Member of IEEE Signal Processing Society (SPS)	2006–present
Member of IEEE Women in Engineering	2007–present
Member of IEEE Engineering in Medicine and Biology Society (EMBS)	2008–present

OTHER ACTIVITIES

Associate Editor of Associate Editor of BioMedical Engineering OnLine (BMEO) Journal	2019–present
Assistant Editor of the IEEE Signal Processing Newsletter	2019-2020
Chair of the IEEE Signal Processing Society Young Professional Committee	2018-2020
Treasurer – IEEE Rochester Signal Processing Chapter	2013–2016
Section Secretary - IEEE Toronto Section	2011-2012
BMES Student Chapter Faculty Advisor	2012–2016
Chair – IEEE Canada Women in Engineering	2010–2012
Chair - IEEE Toronto Women in Engineering	2008–2011
Vice Chair - IEEE Toronto Signal Processing Chapter	2009–2012

STUDENT ADVISING

Postdoctoral

Advisor, Dr. Mark sterling – Biomedical Engineering, R.I.T   2013–2014
Now: Assistant Professor, Nazarbayev University

Current Graduate Students

Murtadha Hssayeni – Ph.D Computer Engineering, FAU	2018–present

Graduated PhD/Masters Students

Prasanth Ganesan – Ph.D., FAU	2015–2019
Murtadha Hssayeni – M.S. Computer Engineering, RIT	2016
Anthony Salmin – M.S. Electrical Engineering, RIT	2016
Sathyashree Basavaraju – M.S. Electrical Engineering, RIT	2018
Vignesh Ramji – M.S. Electrical Engineering, RIT	2016
Miguel Dominguez – M.S. Electrical Engineering, RIT	2016
Prasanth Ganesan – M.S. Electrical Engineering, RIT	2015
Supachan Traitruengsakul – M.S. Electrical Engineering, RIT	2015
Daniel Sinkiewicz – BS./M.S. in Electrical Engineering, RIT	2014
Baabak Mamaghani – BS./M.S. in Electrical Engineering, RIT	2014
Steven Ladavich – B.S./M.S. in Electrical Engineering, RIT	2014

Graduate Research Assistants

Subhosit Ray – Ph.D. Electrical Engineering, FAU	2018
Ronak Patel – M.S. Electrical Engineering, RIT	2015
Jefferson Medel – B.S./M.S. Electrical Engineering, RIT	2015
Sriram Kumar – B.S./M.S. Electrical Engineering, RIT	2015

Graduate Committees

Imran Mohammed – [Committee Member] Ph.D. in Computer Science at FAU	2019–present
Zhabiz Gharibshah– [Committee Member] Ph.D. in Computer Science at FAU	2019–present
Ali Muhamed Ali – [Committee Member] Ph.D. in Electrical Engineering at FAU	2017–present
Mohammed Alharbi – [Thesis Committee] M.S. in Computing Science at FAU	2018
Jingjia Xu– [Committee Member] Ph.D. in Computing and Information Sciences at RIT	2013–2016
Wangshi Zhao– [Committee Member] Ph.D. in Computing and Information Sciences at RIT	2013–2016
Sitong Zhou [Qualifying Exam Committee] Ph.D. in Microsystems at RIT	January 2016
Fatemeh Shahmohamad [Qualifying Exam Committee] Ph.D. in Engineering at RIT	June 2015
Behzad Bahrami [Qualifying Exam Committee] Ph.D. in Engineering at RIT	June 2015
Masoud Golshadi [Qualifying Exam Committee] Ph.D. in Microsystems at RIT	June 2013

Undergraduate Research Assistants

Lillian Boettcher – B.S. Computer Science, FAU	Spring 2019–present
Nick Hirad – B.S. Biology, FAU	Spring 2019–present
Emily Hamlin – B.S. Computer Science, Oberlin College	Spring 2019
Marquita Scott – B.S. Electrical Engineering, FAU	Spring 2018
Ali Zilouchian – B.S. Biology, UF	Summer 2018
Ashley Smith – B.S. Computer Science, UCF	Summer 2017
Luiz Alves – B.S. Electrical Engineering, UCF	Summer 2017
Kelly Nguyen – B.S. Electrical Engineering, University of Redlans	Summer 2017
Kristina Shillieto – B.S. Electrical Engineering, RIT	2015–2016
Nicholas Dacosta – B.S. Biomedical Engineering, RIT	2016–2016
Isaac Arabadjis – B.S. Biomedical Engineering, RIT	2016–2016
Alison Kahn – B.S. Biomedical Engineering, RIT	2015–2016
Erik Messier – B.S. Biomedical Engineering, RIT	2014–2015
Ryan Selby – B.S. Electrical Engineering, RIT	2015
Anup Jonchhe – B.S. Biomedical Engineering, RIT	2015
Matthew Haywood – B.S. Electrical Engineering, RIT	2014
Rachel Baumgarten – B.S. Biomedical Engineering, RIT	2014
Amy Zeller – B.S. Biomedical Engineering, RIT	2013
Andrew Tock – B.S. Biomedical Engineering, RIT	2013

INVITED TALKS

Boca Raton Library, Technology for Improving Healthcare and Treatment	October 2019
FAU Showcase Conference, Computational Approaches Toward Individualized Therapeutic Interventions for Atrial Fibrillation and Parkinson's Disease	September 2019
Pittsburgh University, Engineering Our Way Toward Individualized Healthcare	September 2019
BioFlorida Conference, HealthIT Advancements: Going Digital to Improve Healthcare & Treatment	October 2018
Women in Data Science Conference, Biomedical Signal Feature Extraction for Computer-assisted Clinical Decision Making	March 2018
Massachusetts General Hospital, Developing Algorithms to Localize AF ablation Targets	November 2017
FAU College of Nursing, Applying Technology to Research Proposals	November 2017
Florida Atlantic University, Women in Engineering/Computer Science Panel Discussion	November 2017
Life Sciences Career Event, BioFlorida	October 2016

University of Buffalo, Mechanical and Aerospace Seminar   November 2015

University of Rochester, Department of Biomedical Engineering, Rochester, NY   December 2014

Guest Lecture - Computer Audition, University of Rochester, Rochester, NY. November 2014

University of Wisconsin-Milwaukee, Milwaukee, Wisconsin   September 2014

Xerox, Rochester, NY   May 2013

Rochester IEEE Section Signal Processing Society, Rochester, NY   April 2013

University of Rochester Medical Center, Rochester, NY   January 2013

The American Statistical Association of Rochester Chapter, Rochester, NY   November 2012

The IEEE Canadian Women in Engineering National Conference, Mississauga, Canada   April 2011

The IEEE EMBS Society, University of Ontario Institute of Technology, Oshawa, Canada   February 2010

National Conference on Women in Engineering, Toronto, Canada   November 2009

The IEEE Signal Processing Society, Youngstown, Ohio   November 2009

REFEREED PUBLICATIONS

Journals (underline represents students)

J1) M.D. Hssayeni, M.S. Croock, A. Al-Ani, H.F. Al-khafaji, Z.A. Yahya, and **B. Ghoraani**, "Intracranial Hemorrhage Segmentation Using Deep Convolutional Model" *arXiv preprint arXiv:1910.08643*, November 2019.

J2) **B. Ghoraani**, M.D. Hssayeni, M.A. Burack, J. Jimenez-Shahed, "Multilevel Features for Sensor-based Assessment of Motor Fluctuation in Parkinson's Disease Subjects", *IEEE Journal of Biomedical and Health Informatics*, Sept. 2019. 10.1109/JBHI.2019.2943866

J3) M.D. Hssayeni, M.A. Burack, J. Jimenez-Shahed, and **B. Ghoraani,** "Wearable Sensors for Estimation of Parkinsonian Tremor Severity During Free Body Movements", *Sensors MPDI Journal*, No. 19, Sept. 2019. **https://doi.org/10.3390/s19194215**

J4) **B. Ghoraani**, A.M. Suszko, R.J. Selvaraj, A. Subramanian, S. Krishnan, V.S. Chauhan, "Body Surface Distribution of T wave alternans is Modulated by Heart Rate and Ventricular Activation Sequence in Patients with Cardiomyopathy", *PLOS ONE*, 14 (4), e0214729 April 2019.

J5) P. Ganesan, E.M. Cherry, D.T. Huang, A. Pertsov, and **B. Ghoraani**, "Locating Atrial Fibrillation Rotor and Focal Sources Using Iterative Navigation of Multipole Diagnostic Catheters", *Cardiovascular engineering and technology,* Pages: 1-13, May 2019.

J6) P. Ganesan, A. Salmin, E.M. Cherry, D.T. Huang, A. Pertsov, and **B. Ghoraani**, "Iterative Navigation of Multipole Diagnostic Catheters to Locate Repeating-pattern Atrial Fibrillation Drivers", *Journal of Cardiovascular Electrophysiology*, **https://doi.org/10.1111/jce.13872**, February 2019.

J7) M.D. Hssayeni, M.A. Burack, J. Jimenez-Shahed, and **B. Ghoraani**, "Assessment of Response to Medication in Individuals with Parkinson's Disease", *Medical Engineering & Physics*, https://doi.org/10.1016/j.medengphy.2019.03.002 March 2019.

J8) M.D. Hssayeni, J. Jimenez-Shahed, and **B. Ghoraani**, "Hybrid Feature Extraction for Detection of Degree of Motor Fluctuation Severity in Parkinson's Disease Patients. *Entropy*, 21(2), p.137, January 2019.

J9) M.D. Hssayeni, M.A. Burack, J. Jimenez-Shahed and **B. Ghoraani**, "Wearable-based Mediation State Detection in Individuals with Parkinson's Disease, " *arXiv preprint arXiv:1809.06973*, 2018.

J10) S. Traitruengsakul, L. E. Seltzer, A. R. Paciorkowski, and **B. Ghoraani**, "Developing A Novel Epileptic Discharge Localization Algorithm for Electroencephalogram Infantile Spasms During Hypsarrhythmia", *Medical & Biology Engineering and Computing Journal*, Pages: 1-10, February 2017.

J11) D. Sinkiewicz, L. Friesen, **B. Ghoraani**, "A novel method for extraction of neural response from single channel cochlear implant auditory evoked potentials". Medical Engineering & Physics. 40 (2017) Pages: 47–55.

J12) **B. Ghoraani**, "Class-specific Discriminant Time-frequency Analysis Using Novel Jointly-learnt Non-negative Matrix Factorization", *EURASIP Journal on Advances in Signal Processing*, DOI: 10.1186/s13634-016-0393-4. Sept 2016.

J13) S. Ladavich and **B. Ghoraani**, "Rate-Independent Detection of Atrial Fibrillation by Statistical Modeling of Atrial Activity", *Biomedical Signal Processing and Control Journal*, Pages: 274–281, 2015.

J14) P. Ganesan, E. Cherry, A. Pertsov, and **B. Ghoraani**, "Characterization of Electrograms From Multi-polar Diagnostic Catheters During Atrial Fibrillation", *the Simulations of Heart Function Journal - BioMed Research International*, 2015.

J15) M. Sterling, D. Huang, and **B. Ghoraani**, "Developing a New Computer-aided Clinical Decision Support System For Prediction of Successful Post-cardioversion Patients With Persistent Atrial Fibrillation", *Computational and Mathematical Methods in Medicine Journal - Congestive Heart Failure*, 1(6), 2015.

J16) A. Zeller and **B. Ghoraani**, "Body Surface Mapping of T-wave Alternans Depends on the Distribution of Myocardial Scarring", *The Open Cardiovascular Medicine Journal,* 26, 2015.

J17) **B. Ghoraani**, R. Dalvi, S. Gizurarson, M. Das, A. Ha, A. Suszko, S. Krishnan, and V. Chauhan, "Localized Rotational Activation in the Left Atrium during Human Atrial Fibrillation: Relationship to Complex Fractionated Atrial Electrograms and Low Voltage Zones", *Heart Rhythm*, 10(12), Pages: 1830–1838, 2013.

J18) **B. Ghoraani**, "Selected Topics on Time-Frequency Matrix Decomposition Analysis", *Journal of Pattern Recognition and Intelligent Systems*, 1(3), Pages: 64-78, 2013.

J19) M.F. Kaleem, **B. Ghoraani,** A. Guergachi, and S. Krishnan, "Pathological Speech Signal Analysis and Classification using Empirical Mode Decomposition", Springer, *Medical & Biological Engineering & Computing (MBEC) journa*l, 10.1007/s11517-013-1051-8, 51(7), Pages: 811-821, 2013.

J20) **B. Ghoraani**, and S. Krishnan, "Discriminant Non-stationary Signal Features' Clustering Using Hard and Fuzzy Cluster Labeling" *EURASIP Journal on Advances in Signal Processing Editorial*, Pages: 2012-250, 2012

J21) **B. Ghoraani**, K. Umapathy, L. Sugavaneswaran, and S. Krishnan, "Pathological Speech Signal Analysis using Time-frequency Approaches" *Critical Reviews in Biomedical Engineering*, 40(1), Pages: 63-95, 2012.

J22) **B. Ghoraani**, S. Krishnan, R. J. Selvaraj and V. S. Chauhan, "T Wave Alternans Evaluation Using Adaptive Time-Frequency Signal Analysis and Non-negative Matrix Factorization", *Medical Engineering and Physics*, 33(6), Pages:700-711, 2011.

J23) **B. Ghoraani**, and S. Krishnan, "Time-Frequency Matrix Feature Extraction and Classification of Environmental Audio Signals", *the IEEE Transactions on Audio, Speech and Language Processing*, 19 (7), Pages: 2197 – 2209, 2011.

J24) K. Umapathy, **B. Ghoraani,** and S. Krishnan, Audio Signal Processing using Time- frequency Approaches: Coding, Classification, Fingerprinting, and Watermarking, *EURASIP Journal on Advances in Signal Processing*, Volume 2010 (2010), Article ID 451695, 28 pages.

J25) **B. Ghoraani** and S. Krishnan, "A Joint Time-Frequency and Matrix Decomposition Feature Extraction Methodology for Pathological Voice Classification", *the EURASIP Journal on Advances in Signal Processing*, vol. 2009, Article ID 928974, 11 pages, 2009, doi:10.1155/2009/928974.

Conference Proceedings and Abstracts (underline represents students)

C1) M.D. Hssayeni, J. Jimenez-Shahed, M.A. Burack, and **B. Ghoraani,** "Continuous Parkinsonian Tremor Estimation Using Motion Data", *IEEE GlobalSIP*, November. 2019.

C2) P. Ganesan, S. Rajaraman, R.L. Long, **B. Ghoraani**, and S. Antani, "Assessment of Data Augmentation Strategies Toward Performance Improvement of Abnormality Classification in Chest Radiographs," *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Berlin, Germany, July 2019.

C3) P. Ganesan, Z. Xue, S. Singh, R.L. Long, **B. Ghoraani**, and S. Antani, "Performance Evaluation of a Generative Adversarial Network for Deblurring Mobile-Phone Cervical Images," *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Berlin, Germany, July 2019.

C4) **B. Ghoraani**, A.M. Suszko, R.J. Selvaraj, A. Subramanian, S. Krishnan, and V.S. Chauhan, "Effectiveness of T wave alternans testing for risk stratification of ventricular tachyarrhythmias and sudden death in patients with cardiomyopathy," *Journal of Electrocardiology*, *57*, p.S103, April 2019.

C5) **B. Ghoraani**, "A Novel Resource-Aware Tensor Decomposition Design Based on Reinforcement Learning", *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Pages: 3447-3451, May 2019.

C6) M.D. Hssayeni, M.A. Burack, J. Jimenez-Shahed, and **B. Ghoraani**, "Symptom-based, Dual-channel LSTM Network for The Estimation of Unified Parkinson's Disease Rating Scale III", *IEEE International Conference on Biomedical and Health Informatics*, May 2019.

C7) M.D. Hssayeni, M.A. Burack, J. Jimenez-Shahed, and **B. Ghoraani,** "Activity-independent detection of mediation states in individuals with Parkinson's disease using wearable sensors", *Annual meeting of the American Academy of Neurology*, Neurology 92 (15 Supplement), P2. 8-004, May 2019.

C8) **B. Ghoraani**, A.M. Suszko, R.J. Selvaraj, A. Subramanian, S. Krishnan, V.S. Chauhan, "Effectiveness of T wave Alternans Testing for Risk Stratification of Ventricular Tachyarrhythmias and Sudden Death in Patients with Cardiomyopathy", International Society for Computerized Electrocardiology Annual Conference, April 2019.

C9) P. Ganesan, E. Cherry, A. Pertsov, and **B. Ghoraani**, "Development of a Rotor-Mapping Algorithm to Locate Ablation Targets During Atrial Fibrillation", *The IEEE Life Sciences Conference*, Pages: 41-44, Montreal, Canada, October 2018,

C10) P. Ganesan, H. Zilouchian, E. Cherry, A. Pertsov, and **B. Ghoraani**, "Developing an Iterative Tracking Algorithm to Guide a Catheter Towards Atrial Fibrillation Rotor Sources in Simulated Fibrotic Tissue", *International Conference of the Computing in Cardiology*, Masstricht, Netherlands, September 2018.

C11) M. Hssayeni, J. Adams and **B. Ghoraani**, "Deep Learning for Medication Assessment of Individuals with Parkinson's Disease Using Wearable Sensors," *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 10.1109/EMBC.2018.8513344*, Pages: 1-4, Honolulu, Hawaii, July 2018.

C12) P. Ganesan, K. Shillieto, **B. Ghoraani**, "Simulation of Spiral Waves and Point Sources in Atrial Fibrillation with Application to Rotor Localization", *30th IEEE International Symposium on Computer-Based Medical Systems, IEEE CBMS 2017*, Pages: 379- 384Thessaloniki, Greece, June 2017.

C13) V. Ramji, M. Hssayeni, M. Burack, **B. Ghoraani**, "Parkinson's Disease Medication State Management Using Data Fusion of Wearable Sensors", *in the proceedings of the International Conference of the IEEE Biomedical and Health Informatics*, Pages: 193 - 196, Orlando, February 2017.

C14) P. Ganesan, A. Salmin, E. Cherry, A. Pertsov, D. Huang, and **B. Ghoraani**, "A Tracking Algorithm to Guide Multi-pole Diagnostic Catheters Towards Atrial Fibrillation Sustaining Sources in Simulated Fibrotic Tissue", Abstract *at Proceedings of the 38th Heart Rhythm Scientific Sessions*, Chicago, May 2017.

C15) M. Burack, M. Hssayeni, **B. Ghoraani**, "Individualized classification algorithms for OFF and ON levodopa motor states from continuous wearable motion sensor data in Parkinson disease with motor fluctuations", *at the 30th Annual Symposium on the Etiology, Pathogenesis, and Treatment of Parkinson Disease and Other Movement Disorders*, September 2016, Portland, OR

C16) P. Ganesan*, A. Salmin, E. Cherry, **B. Ghoraani**, "Development of a Novel Probabilistic Algorithm for Localization of Rotors During Atrial Fibrillation", *in the proceedings of the 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Pages: 493-496, Orlando, August 2016.

* The IEEE EMBC Best Student Paper Finalist

C17) K. Shillieto, P. Ganesan, A. Salmin, E. Cherry, A. Pertsov, **B. Ghoraani**, "Catheter Simulator Software Tool to Generate Electrograms of Any Multi-Polar Diagnostic Catheter from 3D Atrial Tissue", *in the proceedings of the 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Pages: 2741-2744, Orlando, August 2016.

C18) M. Hssayeni, M. Burack, **B. Ghoraani**, "Automatic Assessment of Medication States of Patients with Parkinson's Disease Using Wearable Sensors", *in the proceedings of the 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Pages: 6082-6085, Orlando, August 2016.

C19) A. Salmin, P. Ganesan, K. Shillieto, E. Cherry, D. Huang, A. Pertsov, **B. Ghoraani**, "A Novel Catheter-Guidance Algorithm for Localization of Atrial Fibrillation Rotor and Focal Sources", *in the proceedings of the 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Pages: 501-504, Orlando, August 2016.

C20) R. Selby, A. Jonchhe, and **B. Ghoraani**, "Development of Data Acquisition Components for Simultaneous Recording of 3D Epicardial and Surface ECG Signals in the Langendorff Perfusion Apparatus", *in the proceedings of the 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Pages: 2733 - 2736, Orlando, August 2016.

C21) E. Messier, **B. Ghoraani**, "Development of MATLAB Software to Control Data Acquisition from a Multichannel Systems Multi-Electrode Array", *in the proceedings of the 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Pages: 3551 - 3554, Orlando, August 2016.

C22) A. Salmin, P. Ganesan, K.E. Shilieto, E. Cherry, A. Pertsov, D. Huang, and **B. Ghoraani**, "Developing and Evaluating a Novel Tracking Algorithm to Guide Multi-pole Diagnostic Catheters Towards Atrial Fibrillation Sources", Abstract *at Proceedings of the 37th Heart Rhythm Scientific Sessions*, San Francisco, CA, May 2016.

C23) A. Salmin, P. Ganesan, K.E. Shilieto, E. Cherry, A. Pertsov, D. Huang, and **B. Ghoraani**, "An Algorithm to Guide Multi-pole Diagnostic Catheters towards Atrial Fibrillation Sustaining Sites", Abstract *at Proceedings of the 21st Atrial Fibrillation Symposium*, Orlando, FL, January 2016.

C24) A. Salmin**, P. Ganesan, K.E. Shilieto, E. Cherry, A. Pertsov, and **B. Ghoraani**, "An Algorithm to Guide Multi-pole Diagnostic Catheters towards an Atrial Fibrillation Sustaining Site", Abstract *at Proceedings of the Upstate NY Cardiac Electrophysiology Society annual meeting, Rochester, NY, November, 2015, Rochester.*

** *A. Salmin received the Gordon K. Moe Young Investigator Award*

C25) S. Traitruengsakul, L. E. Seltzer, A. R. Paciorkowski, and **B. Ghoraani**, "Automatic Localization of Epileptic Spikes in EEGs of Children with Infantile Spasms", *the Proceedings of 37th Annual International IEEE EMBS*, Pages: 6194-6197, 2015.

C26) J. Medel, A. Savakis, and **B. Ghoraani**, "A Novel Time-Frequency Feature Extraction Algorithm Based on dictionary Learning", *the Proceedings of the 41st IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Pages: 4895-4899, Shanghai, China, March 2016.

C27) S. Kumar, **B. Ghoraani**, A. Savakis, "Joint and Discriminative Dictionary Learning for Facial Expression Recognition," Electronic Imaging, No. 11, Pages: 1-6, February 14-18, San Francisco, 2016.

C28) A. Salmin, P. Ganesan, K.E. Shilieto, E. Cherry, A. Pertsov, D.T. Huang, and **B. Ghoraani**, "An Algorithm to Guide Multi-pole Diagnostic Catheters Towards Atrial Fibrillation sustaining Sites", *at the 21st Atrial Fibrillation Symposium*, Orlando, Florida, Journal of Cardiovascular Electrophysiology, Vol. 27, No. 5, Page 632, May 2016.

C29) L. Seltzer, S. Traitruengsakul, S. Demarest, K. Knupp, T. Benke, D. Phillips, **B. Ghoraani**, and A. R. Paciorkowski, "A Novel Approach to Spike Detection in Hypsarrhythmia Using Matching Pursuit Time-Frequency Domain", presented at the Annual Meeting of the American Epilepsy Society, Philadelphia, PA, December 2015.

C30) P. Ganesan, E. Cherry, A. Pertsov and **B. Ghoraani**, "Rotational Activities During Atrial Fibrillation Associate with Incremental Gradient of Total Conduction Delay from Multi-pole Diagnostic Catheters", *in the Proceedings of the Upstate NY Cardiac Electrophysiology Society annual meeting*, November, 2014.

C31) D. Sinkiewicz, L. Friesen and **B. Ghoraani**, "Analysis of Cochlear Implant Artifact Removal Techniques Using the Continuous Wavelet Transform", *in the proceedings of the 36th Annual International IEEE EMBS Conference*, Pages: 5482-5485, September, 2014.

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