12th November 2023

RESUME

Joachim Abraham Behar
ID: 336215249
Birthdate: 23 April 1988
Haifa, Israel
(+972) 4 829 4125, jbehar@technion.ac.il
ORCID: 0000-0001-5956-7034
https://aim-lab.github.io/ || https://youtu.be/q5hHZsY2FM4 || https://physiozoo.com/ || TERA

ACADEMIC DEGREES

2011-2015 PhD in Biomedical Engineering, University of Oxford, UK.
Dissertation title: "Extraction of Clinical Information from the Non-Invasive Fetal Electrocardiogram". Advisor: Prof. Gari Clifford.

2010-2011 M.Sc., (**with distinction**) Biomedical Engineering, University of Oxford, UK.
Thesis title: "Analysis of accelerometer data for apnea screening". Advisor: Prof. Gari Clifford.

2008-2011 MEng., (**with distinction**), Ingénieur civil des Mines, Ecole Nationale Supérieure des Mines de Saint-Etienne, France.

ACADEMIC APPOINTMENTS

2022-to date Founding director of the Technion-Rambam Initiative in Medical AI (TERA).

2019-to date Assistant Professor, Technion Institute of Technology, Faculty of Biomedical Engineering Haifa, Israel.

2015-2018 Post-Doctoral Fellow, Technion Institute of Technology, Faculty of Biomedical Engineering, Haifa, Israel. Advisor: Prof. Yael Yaniv.

2009 Erasmus, Ecole Polytechnique Fédérale de Lausanne, Switzerland.

DEPARTMENTAL AND INSTITUTIONAL ACTIVITIES

- 2022-to date: academic director Technion-Rambam Initiative in Medical AI (TERA).
- 2022-2023: faculty undergraduate committee member.
- 2021: faculty graduate committee member.
- 2020: committee for strategic partnerships between the faculty and Einstein hospital, Brazil and Technion-Cornell, USA.

RESEARCH INTERESTS

Digital signal processing, machine learning, deep learning, big data, digital health, personalized medicine, sleep medicine, cardiology, non-invasive foetal electrocardiography, heart rate variability analysis, ophthalmology, mathematical modeling of the biochemical and bioenergetics signaling in the heart, atrial fibrillation and sinoatrial node cell activity.

TEACHING EXPERIENCE

2022-to date	**Machine Learning for Physiological Time Series Analysis** (#336018, 2.5 points), fourth year BSc and graduate level, Technion. Course initiated by Joachim Behar.
2019-to date	**Machine Learning in Healthcare** (#336546, 3 points), fourth year BSc and graduate level, Technion. Course initiated by Joachim Behar.
2019-to date	**The digital health revolution: from idea to bedside** (#338002, 1 point), Technion. Website: https://aim-lab.github.io/digital-health-course
2015-2017	Teaching assistant Bioelectricity (undergraduate level), Technion.
2012-2014	Teaching assistant at the department of Biomedical Engineering, University Oxford, in: Machine learning (graduate level), Biomedical signal processing (graduate level), computational methods (graduate and undergraduate level), biomedical instrumentation laboratory (undergraduate level).

PUBLIC PROFESSIONAL ACTIVITIES

Editorial member for archived journals

2016-to date	Editorial board member for IOP Physiological Measurement.

Participation in organizing conferences and workshops

2022	Scientific organizer of the Technion-Rambam Hack: Machine Learning in Healthcare between Technion, Rambam and MIT, Rambam Health Care Campus, Haifa, Israel, March 2022. Three days event with over 200 participants.
2021	Organization of the second workshop on the topic of "Atrial fibrillation modelling, diagnosis, phenotyping and treatment", 9th Nov. 2021 and with the participation of Technion (Israel), Shaare Zedek (Israel), Lund University (Sweden), INSERM (France), Mayo Clinic (US), Cambridge (UK), Emory University (US).
2020	Organization of a workshop on the topic of "Atrial fibrillation modelling, diagnosis, phenotyping and treatment", 7th Sept. 2020 and with the participation of Technion (Israel), Lund University (Sweden) and l'INSERM, (France).
2019	Organizer and session chair of the special session on "computational fetal monitoring" at Computing in Cardiology 2019, Singapore.
2014-to date	Program committee member Computing in Cardiology (CinC) conference.

2013 Co-organizer of the MIT-Physionet/CinC competition 2013 on the topic of Noninvasive fetal ECG. Session chair CinC conference 2013, Zaragoza, Spain.

Reviewer for grants

- U.S.-Israel Binational Science Foundation.
- Israel Science Foundation.
- The National Institute for Psychobiology in Israel.
- Icelandic Research Fund.
- 2e appel France-Québec IA-SANTÉ HDH-FRQS.

Reviewer for scientific journals

- Communications Medicine.
- European Heart Journal.
- Sleep Research Society: Sleep.
- IEEE: Transaction in Biomedical Engineering.
- IEEE: Journal of Biomedical and Health Informatics.
- Nature: Nature Schizophrenia.
- Nature: Scientific Reports.
- Nature Partner Journals: Digital Medicine.
- Elsevier: Digital Signal Processing.
- Elsevier: Computers in Biology and Medicine.
- Elsevier: Biomedical Signal Processing and Control.
- Springer: Medical & Biological Engineering & Computing.
- Springer: BioMedical Engineering OnLine.
- Springer: Sleep and Breathing.
- IOP Physiological Measurement.
- PLOS: Plos One.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- Member, Israeli Medical Association (IMA) for Sleep Research 2022- to date.
- Member, European Laboratory for Learning and Intelligent Systems (ELLIS)- 2021-to date.
- Member, Technion Machine Learning & Intelligent Systems (MLIS)- 2021-to date.
- Senior Member, Institute of Electrical and Electronics Engineers (IEEE)- 2019-to date.
- Member, Institute of Physics (IOP) – 2016-to date.

- Member, European Sleep Research Society (ESRS) – 2019-2020.
- Member, International Society of Heart Research (ISHR) – 2016-2018.
- Member, The Institute of Engineering and Technology (IET) – 2013/2014.

FELLOWSHIPS, AWARDS AND HONORS

- IOP Physiological Measurement, Martin Black Prize for best paper published in 2022.
- The Technion Diane Sherman Prize for Medical Innovation for a Better World, 2023, Israel.
- Technion Aly Kaufman Postdoctoral Fellowship, 2015-2017, Israel
- Winner ISHR Israel, Rena Yarom Young Investigator Competition, 2015, Israel
- Winner Wolfson Innovate Competition, Oxford, 2015, UK
- Engineering and Physical Sciences Research Council (EPSRC) scholarship, UK
- Balliol French Anderson scholarship, 2011-2014, UK
- MindChild Medical PhD scholarship, 2012-2014, UK
- Winner SparkVale Business competition, Oxford, UK
- Winner Physionet/Computing in Cardiology competition 2014, Robust Detection of Heart Beats in Multimodal Data, 2014
- IET William James Award, 2013, UK
- Co-organizer and unofficial winner for Event 1-2 of the Physionet/Computing in Cardiology competition 2013 on the topic of Noninvasive Fetal ECG. Session chair at the Computing in Cardiology conference 2013, Zaragoza, Spain
- Finalist at the MEC 2013 Dragon's Den competition (SleepAp project), 2013, UK
- *Mention Très bien* (Distinction) - *Diplôme Ingénieur Civil des Mines* (French MEng diploma), 2011
- Distinction - MSc in Biomedical Engineering, Oxford University, 2011, UK
- College Senior Science Scholarship - St Hilda's College, Oxford, 2011, UK
- Prize Ernst and Young for Project Management, 2009, France

OTHER PROFESSIONAL ACTIVITIES

- **PhysioZoo**: Project leader 2017-to date. The project aims at creating a reference platform for computational physiology research. The platforms first aim is to provide a reference software for the analysis of physiological time series analysis from Human and mammalian electrophysiological data. http://physiozoo.com/
- **SmartWater**: Lead developer 2011-2013. For two years, I led a team of five software engineers (also university students) in developing a system for monitoring the water consumption (represented by a time series) of water pumps in developing countries. The system was successfully trialed on 300 hand water pumps in rural Kenya and the project secured M£1.9 in 2014, when I left the UK for Israel.

- **Cardiocity**: Consultant. Cardiocity is a start-up company in the field of digital health that uses cutting Edge non-contact ECG sensors for atrial fibrillation screening. I have been doing consultancy work for the period 2012-2015 for the company on digital signal processing filters for the processing of biomedical time series. http://www.cardiocity.com/

GRADUATE STUDENTS

Completed MSc thesis

1. Ori Shemla, B.Sc, Biomedical Engineering, Technion-IIT. "Beating rate variability of pacemaker cells." Consultant. Principal supervisor: Prof. Yael Yaniv. (Completed 2021.)
2. Armand Chocron, B.Sc. in Electrical Engineering, Technion-IIT. "Remote diagnosis and phenotyping of atrial fibrillation using machine learning". Co-supervised with Prof. (Emeritus) Yehoshua Zeevi. (Completed 2021, Thesis grade: 95). MSc with Cum Laude.
3. Raphael Azeroual, B.Sc. Biomedical Engineering, Technion-IIT. "Detection of epileptic seizures from ECG in children at the intensive care unit". Principal supervisor. Co-supervised with Dr. (MD) Danny Eytan. (Completed 2022, Thesis grade: 94). MSc with Cum Laude.
4. Kevin Kotzen, B.Sc. Biomedical Engineering and Electrical Engineering, Witwatersrand University, South Africa. "Sleep architecture and fragmentation estimation from photoplethysmography using feature engineering and deep learning". Principal supervisor. Co-supervised by Associate Prof. Amir Landesberg. (Completed 2022, Thesis grade: 98). MSc with Summa Cum Laude.
5. Yuval Ben Sason, B.Sc. Biomedical Engineering, Technion-IIT. "Personalized Sleep Medicine for the Diagnosis and Therapy of Positional Sleep Apnea using Big Data and Reinforcement Learning". (Completed 2023, Thesis grade: 98). MSc with Cum Laude.
6. Sheina Gendelman, B.Sc. Electrical Engineering, Technion-IIT. "Machine learning for diagnosis and risk prediction of ventricular tachycardia from long term continuous ECG time series." (Completed, 2023, Thesis grade: 95).

PhD thesis in progress

7. Eran Zvuloni, MSc in Biomedical engineering, Technion-IIT. "Machine learning for the diagnosis and risk prediction of cardiovascular diseases from electrocardiogram time series". Principal supervisor. Co-supervised by Prof. Jesse Read (Ecole Polytechnique, Paris, France) through the EuroTech agreement. (Expected graduation in 2024.)
8. Jonathan Fhima, MSc in Machine learning, Ecole Normale Supérieure Paris. "Deep learning for cardiovascular diseases diagnosis and risk prediction from the vasculature of retinal images". Principal supervisor. Co-supervised by with Dr. Moti Freiman. (Expected graduation in 2024.)

9. Jeremy Levy, B.Sc. Electrical Engineering, Technion-IIT. “Machine Learning for the Diagnosis and Monitoring of Respiratory Pathologies”. Co-supervised with Prof. (Emeritus) Yehoshua Zeevi. (Expected graduation in 2023.)
10. Moran Davoodi, B.Sc. in Biomedical Engineering, Technion-IIT. “Aged related beat interval biometric identification using machine learning methods”. Co-supervisor. Principal supervisor: Associate Prof. Yael Yaniv. (Expected graduation in 2024.)
11. Shany Biton, B.Sc. Biomedical Engineering, Technion-IIT. “Diagnosis and risk prediction of atrial fibrillation from beat-to-beat time series”. Principal supervisor. Co-supervised by Prof (MD) Mahmoud Suleiman. (Expected graduation in 2024.)
12. Or Abramovich, B.Sc. Computer Science, Technion-IIT. “Deep learning for robust glaucoma diagnosis”. Principal supervisor. Co-supervised by Prof (MD) Eytan Blumenthal. (Expected graduation in 2025.)

MSc thesis in progress

13. Noam Ben Moshe, B.Sc. Electrical Engineering, Technion-IIT. “Diagnosis and risk prediction of atrial fibrillation from raw continuous electrocardiogram recordings”. (Expected graduation in 2023.)
14. Shirel Attia, B.Sc. Computer Science, Technion-IIT. “Artificial intelligence and digital health for the nocturnal diagnosis of cardiovascular and respiratory diseases – SleepAI”. Principal supervisor. (Expected graduation in 2024.)
15. Yevgeni Man, B.Sc. Electrical Engineering, Technion-IIT. “Deep Learning for Fundus Image Analysis”. Principal supervisor. (Expected graduation in 2024.)
16. Sharon Haimov, B.Sc. Biomedical Engineering, Technion-IIT. “Transfer learning from adults to children for the analysis of physiological time series”. Principal supervisor. Co-supervised by Prof. (MD) Riva Tauman. (Expected graduation in 2024.)
17. Yarin Bekor, B.Sc. Applied Mathematics, Bar-Ilan University. “Deep learning and self-supervised learning for ECG analysis”. Principal supervisor. (Expected graduation in 2025.)

SPONSORED LONG-TERM VISITORS AND POST-DOCTORAL ASSOCIATES

Postdoctoral Fellows

1. Dr. Jonathan Sobel, PhD from École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland (2020-2022).
2. Dr. Márton Áron Goda, PhD from Pázmány Péter Catholic University - Faculty of Information Technology and Bionics, Budapest, Hungary. (August 2022-to date).

RESEARCH GRANTS

Competitive and international:

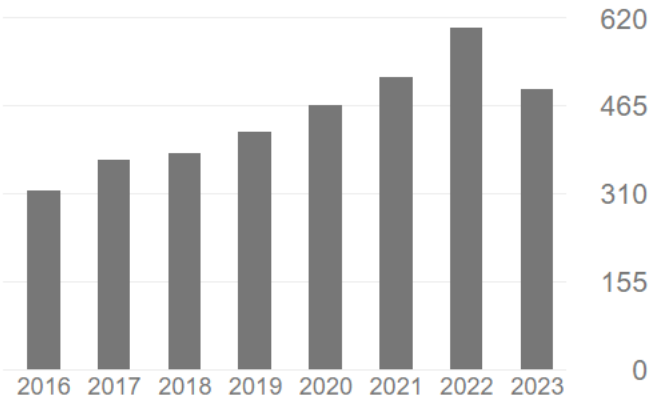
Year	Investigator	Granted by	Amount
2020-2023	co-PI	ERA-Net for Cardiovascular Diseases- Joint Transnational Call 2019. **Ministry of Health**. Consortium including investigators in: Israel, France, Germany.	89,370€ AIMLab (with all co-PIs 627,189€)
2021-2024	Collaborator	ERA-Net for Cardiovascular Diseases- Joint Transnational Call 2020. **Ministry of Health**. Consortium including investigators in: Israel, Belgium, Canada (Montréal), France, USA	152,000€ AIMLab (with all PIs 785,449€).
2020-2022	PI	Maimonides-Israel. **Ministry of Science and Technology**. Consortium including partners in Israel and France.	80,000€ AIMLab (with all PIs 160,000€)
2024-2026 (estimated)	Co-PI	**Horizon Europe:** Marie Skłodowska-Curie Actions. Consortium including investigators in Israel, Sweden, Italy, Spain and Finland.	~250,000€ AIMLab (with all PIs ~3,000,000€)
2023-2024	PI	**Israel Innovation Authority** (IIA) – Kamin	746,060NIS AIMLab

Institutional and sponsored research:

Year	Investigator	Granted by	Amount
2022-2024	PI	Technion faculty start-up grant.	$275,000
2021	PI	Sponsored research BioSig Technologies, Inc.	$12,000
2022-2024	PI	Technion Human Health initiative (THHI). Establishing the Technion-Rambam Initiative in Medical AI.	$700,000
2022-2024	Co-PI	Ingham Institute – Technion Australia Competitive Grant Program	$64,000 (with all PIs $223,000)
2021-2023	Co-PI	MIT - Israel Zuckerman STEM Fund	$29,700
2023-2024	PI	Technion Irving and Branna Sisenwein Fund - 2022	$27,500
2022-2024	PI	Technion Hittman Family Foundation Biomedical Innovation Fund.	$30,000
2022-2024	PI	FINE scholarship to support a postdoctoral fellow.	144,000NIS

PUBLICATIONS

	All	Since 2018
Citations	3996	2886
h-index	30	27
i10-index	49	43



Theses

1. **Behar Joachim** supervised by Clifford Gari D. Extraction of Clinical Information from the Non-Invasive Fetal Electrocardiogram. PhD. Thesis, University of Oxford. Michaelmas 2014.
2. **Behar Joachim** supervised by Clifford Gari D. Analysis of accelerometer data for apnea screening. MSc. Thesis, University of Oxford. Submitted August 2011.

Refereed papers in professional journals

1. Clifford Gari D, **Behar Joachim**, Li Qiao, Iead Rezek. Signal Quality Indices and Data Fusion for Determining Clinical Acceptability of Electrocardiograms Collected in Noisy Ambulatory Environments. **Physiological Measurement (IF: 2.688)**. 33.9 (2012): 1419-33.
2. **Behar Joachim**, Oster Julien, Qiao Li, Clifford Gari D. ECG Signal Quality During Arrhythmia and its Application to False Alarm Reduction. **IEEE Transaction on Biomedical Engineering (IF: 4.756)**. 60.6 (2013): 1660-6.
3. Zhu Tingting, Johnson Alistair E. W., **Behar Joachim**, Clifford Gari D. Crowd-Sourced Annotation of ECG Signals Using Contextual Information. **Annals of Biomedical Engineering)IF: 4.219).** 42.4 (2014): 871-84.

4. **Behar Joachim**, Johnson Alistair, Clifford Gari D., Oster Julien. A Comparison of Single Channel Foetal ECG Extraction Methods. **Annals of Biomedical Engineering (IF: 4.219)**. 42.6 (2014): 1340-53.
5. **Behar Joachim**, Andreotti Fernando, Zaunseder Sebastian, Li Qiao, Oster Julien, Clifford Gari D. An ECG simulator for generating maternal-foetal activity mixtures on abdominal ECG recordings. **Physiological Measurement (IF: 2.688)**. 35.8 (2014): 1537-50.
   Source code: http://fecgsyn.com/
6. **Behar Joachim**, Oster Julien, Clifford Gari D. Combining and benchmarking methods of foetal ECG extraction without maternal or scalp electrode data. **Physiological Measurement (IF: 2.688).** 35.8 (2014): 1569-89.
   Winning entry of the Physionet Challenge 2013 (non-official).
7. Oster Julien, **Behar Joachim**, Johnson Alistair, Sayadi Omid, Nemati Shamim, Clifford Gari D. Semisupervised ECG ventricular beat classification with novelty detection based on switching Kalman filters. **IEEE Transactions on Biomedical Engineering (IF: 4.756)** 62.9 (2015): 2125-34.
8. Johnson Alistair E. W., **Behar Joachim**, Clifford Gari D., Oster Julien. Multimodal heart beat detection using signal quality indices. **Physiological Measurement (IF: 2.688).** 36.8 (2015): 1665-77.
   Winning entry of the Physionet Challenge 2014.
9. Zhu Tingting, Dunkley Nic, **Behar Joachim**, Clifton David A., Clifford Gari D. Fusing Continuous-valued Medical Labels using a Bayesian Model. **Annals of Biomedical Engineering (IF: 4.219).** 43.12 (2015): 2892-902.
10. **Behar Joachim**, Roebuck Aoife, Shahid Mohammed, Daly Jonathan, Miranda Pureza Andre Hallack, Niclas Palmius, Stradling John, Clifford Gari D. SleepAp: An Automated Obstructive Sleep Apnoea Screening Application for Smartphones. **IEEE Journal of Biomedical Health Informatics (IF: 7.021).** 19.1 (2015): 325-31.
11. Andreotti Fernando, **Behar Joachim**, Zaunseder Sebastian, Oster Julien, Clifford Gari D. An open-source framework for stress-testing non-invasive foetal ECG extraction algorithms. **Physiological Measurement (IF: 2.688).** 37.5 (2016): 627-48.
12. Yaniv Yael, Ahmet Ismayil, Tsutsui Kenta, **Behar Joachim**, Moen Jack M., Okamoto Yosuke, Guiriba Toni-Rose, Liu Jie, Bychkov Rostislav, Lakatta Edward G. Deterioration of both autonomic neuronal receptor signaling and mechanisms intrinsic to

heart pacemaker cells contribute to age-associated alterations in the basal heart rate and heart rate variability in vivo. **Aging Cell (IF: 7.8).** 15.4 (2016): 716-24.

13. **Behar Joachim** and Yaniv Yael. Dynamics of PKA phosphorylation and gain-of-function in cardiac pacemaker cells: a computational model analysis. **American Journal of Physiology-Heart and Circulatory Physiology (IF: 5.125).** 310.9 (2016): H1259-66.
14. **Behar Joachim**, Zhu Tingting, Oster Julien, Niksch Alisa, Mah Douglas Y., Chun Terrence, Greenberg James, Tanner Cassandre, Harrop Jessica, Sameni Reza, Ward Jay, Wolfberg Adam J, Clifford Gari D. Evaluation of the fetal QT interval using non-invasive fetal ECG technology. **Physiological Measurement (IF: 2.688).** 37.9 (2016): 1392-403.
15. **Behar Joachim**, Ganesan Ambhighainath, Zhang Jin, Yaniv Yael. The Autonomic Nervous System Regulates the Heart Rate through cAMP-PKA Dependent and Independent Coupled-Clock Pacemaker Cell Mechanisms. **Frontiers in Physiology (IF: 4).** 7 (2016): 419.
16. Lakhno Igor V.*****, **Behar Joachim***, Oster Julien, Shulgin Vyacheslav, Ostras Oleksii, Andreotti Fernando. The use of non-invasive fetal electrocardiography in diagnosing second degree fetal atrioventricular block. **Maternal Health, Neonatology and Perinatology.** 3.1 (2017):14. ***** Equal contribution.
17. Shiraz Haron-Khun, Weisbrod David, Bueno Hanna, Yadin Dor, **Behar Joachim**, Peretz Asher, Binah Ofer, Hochhauser Edith, Eldar Michael, Yaniv Yael, Arad Michael, Attali Bernard. SK4 K+ channels are therapeutic targets for the treatment of cardiac arrhythmias. **EMBO Molecular Medicine (IF: 14.00).** 9.4 (2017): 415-29.
18. **Behar Joachim** and Yaniv Yael. Age-related pacemaker deterioration is due to impaired intracellular and membrane mechanisms: insights from numerical modeling. **The Journal of General Physiology (IF: 4)** 149.10 (2017): 935-49.
    Cover: http://jgp.rupress.org/content/149/10/891
19. Kamoun David, **Behar Joachim**, Leichner Joseph M., and Yaniv Yael. Bioenergetic feedback between heart cell contractile machinery and mitochondrial 3D deformations. **Biophysical Journal (IF: 3.4)** 115.8 (2018): 1603-1613.
20. **Behar Joachim***, Rosenberg Aviv*, Alexandrovich Alexandra, Shemlas Ori, Weiser Ido, Yaniv Yael. PhysioZoo: a novel open access software and databases for heart rate variability analysis in mammals. *Equal contribution. **Frontiers in Physiology (IF: 4)** 9 (2018): 1390.
    Source code: https://physiozoo.com/

21. **Behar Joachim***, Rosenberg Aviv*, Yaniv Yael. A universal scaling relation for defining power spectral bands in mammalian heart rate variability analysis. *Equal contribution. **Frontiers in Physiology (IF: 4)** 9 (2018): 1001.
22. Gliner Vadim, **Behar Joachim**, Yaniv Yael. Novel Method to Efficiently Create an mHealth App: Implementation of a Real-Time Electrocardiogram R Peak Detector. **JMIR mHealth and uHealth (IF: 5)** 6.5 (2018).
23. Lyashkov Alexey, **Behar Joachim**, Lakatta Edward, Yaniv Yael*, Maltsev Victor*. Positive feedback mechanisms among local Ca releases, NCX, & ICaL ignite pacemaker action potentials. *Equal contribution. **Biophysical Journal (IF: 3.4)** 114.13 (2018): 1176–1189.
24. **Behar Joachim*,** Niclas Palmius*, Qiao Li, Silverio Garbuio, Fabìola PG Rizzatti, Lia Bittencourt, Sergio Tufik, and Gari D. Clifford. Feasibility of Single Channel Oximetry for Mass Screening of Obstructive Sleep Apnea. **EClinicalMedicine (IF: 15.1)** 11 (2019): 81-88. *Equal contribution.
25. **Behar Joachim,** Bonnemains Laurent, Oster Julien, Shulgin Vyacheslav, Ostras Oleksii and Lakhno Igor. Non-invasive fetal electrocardiography for the detection of fetal arrhythmias. **Prenatal diagnosis (IF: 3)** 39.3 (2019): 178-187.
26. Chocron Armand, Oster Julien, Biton Shany, Mendel Franck, Elbaz Meyer, Zeevi Yehoshua, **Behar Joachim**. Remote atrial fibrillation burden estimation using deep recurrent neural network. **IEEE Transactions on Biomedical Engineering (IF: 4.756)** 68(8), (2020): 2447-2455.
27. Shemla Ori, Tsutsui Kenta, **Behar Joachim***, Yaniv Yael*. Beating rate variability of isolated mammal sinoatrial node tissue: insight into its contribution to heart rate variability. Beating rate variability of isolated SAN. **Frontiers in Neuroscience (IF: 4.3)** 14 (2020): 614141. * equal senior authorship.
28. Chocron Armand, Efraim Roi, Mandel Franck, Rueschman Michael, Palmius Niclas, Penzel Thomas, Elbaz Meyer, and **Behar Joachim**. Machine learning for nocturnal mass diagnosis of atrial fibrillation in a population at risk of sleep-disordered breathing. **Physiological Measurement (IF: 2.688)** 41(10), (2020): 104001.
29. **Behar Joachim***, Palmius Niclas*, Zacharie Sroussi, Chocron Armand, Penzel Thomas, Bittencourt Lia, and Tufik Sergio. Single-channel oximetry monitor versus in-lab polysomnography oximetry analysis: does it make a difference? **Physiological Measurement (IF: 2.688)** 41(4), (2020): 044007. * equal contribution

30. Arbel-Ganon Limor, **Behar Joachim**, Gómez Ana María and Yaniv Yael. Distinct mechanisms mediate pacemaker dysfunction associated with catecholaminergic polymorphic ventricular tachycardia mutations: Insights from computational modeling. **Journal of Molecular and Cellular Cardiology (IF: 5).** 143 (2020):85-95.
31. Biton Shany, Gendelman Sheina, Ribeiro Antônio H., Miana Gabriela, Moreira Carla, Ribeiro Antonio Luiz P, and **Behar Joachim**. Atrial fibrillation risk prediction from the 12-lead ECG using digital biomarkers and deep representation learning. **European Heart Journal-Digital Health (new journal)** 2.4 (2021): 576-585.
32. Benaim Reiner Anat, Sobel Jonathan, Almog Ronit, Lugassy Snir, Shabbat Tsviel Ben-Shabbat, Johnson Alistair, Eytan Danny, **Behar Joachim**. Comparing COVID-19 and influenza presentation and trajectory. **Frontiers in Medicine (IF: 3.6)** 8, (2021): 656405.
33. Levy Jeremy, Alvarez Daniel, del Campo Felix and **Behar Joachim**. Machine learning for nocturnal diagnosis of chronic obstructive pulmonary disease using digital oximetry biomarkers. **Physiological Measurement (IF: 2.688)** 42(5), (2021): 054001.
34. Levy Jeremy, Álvarez Daniel, Rosenberg Aviv A., Alexandrovich Alexandra, del Campo Felix, and **Behar Joachim**. Digital oximetry biomarkers for assessing respiratory function: standards of measurement, physiological interpretation, and clinical use. **npj Digital Medicine (IF: 15.2)** 4 (2021): 1-14.
    Source code: https://physiozoo.com/
35. Keenan Emerson, Karmakar Chandan, Udhayakumar Radhagayathri, Brownfoot Fiona, Lakhno Igor, Shulgin Vyacheslav, **Behar Joachim** and Palaniswami Marimuthu. Detection of fetal arrhythmias in non-invasive fetal ECG recordings using data-driven entropy profiling. **Physiological Measurement (IF: 2.688)** 43.2 (2022): 025008.
36. Azriel Raphael, Hahn Cecil D, De Cooman Thomas, Van Huffel Sabine, Payne Eric T, McBain Kristin L, Eytan Danny* and **Behar Joachim***. Machine learning to support triage of children at risk for epileptic seizures in the pediatric intensive care unit. **Physiological Measurement (IF: 2.688)** 43, (2022): 095003. *Equal senior authorship.
37. Charlton Peter H., Kevin Kotzen, Elisa Mejía-Mejía, Philip J. Aston, Karthik Budidha, Jonathan Mant, Callum Pettit, **Joachim Behar**, and Panayiotis A. Kyriacou. Detecting beats in the photoplethysmogram: benchmarking open-source algorithms. **Physiological Measurement (IF: 2.688)** 43.8, (2022): 085007. **Martin Black Prize for best paper published in 2022.**

38. Aublin Pierre Gabriel, Ben Ammar Mouin, Fix Jérémy, Barret Michel, **Behar Joachim**, and Oster Julien. Predict alone, decide together: cardiac abnormality detection based on single lead classifier voting. **Physiological Measurement (IF: 2.688)** 43.5 (2022): 054001.
39. Itzhak Sagi Ben, Sharony Ricon Shir, Biton Shany, **Behar Joachim**, and Sobel Jonathan A. Effect of temporal resolution on the detection of cardiac arrhythmias using HRV features and machine learning. **Physiological Measurement (IF: 2.688)** 43, no. 4 (2022): 045002.
40. Eran Zvuloni, Read Jesse, Ribeiro Antônio H., Ribeiro Antonio Luiz P., and **Behar Joachim**. On Merging Feature Engineering and Deep Learning for Diagnosis, Risk-Prediction and Age Estimation Based on the 12-Lead ECG. **IEEE Transactions on Biomedical Engineering (IF: 4.756)** 70, no. 7 (2023):2227-36.
41. Sobel Jonathan, Levy Jeremy, Almog Ronit, Reiner-Benaim Anat, Miller Asaf, Eytan Danny, and **Behar Joachim**. Descriptive characteristics of continuous oximetry measurement in moderate to severe COVID-19 patients. **Scientific Reports (IF: 4.997),** 13, no. 1 (2023): 442.
42. Kevin Kotzen, Charlton Peter H., Salabi Sharon, Landesberg Amir, and **Behar Joachim**. SleepPPG-Net: a deep learning algorithm for robust sleep staging from continuous photoplethysmography. **IEEE Journal of Biomedical and Health Informatics (IF: 7.021), 27(2), 924-932.**
43. Segal Sofia, Shemla Ori, Shapira Rotem, Peretz Noa Kirschner, Lukyanenko Yevgeniya, Brosh Inbar, **Behar Joachim**, Lakatta Edward G., Tsutsui Kenta, and Yaniv Yael. cAMP/PKA signaling affects aged-deteriorated pacemaker beat interval dynamic: Antiaging approach. **Journal of Molecular and Cellular Cardiology (IF: 5)** 173 (2022): 32.
44. Biton Shany, Aldhafeeri Mohsin, Marcusohn Erez, Tsutsui Kenta, Szwagier Tom, Elias Adi, Oster Julien, Sellal Jean Marc, Suleiman Mahmoud, and **Behar Joachim**. Generalizable and Robust Deep Learning Algorithm for Atrial Fibrillation Diagnosis Across Ethnicities, Ages and Sexes. **npj Digital Medicine (IF: 15.2)**, 6(1), 44.
45. Ben Sason Yuval, Oksenberg Arie, Sobel Jonathan A., and **Behar Joachim**. Characteristics of patients with positional OSA according to ethnicity and the identification of a novel phenotype—Lateral Positional Patients: a MESA study. **Journal of Clinical Sleep Medicine (IF: 4.324)** 19.3 (2023): 529-538.

46. Einoch Amor Reef, Levy Jeremy, Broza Yoav, Vangravs Reinis, Rapoport Shelley, Zhang Min, Wu Weiwei, Leja Marcis, **Behar Joachim**, Haick Hossam. Liquid Biopsy Based Volatile Organic Compounds from Blood and Urine, and their Combined Datasets for Highly Accurate Detection of Cancer. **ACS sensors (IF: 9.618)**, 8(4), 1450-1461.
47. Abramovich Or, Pizem Hadas, Eijgen Jan Van, Oren Ilan, Melamed Joshua, Stalmans Ingeborg, Blumenthal Eytan, and **Behar Joachim**. FundusQ-Net: A regression quality assessment deep learning algorithm for fundus images quality grading. Accepted for publication in **Computer Methods and Programs in Biomedicine (IF: 7.027)** 239 (2023): 107522.
48. Segal Sofia, Shemla Ori, Shapira Rotem, Peretz Noa Kirschner, Lukyanenko Yevgeniya, Brosh Inbar, **Behar Joachim**, Lakatta Edward G., Tsutsui Kenta, and Yaniv Yael. cAMP signaling affects age-associated deterioration of pacemaker beating interval dynamics. **GeroScience (IF: 7.581)** (2023): 1-12.
49. Ben Sason Yuval, Levy Jeremy, Oksenberg Arie, Sobel Jonathan A., and **Behar Joachim**. Positional sleep apnea phenotyping using machine learning and digital oximetry biomarkers. Accepted for publication in **Physiological Measurement (IF: 2.688)**, 44 (2023): 085001.
50. Levy Jeremy, Álvarez Daniel, Del Campo Félix and **Behar Joachim**. Deep learning for obstructive sleep apnea diagnosis based on single channel oximetry. **Nature Communications (IF: 17.694)**, 14(1), (2023): 4881.
51. Habineza Theogene, Ribeiro Antônio H., Gedon Daniel, **Behar Joachim** A., Ribeiro Antonio Luiz P., and Schön Thomas B. End-to-end risk prediction of atrial fibrillation from the 12-Lead ECG by deep neural networks**. Journal of Electrocardiology (IF: 1.38),** 81 (2023): 193-200.
52. Moran Davoodi, Adam Soker, **Behar Joachim**, and Yaniv Yael. Using beat-to-beat heart signals for age-independent biometric verification. **Scientific Reports (IF: 4.997),** 13, no. 1 (2023): 16937.

Review papers

53. Roebuck Aoife, Monasterio Violeta, Gederi Elnaz, Osipov Maxim, **Behar Joachim**, Malhotra Atul, Penzel Thomas, Clifford Gari D. A review of signals used in sleep analysis. **Physiological Measurement (IF: 2.688)**. 35(1), (2014): R1-57.
54. **Behar Joachim**, Roebuck Aoife, Gederi Elnaz, Domingos Joao, Clifford Gari D. A Review of Current Sleep Screening Applications for Smartphones. **Physiological Measurement (IF: 2.688)**. 34.7 (2013): R29-46.

55. **Behar Joachim**, Andreotti Fernando, Zaunseder Sebastian, Oster Julien, Clifford. Gari D. A practical guide to non-invasive foetal electrocardiogram extraction and analysis. **Physiological Measurement (IF: 2.688)**. 37.5 (2016): R1-35.
56. Radana Kahankova, Martinek Radek, Jaros Rene, Behbehani Khosrow, Matonia Adam, Jezewski Michal, and **Behar Joachim**. A Review of Signal Processing Techniques for Non-Invasive Fetal Electrocardiography. **IEEE Reviews in Biomedical Engineering (IF: 7.073).** 13 (2019): 51-73.
57. **Behar Joachim**, Chengyu Liu, Kevin Kotzen, Kenta Tsutsui, Valentina DA Corino, Janmajay Singh, Marco AF Pimentel et al. Remote health diagnosis and monitoring in the time of COVID-19. **Physiological measurement (IF: 2.688)** 41(10), (2020): 10TR01.
58. Bar Nitai, Sobel Jonathan A., Penzel Thomas, Shamay Yosef, **Behar Joachim**. From sleep medicine to medicine during sleep – a clinical perspective. **Physiological Measurement (IF: 2.688)** 42(4), (2021): 044006.
59. Peter H. Charlton, John Allen, Raquel Bailón, Stephanie Baker, **Joachim Behar**, Fei Chen, Gari D. Clifford, David A. Clifton, Harry Davies, Cheng Ding, Xiaorong Ding, Jessilyn Dunn, Mohamed Elgendi, Munia Ferdoushia, Daniel Franklin, Md Farhad Hasana3,4 10 , Eduardo Gil, Jussi Hernesniemi, Xiao Hu, Nan Ji, Yasser Khan, Spyridon Kontaxis, Ilkka Korhonen, Panicos A. Kyriacou, Pablo Laguna, Jesús Lázaro, Chungkeun Lee, Jeremy Levy, Yumin Li, Chengyu Liu27, Jing Liu, Lei Lu, Danilo Mandic, Vaidotas Marozas, Elisa Mejía-Mejía, Ramakrishna Mukkamala, Meir Nitzan, Tania Pereira, Carmen C. Y. Poon, Jessica C. Ramella-Roman, Harri Saarinen, Md Mobashir Hasan Shandhi, Hangsik Shin, Gerard Stansby, Toshiyo Tamura, Antti Vehkaoja, Will Ke Wang, Yuan-Ting Zhang, Ni Zhao, Dingchang Zheng, and Tingting Zhu. The 2023 Wearable Photoplethysmography Roadmap. **Physiological Measurement (IF: 2.688)** (2023).
60. Ma Caiyun, Xiao Zhijun, Zhao Lina, Biton Shany, **Behar Joachim**, Long Xi, Vullings Rik, Aarts Ronald M., Li Jianqing, and Liu Chengyu. "A Review on Atrial Fibrillation Detection from Ambulatory ECG." **IEEE Transactions on Biomedical Engineering (IF: 4.756)** (2023).

Editorials and letters to the editors

61. Clifford Gari D., Silva Ikaro, **Behar Joachim**, Moody George. Editorial: Non-invasive fetal ECG analysis. **Physiological Measurement (IF: 2.688).** 35.8 (2014): 1521-36.

62. Silva Ikaro, Moody Benjamin, **Behar Joachim**, Johnson Alistair, Oster Julien and Clifford Gari D. Editorial: Robust detection of heart beats in multimodal data. **Physiological Measurement (IF: 2.688).** 36.8 (2015): 1629-44.
63. Yaniv Yael and **Behar Joachim**. Mutation in one Molecule Induces Beating Rate Changes by Affecting the Coupled Clock Pacemaker. **Journal of Cardiology & Cardiovascular Therapy.** 6.4 (2017): 1-3.
64. **Behar Joachim**, Julien Oster, Maarten De Vos, and Gari D. Clifford. Wearables and mHealth in mental health and neurological disorders. **Physiological Measurement (IF: 2.688).** 40 (2019):070401.
65. **Behar Joachim**. From sleep medicine to medicine during sleep: a new paradigm. **Sleep (IF: 5.6).** 43.1 (2019): zsz279.
66. **Behar Joachim**, Liu Chengyu, Zigel Yaniv, Laguna Pablo and Clifford Gari D., 2020. Editorial on Remote Health Monitoring: from chronic diseases to pandemics. **Physiological Measurement (IF: 2.688).** 41(10), (2020) p.100401.
67. **Behar Joachim,** Shamay Yosi, Alvarez Daniel, del Campo Matías Felix, and Penzel Thomas. From Sleep Medicine to Medicine During Sleep. **Physiological Measurement (IF: 2.688).** 42(12), (2021):120301.

Refereed papers in conference proceedings

1. Dafoulas George E., Koutsias Stylianos, **Behar Joachim**, Osorio Juan, Malley Brian, Gruentzig Alexander, Celi Leo A., Angelidis Pantelis, Theodorou Kyriaki, Giannoukas Athanasios. Development of an mHealth Open Source Platform for Diabetic Foot Ulcers Tele-consultations, 2nd International ICST Conference on Wireless Mobile Communication and Healthcare - MobileHealth 2011, Kos Island, Greece, October 2011.
2. **Behar Joachim**, Oster Julien, Li Qiao, Clifford Gari. A single channel ECG quality metric. Computing in Cardiology. Krakow, Poland, 9-12th Spt, 2012.
3. **Behar Joachim,** Guazzi Alessandro, Jorge Joao, Maraci Mohamad A., Laranjeira Simao, Papastylianou Tasos, Thomson Patrick, Clifford Gari D., Hope Robert A. Software Architecture to Monitor Handpump Performance in Rural Kenya. WG 9.4: 12th International Conference on Social Implications of Computers in Developing Countries, Ocho Rios Jamaica, 19-22th May, 2013.
4. Zhu Tingting, Jonhson Alistair, **Behar Joachim**, Clifford Gari D. Bayesian Voting of Multiple Annotators for Improved QT Interval Estimation. Computing in Cardiology, 40:659-662, Zaragoza, Spain, 22-25th Spt, 2013.

5. Oster Julien, **Behar Joachim**, Colloca Roberta, Qiao Li, Clifford Gari D. Open source Java-based ECG analysis software and Android app for atrial fibrillation screening. Computing in Cardiology, 40:731-734, Zaragoza, Spain, 22-25th Spt, 2013.
6. Silva Ikaro, **Behar Joachim**, Zhu Tingting, Oster Julien, Clifford Gari D., Moody George B. Noninvasive Fetal ECG: the PhysioNet/Computing in Cardiology Challenge 2013. Computing in Cardiology, 40:149-152, Zaragoza, Spain, 22-25th Spt, 2013.
7. **Behar Joachim**, Oster Julien and Clifford Gari D. Non Invasive FECG extraction from a set of abdominal sensors. Computing in Cardiology, Zaragoza, 40:297-300, Spain, 22-25th Spt, 2013. Winning entry of the Physionet Challenge 2013 (non-official).
8. **Behar Joachim**, Roebuck Aoife, Shahid Mohammed, Daly Jonathan, Andre Hallack, Niclas Palmius, Stradling John, Clifford Gari D. An Evidence Based Android OSA Screening Application. Computing in Cardiology, 40:257-260, Zaragoza, Spain, 22-25th Spt, 2013.
9. **Behar Joachim**, Alistair Johnson, Julien Oster, Gari D. Clifford. An Echo State Neural Network for Foetal Electrocardiogram Extraction Optimised by Random Search. NIPS workshop Lake Tahoe, Nevada, US, 5-10 December 2013.
10. Tingting Zhu, **Behar Joachim**, Papastylianou Tasos, Clifford Gari D. CrowdLabel: A Crowdsourcing Platform for Electrophysiology. Computing in Cardiology, Boston (MA), USA, 7-10th Spt, 2014.
11. Alvi Mohsan, Andreotti Fernando, Oster Julien, Clifford Gari D., **Behar Joachim**. fecgsyngui: A GUI Interface to fecgsyn for Simulation of Maternal-Foetal Activity Mixtures on Abdominal Electrocardiogram Recordings. Computing in Cardiology, Boston (MA), USA, 7-10th Spt, 2014.
12. **Behar Joachim**, Oster Julien and Clifford Gari D. A Bayesian Filtering Framework for Accurate Extracting of the Non Invasive FECG Morphology. Computing in Cardiology, Boston (MA), USA, 7-10th Spt, 2014.
13. Andreotti Fernando, **Behar Joachim**, Oster Julien, Clifford Gari D., Malberg Hagen and Zaunseder Sebastian. Optimized Modelling of Maternal ECG Beats using the Stationary Wavelet Transform. Computing in Cardiology, Boston (MA), USA, 7-10th Spt, 2014. Poster award at Computing in Cardiology 2014.
14. Andreotti Fernando, **Behar Joachim**, Zaunseder Sebastian, Clifford Gari D., Oster Julien. Evaluation of Foetal ECG extraction Methods in the Presence of Non-Stationary Abdominal Mixtures. bi-annual Brazilian Biomed. Eng. Congress, Oct 2014.

15. Clifford Gari D., Arteta Carlos, Zhu Tingting, Pimentel Marco, Santos Mauro, Domingos Joao, Maraci Mohammad A., **Behar Joachim** and Oster Julien. A scalable mHealth system for non-communicable disease management. IEEE GHTC, 10-13th Oct 2014, Silicon Valley, San Jose, California USA.
16. Papastylianou Tasos, **Behar Joachim** et al. Smart Handpumps: Improving the reliability of rural water services. AHT2014, London, 17-18th Spt 2014.
17. Johnson Alistair E W, **Behar Joachim**, Clifford Gari D. and Oster Julien. R-Peak Estimation using Multimodal Lead Switching. Computing in Cardiology, Boston (MA), USA, 7-10th Spt, 2014. Winning entry of the Physionet Challenge 2014.
18. **Behar Joachim**, Rosenberg Aviv, Yaniv Yael, Oster Julien. Rhythm and Quality Classification from Short ECGs Recorded Using a Mobile Device. Computing in Cardiology, Rennes, France, 24-27th Spt 2017.
19. **Behar Joachim**, Palmius Niclas, Daly Jonathan, Li Qiao, Rizzatti Fabiola, Bittencourt Lia, Clifford Gari D. Sleep Questionnaires in Screening for Obstructive Sleep Apnoea. Computing in Cardiology, Rennes, France, 24-27th Spt 2017.
20. **Behar Joachim**, Shemla Ori, Weiser-Bitoun Ido, Rosenberg Aviv A. and Yaniv Yael. Adding two dimensions to heart rate variability research. Computing in Cardiology, Maastricht, Netherland, 23-26th Spt 2018.
21. Roussel Benjamin, **Behar Joachim**, Oster Julien. A Recurrent Neural Network for the Prediction of Vital Sign Evolution and Sepsis in ICU. Computing in Cardiology, Singapore, 8-11th Spt 2019.
22. Assaraf David, Levy Jeremy, Singh Janmajay, Chocron Armand, **Behar Joachim**. Classification of 12-lead ECGs using digital biomarkers and representation learning. Computing in Cardiology, Rimini, 13-16th Spt 2020. **Best oral presentation award**.
23. Kotzen Kevin, Charlton Peter H, Landesberg Amir and **Behar Joachim**. Benchmarking Photoplethysmography Peak Detection Algorithms Using the Electrocardiogram Signal as a Reference. Computing in Cardiology. Brno, Czech Republic, 12-15th September 2021 (hybrid event). Vol. 48. IEEE, 2021.
24. Gendelman Sheina, Biton Shany, Raphael Derman, Lugassy Snir, Alexandrovich Alexandra and **Behar Joachim**. PhysioZoo ECG: Digital electrocardiography biomarkersto assess cardiac conduction. Computing in Cardiology. Brno, Czech Republic, 12-15th September 2021 (hybrid event). Vol. 48. IEEE, 2021.
25. Fhima Jonathan, Van Eijgen Jan, Stalmans Ingeborg, Men Yevgeniy, Freiman Moti, and **Behar Joachim**. PVBM: A Python Vasculature Biomarker Toolbox Based On Retinal Blood

Vessel Segmentation. Proceeding of the European Conference on Computer Vision (ECCV) workshop on medical computer vision, Tel Aviv, Israel, 23th October 2022.

26. Zvuloni Eran, Gendelman Sheina, Mohanty Sanghamitra, Lewen Jason, Natale Andrea, **Behar Joachim**. Atrial Fibrillation Recurrence Risk Prediction from 12-lead ECG Recorded Pre-and Post-Ablation Procedure. Computing in Cardiology. Tempere, Finland, 4-7th September 2022.
27. Fhima Jonathan, Van Eijgen Jan, Freiman Moti, Stalmans Ingeborg, **Behar Joachim**. Lirot. ai: A Novel Platform for Crowd-Sourcing Retinal Image Segmentations. Computing in Cardiology. Tempere, Finland, 4-7th September 2022.
28. Ben Moshe Noam, Shany Biton and **Behar Joachim**. ArNet-ECG: Deep Learning for the Detection of Atrial Fibrillation from the Raw Electrocardiogram. Computing in Cardiology. Tempere, Finland, 4-7th September 2022.
29. Biton Shany, Mahmoud Suleiman, Ben Moshe Noam, Sörnmo Leif, and **Behar Joachim**. Estimation of f-wave Dominant Frequency Using a Voting Scheme. Computing in Cardiology. Tempere, Finland, 4-7th September 2022.
30. Goda Márton Áron, Charlton Peter and **Behar Joachim**. Robust peak detection for photoplethysmography signal analysis. Accepted in Computing in Cardiology 2023 (special session),
31. Goda Márton Áron, Beloosesky Ron, Weiner Zeev and **Behar Joachim**. Case Study: Fetal Breathing Movements as a Proxy for Fetal Lung Maturity Estimation. Accepted in Computing in Cardiology 2023.
32. **Behar Joachim** et al. PhysioZoo: The Open Physiological Biomarkers Resource. Accepted in Computing in Cardiology 2023.
33. Charlton Peter, Goda Márton Áron, **Behar Joachim** and Panicos Kyriacou. Accelerometry-Guided Inter-Beat-Interval Assessment from Wrist Photoplethysmography. Accepted in Computing in Cardiology 2023.

Patent applications

1. **Behar Joachim**. Parasol device for collecting and restoring solar energy. 2006. FR2904686A1.
2. Clifford Gari D., Gederi Elnaz, Osipov Maxim, Monasterio Violetta, Roebuck Aoife, **Behar Joachim**. Systems and methods for determining mental and physical health using multi-scale metrics. 2012. WO Patent 2013106700.

3. Yaniv, Yael, **Behar Joachim**, and Aviv Rosenberg. "Heart rate variability analysis in mammalians." U.S. Patent Application No. 17/259,172.

CONFERENCES AND INVITED TALKS

Plenary, keynote or invited talks

1. **Behar Joachim** and Yaniv Yael. Age-related pacemaker deterioration: Insights from numerical modeling. Israel Society for Physiology and Pharmacology. Jerusalem, 14th February 2019. **Invited**.
2. **Behar Joachim**, Weiner Zeev and Warrick Philip. Special Session on Computational Fetal Monitoring. Computing in Cardiology. Singapore, 8-11th Spt 2019. **Invited.**
3. Feasibility of Single Channel Oximetry for Mass Screening of Obstructive Sleep Apnea. Franco Israeli Congress on Sleep. 27-31th 2019, Dan Hotel, Tel Aviv. **Invited.**
4. Blind source separation theory and practice for fetal ECG analysis. Second International Summer School on Technologies and Signal Processing in Perinatal Medicine – TSPPM. 16-23 July, 2021, Via Zoom. **Invited.**
5. Digital Biomarkers and Machine Learning for Intelligent Patient Monitoring. AI in precision medicine and future health-tech solutions. Workshop organized by the Bio-Convergence and Technion Human Health Initiatives. Technion, Haifa, Israel 2nd March 2021. **Invited.**
6. Artificial intelligence in medicine. Agora de La Fabrique du Futur. Session on TELEMEDECINE. 5-6 Juillet 2021 (France). Via video conference. **Invited.**
7. Digital biomarkers and machine learning for physiological time series analysis. IEEE International Conference on Microwaves, Antennas, Communications and Electronic Systems (COMCAS). 1th October 2021, David Intercontinental, Tel Aviv. **Invited.**
8. Atrial fibrillation risk prediction from the 12-lead ECG using digital biomarkers and deep representation learning. International Congress of Electrocardiology. ICE 2021, Online conference, 15-17th April 2021. **Invited.**
9. Digital Biomarkers and Deep Learning for Physiological Time Series Analysis. Symposium on the Future of Medicine, Meet in Galilee, Zichron Yaakov, Israel. 24th July 2022. **Invited.**
10. Closing the Loop: Technion-Rambam Center for Artificial Intelligence in Healthcare. Presentation on behalf of the Technion to Björn Thümler, Minister for Science and Culture of the German State of Lower Saxony. 1th May 2022. Technion-IIT, Haifa. **Invited.**
11. Digital Biomarkers and Deep Learning for Physiological Time Series Analysis. Technion-Rambam Hack: Machine Learning in Healthcare, Rambam Health Care Campus, Haifa, Israel. 7-9th Mach 2022. **Organizer.**

12. Digital Biomarkers and Deep Learning for Physiological Time Series Analysis. Faculty seminar, Biomedical Engineering, Ben-Gurion University of the Negev, Beersheba, Israel. 11th May 2022. **Invited.**
13. Artificial Intelligence and Digital Health for the Nocturnal Diagnosis of Obstructive Sleep Apnea. Franco Israeli Congress on Sleep. 30 October-3rd November 2022, Dan Hotel, Tel Aviv. **Invited.**
14. Digital biomarkers and deep learning for physiological time series analysis. 35th Umbrella Symposium, Aachen, Life Science and Engineering: Data Analytics, Neuroscience and Multiscale Biomedical Engineering, Aachen, Germany, 16-18 May 2022. **Invited.**
15. Artificial Intelligence - Based Solutions to Support AF Diagnosis and Management. ICI4All 4-6th December 2022. David Intercontinental Hotel, Tel-Aviv, Israel. **Invited.**
16. Deep learning for retinal fundus image analysis. Technion-Rambam Initiative in Medical AI (TERA). 23rd November 2022. Faculty of Biomedical Engineering, Haifa, Israel. **Invited.**
17. IA and precision medicine. **Keynote** at round table, Technion France and G9+. 6th of February. Les Salons de l'Hôtel des Arts et Métiers 2023, Paris, France.
18. Digital biomarkers and deep learning for physiological time series analysis. AI and Beyond, Technion. Tech.AI annual conference 2 March 2023, Haifa, Israel. **Invited.**
19. Artificial Intelligence in Medicine. T-Cairem - Technion Catalyst Workshop Medicine and Biology in the AI Age, 8-10 May 2023, Ein Gedi, Israel. **Invited.**
20. Deep learning for retinal fundus image analysis. 36th Umbrella Symposium titled “Life Science & Engineering: Data Analytics, Neuroscience & Multiscale Biomedical Engineering” Technion, RWTH Aachen University and Forschungszentrum Jülich. May 30 - June 1 2023, Technion-IIT, Haifa, Israel. **Invited.**
21. PhysioZoo: The Open Digital Physiological Biomarkers Resource. MIT Laboratory for Computational Physiology, Cambridge Massachusetts. 15th August 2023. **Invited**.

Contributed Talks and Posters

22. **Behar Joachim**, Milandri Giovanni, Raghu Arvind, Fathima Sana, Dr Clifford Gari D. Global Health Initiative through EWH-Oxford Student Organization. PGBiomed, Glasgow, 14-16 August, 2011.
23. **Behar Joachim**, Newton Alice, Dafoulas George, Chigurupati Radhika, Naik Shreesh, Paik Kenneth, Celi Leo Anthony. Sana: Democratizing Access to Quality Healthcare using an Open mHealth Architecture. ICTT 2012. London, 6 March.

24. **Behar Joachim**, Wolfberg Adam, Zhu Tingting, Oster Julien, Niksch Alisa, Mah Douglas, Chun Terrence, Greenberg James, Tanner Cassandre, Harrop Jessica, Esbroeck Alexander Van, Alexander Amy, McCarroll Michele, Drake Timothy, Silber Angela, Sameni Reza, Ward Jay, Clifford Gari D. Evaluation of the fetal QT interval using non-invasive foetal ECG technology. SMFM - 34th Annual Meeting- The Pregnancy Meeting. New Orleans, LA, 8th February, 2014.
25. Daly Jonathan, Roebuck Aoife, Morys Megan, Palmius Niclas, **Behar Joachim**, Clifford Gari D. SleepCare: a Smartphone Application for Obstructive Sleep Apnoea Monitoring. AHT2014, London, 17-18th Spt 2014.
26. **Behar Joachim** and Yaniv Yael. The Regulation of the Heart Beat by the Crosstalk between Brain Signaling Receptor Stimulation and Pacemaker Cell Internal Mechanisms. ISHR-Israel section, Haifa, Israel, 10 Dec 2015. Winner Rena Yarom Young Investigator Competition.
27. Palmius Niclas, Daly Jonathan, Roebuck Aoife, Morys Megan, **Behar Joachim**. SmartCare: A centralised hub for medical apps. Connected Life 2015 conference, Balliol college, Oxford 4th June 2015.
28. **Behar Joachim**, Racheli Gordon, Sofi Segal and Yael Yaniv. Non-additive sympathetic-parasympathetic brain stimulation interaction in single sinoatrial node cells. ISHR-Israel section, Beersheba, Israel, 28 December 2016.
29. Elul Yonatan, Rosenberg Aviv, **Behar Joachim** and Yaniv Yael. PhysioZoo database: a Software for annotating animal electrophysiological data. ISHR-Israel section, Beersheba, Israel, 28 Dec 2016.
30. **Behar Joachim** and Yaniv Yael. Internal Pacemaker Cell Mechanisms Mediating Autonomic Nervous Regulation of the Heart Rate. XXII ISHR World Congress, Buenos Aires, Argentina, 18-21April 2016.
31. **Behar Joachim**, and Yaniv Y. A novel mouse pacemaker cell mathematical model to study autonomic nervous system regulation of the beating rate and aging impairment. 42nd FEBS congress, Jerusalem, Israel. 10-14 September 2017. Vol. 284.
32. **Behar Joachim**, Rosenberg Aviv, Alexandrovich Alexandra, Elul Yonatan, Shemlas Ori, Yaniv Yael. PhysioZoo: Open source software for heart rate variability analysis of mammal's electrophysiological data. ISHR European conference, Hamburg, 24-27 July 2017.
33. **Behar Joachim**, Laurent Bonnemains, Vyacheslav Shulgin, Julien Oster, Oleksii Ostras, and Igor Lakhno. Non-invasive fetal electrocardiography for the detection of fetal arrhythmias: Toward a fetal Holter. Archives of Cardiovascular Diseases Supplements 10.3-4 (2018): 281.

34. Victor Maltsev, Lyashkov Alexey E., **Behar Joachim**, Lakatta Edward G. and Yaniv Yael. Positive Feedback Mechanisms among Local Ca Releases, NCX, and ICaL Ignite Pacemaker Action Potentials. Biophysical journal 114.5 (2018): 1176-1189.
35. Rosenberg Aviv, **Behar Joachim**, Shemlas Ori, Yaniv Yael. Non-invasive in-vivo analysis of intrinsic clock-like pacemaker mechanisms: decoupling neural input from heart rate variability measurements. ISHR-Israel section, Tel-Aviv, Israel, 28th March 2018.
36. Weiser-Bitoun Ido, Rosenberg Aviv, Shemla Ori, Alexandrovich Alexandra, **Behar Joachim A.*** and Yaniv Yael*. Accurate Heart rate Estimation in Mammalians Electrocardiographic Data. ISHR-Israel section, Tel-Aviv, Israel, 28th March 2018. * Equal contribution.
37. Maltsev Victor, Lyashkov Alex, **Behar Joachim**, Lakatta Edward G, and Yaniv Yael. Positive Feedback Mechanisms among Local Ca Releases, NCX, & ICAL Ignite Pacemaker Action Potentials. Biophysical Society Annual Meeting, San Francisco, California, 17-21 February 2018. 114(3), 622a-623a.
38. Weiser-Bitoun Ido, Shemla Ori, Rosenberg Aviv A., Yaniv Yael and **Behar Joachim**. The PhysioZoo world: integrating in vivo and in vitro data from different mammals. ISPP. Jerusalem, 14th February 2019.
39. Arbel-Ganon Limor, **Behar Joachim**, Maria Gomez and Yaniv Yael. Mechano signal transduction by Ca2+ and phosphorylation signaling in health and dysfunctional heart pacemaker tissue. ISPP. Jerusalem, 14th February 2019.

INVITED SEMINARS

1. Non-Invasive FECG Extraction From a Set of Abdominal Sensors, IET Annual Healthcare lecture. London, UK, 21th November 2013.
2. Perinatal monitoring and Global Health: From theory to application driven projects. Technion-IIT, Faculty of Biomedical Engineering, Haifa, Israel, 21th September 2014.
3. Biosignal Processing and Mathematical Modelling for Heart Rate Extraction, Interpretation and Analysis. Technion-IIT, Faculty of Biomedical Engineering, Haifa, Israel, 22nd November 2015.
4. Obstructive Sleep Apnoea Screening using Mobile Health Technology. BME conference, Haifa, Israel, 24th February 2016.
5. Internet of things (IoT) and wearables. Technion-IIT, BizTech entrepreneurship meeting, Haifa, Israel, 19th January 2017

6. Non-Invasive Foetal Electrocardiography. Interventional and Diagnostic Adaptive Imaging Laboratory. French National Institute for Medical Research (INSERM), Nancy, France. 28th July 2017.
7. PhysioZoo: Heart Rate Variability Analysis in Mammalian Electrophysiological Data. Technion-IIT, Medical School, 11th February 2018. Workshop.
8. Intelligent Remote Patient Monitoring Using Mobile Health Systems. Bar Ilan University, The Azrieli Faculty of Medicine, Safed, Israel, 27th December 2018.
9. Intelligent Remote Patient Monitoring Using Mobile Health Systems. Tel Aviv University, Department of Biomedical Engineering, Tel Aviv, Israel, 21th October 2018.
10. PhysioZoo: a novel software for beating rate variability analysis from mammalian electrophysiological and pulsatile data. French National Institute for Medical Research (INSERM), Pharmacy faculty, Paris Sud University, Paris, France, 28th September 2018.
11. Intelligent Remote Patient Monitoring Using Mobile Health Systems. Technion-IIT, Faculty of Biomedical Engineering, Haifa, Israel, 5th July 2018.
12. PhysioZoo: a novel software for beating rate variability analysis from mammalian electrophysiological and pulsatile data. Center for Dynamical Biomarkers (DBIOM) at Beth Israel Deaconess Medical Center and Harvard Medical School, 7th May 2018.
13. PhysioZoo: a novel software for beating rate variability analysis from mammalian electrophysiological and pulsatile data. Laboratory for Computational Physiology at the Massachusetts Institute of Technology, 8th May 2018.
14. Physiologically informed diagnosis using cardiac mobile health systems. New York University, Langone Health, 2nd May 2018.
15. Age-related pacemaker deterioration: Insights from numerical modeling. Israel Society for Heart Research. Tel Aviv University, 28th February 2018.
16. The digital healthcare revolution. Technion-IIT, Medical School, 10th January 2018.
17. Feasibility of single channel oximetry for mass screening of obstructive sleep apnea. Google Health, London, UK. 12th December 2019.
18. Using AI to assess changes in physiological function with ageing: from single cell to organism. King's college London, London, UK. 11th December 2019.
19. Data-driven healthcare: redefining medicine. Opening talk, faculty retreat. Nahsholim, 23rd September 2019.
20. Digital biomarkers and machine learning for continuous remote patient monitoring. HealthIL satellite event "Engineering the future of Health". 9th November 2020.
21. Machine learning in COVID-19 research. Technion Brazilian Society. 24th September 2020.

22. Machine learning in COVID-19 research. Technion French Society. 4th September 2020.
23. A data-driven approach for obstructive sleep apnea mass screening from single channel oximetry. KU Leuven, Belgium. 12th February 2020.
24. Machine learning in medicine: AI for fundamental medical research and AI powered-wearables. Intel faculty meeting at the Technion, Haifa, Israel, 2rd January 2020.
25. Machine learning and digital health for improved diagnosis, risk prediction and personalized management of cardiac diseases. Rambam Health Care Campus, Cardiology department. 27th October 2021.
26. Panelist in the "Panel discussion on Innovation". The 2022 Rambam & Stanford Medicine Symposium, Rambam HCC, Haifa, Israel, June 28-29, 2022.
27. Artificial Intelligence for Remote Patient Monitoring Connecting the dots between Australia and Israel. Technion Australian Society. 31th May 2022.
28. AI challenges in cardiovascular signal processing: the PhysioNet/Computing in Cardiology Challenge for Physiological Time Series Analysis. Guest lecture delivered at Politecnico di Milano, Italy (Via Zoom), 2nd of February 2022 & 31th January 2023.
29. Deep learning for physiological time series analysis. Medical AI North IL Meetup. Beyeonics Vision, Matam, Haifa, Israel. 3rd July 2023.

OTHER

- Presentation of the new Technion-Rambam center in medical AI to Mr. Björn Thümler, Minister for Science and Culture of the German State of Lower Saxony on Sunday, May 1st, 2022.
- Roundtable discussion, Minister from Austria, 29th of March, Technion.
- 2020-2022: High school teachers outreach. This included lecturing high school teachers on the advances and potential of artificial intelligence in healthcare.
- 2019-2020: Portable Biomedicine Innovation Laboratory co-PI.
- 14-15th March 2019: mentor at the Digital Health Hackathon, Haifa, Israel.
- 19th December 2019: Judge BME Hack.