# Dr. Yaakov Buchris - CV

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## EDUCATION

2014 - 2019 **TECHNION, ISRAEL INSTITUTE OF TECHNOLOGY** Haifa, Israel
*PhD in Electrical Engineering*

- Academic advisor: Prof. Israel Cohen & Prof. Jacob Benesty
- Research topic: "Design Methods of Sparse and Robust Differential Microphone Arrays"

2005 – 2010 **TECHNION, ISRAEL INSTITUTE OF TECHNOLOGY** Haifa, Israel
*MSc in Electrical Engineering*

- Academic advisor: Prof. Israel Cohen & Dr. Miri Doron
- Research topic: "Bayesian Focusing Transformations for Robust Coherent Adaptive Wideband Beamforming"
- Total average: 92/100

2000 – 2004 **TECHNION, ISRAEL INSTITUTE OF TECHNOLOGY** Haifa, Israel
*BSc in Electrical Engineering*

- Proficiencies: Signal Processing, Digital Communication, Electro-optics
- Total average: 91/100

## HONORS AND AWARDS

2014 - *RAFAEL's PhD program funding*– complete funding of PhD including salary and academic payments

2011 - *Katzir Grant* – A six year grant given by Defense Minister of Israel for young researchers in industrial institutes

## EXPERIENCE

2017 - **RAFAEL – ADVANCED DEFENCE SYSTEMS LTD** Haifa, Israel
*Researcher, signal processing and communication team leader, Acoustic Department*

- Leading several research and development activities in the fields of signal processing and communications
- Team consists of 20 engineers and 5 students

2009 - 2015 **RAFAEL – ADVANCED DEFENCE SYSTEMS LTD** Haifa, Israel

*Researcher, underwater communication team leader, Acoustic Department*

- Leading several research and development activities of underwater acoustic communication and localization systems
- Algorithm development of underwater acoustic OFDM modem

2006 –current **TECHNION, ISRAEL INSTITUTE OF TECHNOLOGY** Haifa, Israel

*Supervisor in Signal and Image Processing Lab. (SIPL)*

- Advisor in bachelor degree student's final projects in a variety of topics, including spread spectrum comm., OFDM Doppler estimation, channel estimation, acoustic localization, array processing, and more

*Teaching assistant, Electrical Engineering department*

- Teaching assistant in "Adaptive Signal Processing", "Signal processing in noisy environments"

2004 – 2010 **IDF: RAFAEL LTD (MILITARY SERVICE)** Haifa, Israel

*Electrical engineer, underwater acoustic comm. group*

- Algorithm development of underwater acoustic spread spectrum communication network for divers
- Conducting various sea trials for proof of concept

2002 – 2004 **RAFAEL – ADVANCED DEFENCE SYSTEMS LTD** Haifa, Israel

*Student position, underwater acoustic comm. group*

- Algorithm development for physical layer, including channel estimation, Doppler tracking, and noise reduction

## PUBLICATIONS

### *Journal Publications*

- Y. Buchris, J. Benesty, I. Cohen, and A. Amar, (2020). "Joint Sparse Concentric Array Design for Frequency and Rotationally Invariant Beampattern," submitted to *IEEE/ACM Transactions on Audio, Speech, and Language Processing*

- Y. Buchris, I. Cohen, and J. Benesty, (2019). "On the Design of Time-Domain Differential Microphone Arrays," *Applied Acoustics*, 148, pp. 212-222

- Y. Buchris, A. Amar, J. Benesty, and I. Cohen, (2019). "Incoherent Synthesis of Sparse Arrays for Frequency-Invariant Beamforming," *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, 27(3), pp. 482-495

- Y. Buchris, I. Cohen, and J. Benesty, (2018). "Frequency-Domain Design of Asymmetric Circular Differential Microphone Arrays," *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, 26(4), pp. 760-773

- R. Diamant, Y. Buchris, and A. Feuer, (2016). An Efficient Method to Measure Reliability of Underwater Acoustic Communication Links. *Journal of Ocean Engineering and Science*, 1(2), pp. 129-134

- A. Amar, and Y. Buchris, "Asynchronous Transmitter Position and Velocity Estimation Using A Dual Linear Chirp," *IEEE Signal Processing Letters*, Vol.21, No.9, pp.1078-1082, September 2014

- Y. Buchris, I. Cohen, and M. A. Doron, "Bayesian Focusing for Robust Adaptive Wideband Beamforming," *IEEE Transactions on Audio and speech processing*, Vol.20, pp.1282-1296 , May 2012

***Conference Publications***

- Y. Buchris, I. Cohen, and J. Benesty, "Asymmetric Supercardioid Beamforming Using Circular Microphone Arrays," in *Proc. 26th European Signal Processing Conference (EUSIPCO 2018),* pp. 627-631

- Y. Buchris, I. Cohen, and J. Benesty, "Asymmetric Beampatterns with Circular Differential Microphone Arrays," in *Proc. IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA 2017),* pp.190-194

- Y. Zonis, Y. Buchris and I. Cohen, "Estimation of Speaker Individual Spectral Envelope for Pitch Tracking Improvement," *Proc. IEEE International Conference on the Science of Electrical Engineering, ICSEE-2016, Eilat, Israel,* Nov., 2016 **(Best student paper award)**

- M. Buchbinder, Y. Buchris and I. Cohen, "Adaptive Weighting Parameter in Audio-Visual Voice Activity Detection," *Proc. IEEE International Conference on the Science of Electrical Engineering, ICSEE-2016, Eilat, Israel,* Nov., 2016

- Y. Buchris, I. Cohen, and J. Benesty, "First-Order Differential Microphone Arrays from a Time-Domain Broadband Perspective," *in International Workshop on Acoustic Echo and Noise Control (IWAENC),* Sep. 2016

- Y. Buchris, I. Cohen and J. Benesty, "Analysis and Design of Time-Domain First-Order Circular Differential Microphone Arrays," *in the 22$^{nd}$ International Congress on Acoustics (ICA),* Sep. 2016

- A. Sinai, Y. Buchris, and A. Amar, "Frequency and Code Modulations for Underwater Acoustic Spread Spectrum Communication," *SECON 2014*, Singapore

- G. Avrashi, S.Museri, Y.Buchris, A.Sinai and A.Amar, "Underwater Video Streaming Using Adaptive Frame Decimation," *OCEANS 2014*, Taiwan

- Y. Buchris, I. Cohen and M. A. Doron, "Robust Focusing for Wideband MVDR Beamforming," *in the Sixth IEEE Sensor Array and Multichannel Signal Processing Workshop*, Ma'ale Hahamisha, Israel, Oct. 2010

- Y. Buchris, and A. Amar, "A Statistical-Based Doppler-Tolerant Criterion for Underwater Acoustic Time Synchronization, " *IEEE OCEANS Conf.* , Virginia, U.S.A, 2012

- Y. Buchris, I. Cohen and M. A. Doron, "Bayesian Focusing Transformation for Coherent Wideband Array Processing," *in the IEEE Convention of Electrical and Electronics Engineers*, Eilat, Israel, Dec. 2008

## LANGUAGES

**Hebrew:** Native Language

**English**: Superior level

## COMPUTER SKILLS

**Programming**: MATLAB, C, C++.