

# Miodrag Bolic

*Curriculum vitae (September 18, 2022)*

## **Address**

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## **EDUCATION**

**Ph.D. in Electrical Engineering**, Stony Brook University, Stony Brook, NY, USA, 2004

**M.Sc. Electrical Engineering**, The University of Belgrade, Belgrade, Yugoslavia, 2001

**B.Sc. in Electrical Engineering**, The University of Belgrade, Belgrade, Yugoslavia, 1996

## **EMPLOYMENT HISTORY**

<b>Dates</b>	<b>Institution</b>	<b>Position</b>
2022-now	Associate Director for the undergraduate Computer Engineering program	Associate director
2018-now	School of Electrical Engineering and Computer Science, University of Ottawa, Canada	Professor
2009-2018	School of Electrical Engineering and Computer Science, University of Ottawa, Canada	Associate Professor
2004 - 2009	School of Information Technology and Engineering, University of Ottawa, Canada	Assistant Professor
2001-2004	Symbol Technologies, Inc., Holtsville, NY, USA	Part time DSP algorithm developer
2000-2004	Electrical Engineering Department, State University of New York at Stony Brook, USA	Research assistant
1996-2000	Electronic Department, Vinca, Nuclear Sciences Institute, Belgrade, Serbia	Researcher and design engineer

Startups co-founded: Scandent LLC, NY, USA, 2007: <https://www.scan-dent.com/>

Consulting company: Manaka Proof of Concept Inc., <http://www.manakapoc.com/>

Consulted: Orica Canada, Amita Corporation, Braebon Corporation, Teslonix Inc., NRC, Edwards Lifesciences, ...

Director of the research groups:

- Computational Analysis and Acceleration Research Group (CARG), EECS, University of Ottawa, <http://carg.eecs.uottawa.ca/>
- Health Device Research Group, University of Ottawa, <http://health-devices.eecs.uottawa.ca/>

## RESEARCH

### Active research projects

#### *Signal processing*

- Algorithms and systems for blood pressure measurement
- Processing breathing signals using radars

#### *Machine/deep learning*

- Deep learning for fall detection using 3D cameras and radars
- Detecting privacy information in documents

### Completed R&D projects (partial list):

#### *Signal processing*

- Detection of breathing signals through the wall using UWB radars (at OttawaU)
- Particle filters for speech enhancement (at OttawaU)

#### *Computer architectures*

- Acceleration of LU Factorization on GPGPUs (at OttawaU)
- Software Acceleration on Embedded GPUs (at OttawaU)
- FPGA-based Hardware Accelerators in Cloud Computing (at OttawaU)
- Reducing jitter in real-time control systems (at OttawaU)
- Modifications of DSP algorithms for more efficient implementation (at OttawaU)
- Automated generation of configurable processors (at OttawaU)
- Parallel architectures for particle filters on FPGA platforms (in SUNY Stony Brook)

#### *RFID and wireless*

- Localization with passive RFID tags (at OttawaU)
- Semipassive RFID system for Internet-of-things (at OttawaU)
- Active RFID tags for eloping prevention (at OttawaU)
- Low-frequency RFID technology for detecting buried objects (at OttawaU)
- Algorithms for range estimation in RFID networks (in Symbol Technologies)
- Algorithm for improving coexistence between IEEE802.11b and Bluetooth networks (in Symbol Technologies)

#### *Brain Computer Interface*

- Tongue display unit (at OttawaU)
- Disposable electrodes for tDCS (at OttawaU)
  - System for non-invasive brain stimulation (at OttawaU)

#### *Instrumentation*

- Dedicated digital signal processor for improving energy resolution for nuclear spectroscopy (in Vinca, Belgrade)
- Internet-based systems for data acquisition (in Vinca, Belgrade)
- Radiation monitor for beta contamination (in Vinca, Belgrade)
- System for controlling preservation of human cells (in Vinca, Belgrade)
- PC based gamma radiation monitor as a virtual instrument (in Vinca, Belgrade)

## GRADUATE SUPERVISION

	Number of students who finished	Number of current full-time students
PDFs and visiting scholars	19	1
PhD (supervisor)	3	5
PhD (co-supervisor)	3	2
MS(supervisor)	12	1
MS (co-supervisor)	11	0
Total	47	8

### Post-doctoral fellows

- **Varunkumar Mehta, (2019 - )** Machine learning and signal processing for breathing rate estimation and for drone tracking

### Current full-time students

- **Shan He (Ph.D.), 2019 –**
- **Cristovao Iglesias (PhD), 2020-2024**
- **Khurram Shafiq (M.Sc.) 2019-2021**
- **Fardad Dadboud (Ph.D.) 2021-2025**
- **Mohamad Hosein Davoodabadi Farahani (Ph.D) 2021-2025**
- **Zixiong Han (Ph.D.) Sept 2021-**
- **Hamid Asad (M.Sc) Sept 2021-**
- **Tianyu Zhang (Ph.D), Sept 2021-**
- **Daniel Charron (M.Sc) Sept 2021-**

### Current part-time students

- **Mira Vrbaski (Ph.D.) 2015-2023, Co-supervised with Dr. Majumdar**

## Completed

### Visiting professors/scholars

- **Xiaolin Jia** (visiting scholar from China), 2017-, RFID protocols
- **Prof. Amir Rajabzadeh** (visiting scholar from Iran), 2012-2014, Computer Architecture research
- **Luo Wuming** (visiting scholar from China), 2013-2014, Active RFID systems.
- **Siqin Zhao** (visiting scholar from China), 2013-2014.

### Research associates

- **Dr. Izmail Batkin, 2009-2016, Blood pressure measurements and bioimpedance measurements**

- **Saif Ahmad**, 2008-2013, Topic: ECG-Assisted Blood Pressure Measurement Systems, (co-supervised with Prof. Voicu Groza and Prof. Hilmi Dajani)
- **Shan Zhao**, 2010-2011, Topic: Complex event processing for RFID systems (co-supervised with Prof. Voicu Groza)
- **Abeye Mekonnen**, 2012-2014, Topics: Simulation of the current propagation during non-invasive brain stimulation.
- **Pankaj K. Mishra**, 2009 - 2010. Topic: RFID for underground detection (co-supervised with M. Yagoub) – now with Central Institute of Mining & Fuel Research, India

#### Postdoctoral fellows

- **HamidReza Sadreazami**, 2017-2019, fall detection using radars
- **Daniel Shapiro**, 2018-2019, Multi-Microphone Signal Processing and Machine Learning
- **Isar Nejadgholi**, 2013-2016, Topic: Radar signal processing and classification
- **Parisa Pouladzadeh** 2016-2016, Topic: Processing video signal to detect obstructive sleep apnea
- **Mohammad Forouzanfar**, 2014-2014: Topic: Classification of the human actions and beathing using CW radars
- **Crystal Villeneuve**, 2012-2014, Topic: Clinical trial of opioid addiction to assess the extended viability of tDCS stimulation
- **Shiva Gholami** 2014-2014, Topic: Biompedance measurements
- **Abid Muslim Malik** (Post-doctoral fellow), Nov 2008- Apr 2009, Topic, Compilers for multiprocessing systems on chip (co-supervised with Prof. Voicu Groza).
- **Subhasis Banerjee** (Post-doctoral fellow), 2009-2010, Computer architecture research
- **Balakumar Balasingam** (Post-doctoral fellow), 2008-2010, Topic: Complexity reduction of particle filters.
- **Soojeong Lee**, 2009-2010, Topic: Confidence levels for blood pressure measurement (co-supervised with Prof. Voicu Groza and Prof. Hilmi Dajani)

#### Ph.D students

- **Qi Zhai, (Ph.D.)**, 2019 –2021, CSC Scholar, also Ph.D. candidate of school of Electronics and Information in Northwestern Polytechnical University in China
- **Hershel Caytak (Ph.D.)** 2011-2018, Topic: BioImpedance spectroscopy methods for analysis and control of neurostimulation dose, Co-supervised with Dr. Adler
- **Daniel Shapiro (Ph.D.)** 2008-2017, Topic: Composing Recommendations Using Computer Screen Images: A Deep Learning Recommender System for PC Users.
- **Jing Wang (Ph.D. – CSC scholarship from China)** 2012-2017, Indoor Localization using Augmented UHF RFID System for the Internet-of-Things
- **Mohamed Mabrouk (Ph.D.) – Scholarship from Egypt)** 2012-2015, Topics: Signal Processing of Ultra-Wideband Radar Signals for Human Detection behind Walls (main supervisor, co-supervised with Dr. Sreeraman Rajan).
- **Frédéric Mustière, (Ph.D.)** 2006-2010, Topic: Speech enhancement in real-world environments using state-space based algorithms (co-supervised with Prof. Martin Bouchard) – now with National Research Centre, Ottawa, Canada

- **Brady Laska** (Ph.D.) 2007-2010, Topic: Transform Domain Model-Based Wideband Speech Enhancement with Hearing Aid Applications (co-supervised with Prof. Rafik Goubran) – now with Research in Motion, Ottawa, Canada

### **M.Sc. Students**

- **Zixiong Han (M.Sc.) 2018-2021**, Respiratory Patterns Classification using UWB radar
- **Fan Yang (M.Sc.) 2018-2021**, Object detection for contactless vital sign estimation
- **Rajitha Hathurusinghe (M.Sc.), 2018-2020**, Building a Personally Identifiable Information Recognizer in a Privacy Preserved Manner using Automated Annotation and Federated Learning
- **Shan He (M.Sc.), 2017-2019**, Time-interval Based Blood Pressure Measurement Technique and System.
- **Isuru Gunasekara (M.Sc.) (2016-2017)**, Contactless Estimation of Breathing Rate using UWB Radar.
- **Xinyang Zhang (M.Sc.) (2014-2017)**, Topic: Characterizing performance of the radar system for breathing and heart rate estimation in real-life conditions.
- **Gregory Somers (M.Sc.) (2013-2016)**, Topic: Acceleration of Block-Aware Matrix Factorization on Heterogeneous Platforms (cosupervised with Emad Gad)
- **Ovidiu Draghici (M.Sc.) 2010-2014**, Topic: The MouthPad – a Tongue Interface for Hands-Free Computer Control
- **Hassan Ahmad Roshan (M.Sc.) 2012-2013**, Topic: Eloping Prevention, Occupancy Detection and Localizing System for Smart Healthcare Applications
- **Iype Joseph (M.Sc.) 2012 -2013**, Acceleration of Java programs on embedded GPUs (co-supervised with Prof. Groza)
- **Majed Rostamian (M.Sc.) 2011-2014**, Topic: Localization and Proximity Detection in the Internet of Things Based on an Augmented UHF RFID System
- **Josip Popovic (M.Sc.) 2009-2013**, FPGA-Based Coprocessors for Clouds.
- **Chamira Perera (M.Sc.) 2010-2013**, Topic: Improving Digital Control System Performance Through a Novel Jitter Compensating Method (Co-supervised with Prof. Trevor Pierce)
- **Bardia Bandali (M.Sc.) 2011-2013**, Topic: Steady-State Analysis of Nonlinear Circuits using the Harmonic Balance on GPU (cosupervised with Emad Gad)
- **Wei Wang (M.Sc.), 2012-2013**, Topic: Accessing an FPGA-based Hardware Accelerator in a Paravirtualized Environment
- **Alexey Borisenko (M.Sc.) 2010-2012**, Topic: Augmented RFID system with localization capabilities
- **Majid Mafi (MS), 2009-2011**, Topic: Blood Pressure Estimation using Oscillometric Pulse Morphology (co-supervised with Prof. Voicu Groza)
- **Tzu Hao Li (MS), 2008-2011**, Topic: Open Platform Semi-Passive Ultra High Frequency Radio Frequency Identification Tag.
- **Michael Montcalm (MS) 2008-2011**, Topics: An ILP-based Task and Instruction Scheduling Algorithm for Instruction Set Extended Symmetrical Homogeneous Multiprocessor Systems-on-Chip (co-supervised with Prof. Voicu Groza) – now with Alcatel.
- **Vishal Thareja (MS) 2007-2010**, Topic: Design space exploration for RISC Processors- now with Synopsys.

- **Silu Chen** (MS) 2008-2010, Topic: Improving Algorithms for Oscillometric Blood Pressure Estimation by Suppressing Breathing Effects (co-supervised with Prof. Voicu Groza).
- **Jonathan Parri** (MS) 2008-2010, Topic: Effective Modeling for Selection and Integration of Custom Instructions for Hybrid System-on-Chips (co-supervised with Prof. Voicu Groza)
- **Daniel Shapiro** (M.Sc.) 2007-2008, Title: Design and Implementation of Instruction Set Extension Identification for a Multiprocessor System-on-chip Hardware/Software Co-design Toolchain.
- **Frédéric Mustière**, (M.Sc.) 2004-2006, Title: Particle Filter methods for Speech Processing (co-supervised with Prof. Martin Bouchard)
- **Haseeb Syed**, (MS of Science) 2005-2008, Title: Radio Frequency Identification and its Application in Tracking Vehicles.

### **Graduate students and Post-docs that I collaborated with and published (but did not supervise)**

- Patrick Longa (M.Sc. student of Dr. Ali Miri)
- Karen Soueidan (M.Sc. student of Dr. Dajani)
- Bahareh Taji (M.Sc. student of Dr. Groza and Dr. Shirmohammadi)
- Seddigheh Baktash (M.Sc. student of Dr. Dajani)
- Huthaifa N. Abderahman (Ph.D. student of Dr. Dajani)
  
- Mohammad Forouzanfar (Ph.D. student of Dr. Groza and Dr. Dajani)
- Nazish Irfan (Ph.D. student of Dr. Yagoub)
- Neda Nabavi (Ph.D. student of Dr. Hall)
- Zachary Baird (Ph.D. student of Dr. Rajan)
- Travis Davidson (supervised by Dr. François Tremblay)
- Anwar Falatah (PhD student of Dr. Dajani)
- Ekambir Sidhu (M.Sc. student of Dr. Groza)
  
- Anthony Remaud (Bruyere Research Institute, supervised by Dr. François Tremblay)
- Hongbo Guo (Post-doc of Dr. V. C.M. Leung)
- Hai Liu (Post-doc of Dr. Stojmenovic and Dr. Nayak)
- Vladimir Savic (Post-doc of Dr. Erik G. Larsson and Dr. Fredrik Gustafsson)
- Tiancheng Li (Post-doc, Northwestern Polytechnical University, China)

### **Undergraduate students**

Supervised following undergraduate students: Daniel Shapiro 2005, Vishal Thareja 2005, Peter Farkas 2005, Fan Hu 2005, Hassan Zaki 2005, Srivatsan Vijayakumar 2008, Aly Shoukry 2008, John-Marc Desmarais 2009, Mukul Tewary 2009, Alexey Borisenko 2009-2010, Ovidiu Dragichi 2009, Lukash Monczak 2010, Patrick Santos 2011, John Earl 2011 and Kyle Moncrief 2011.

### **Internship students**

- Guillaume Chanas, Feb-July 2008, RFID, from ESISAR France.

- Julien David, Feb-July 2008, RFID, from ESISAR France.
- Gabriella Esteves, May –August 2014, Controlling Tongue Display Unit from Android Phone, Exchange student from Brazil.
- Filipe Landerdahl Albanio, May –August 2014, Blood pressure monitoring and ECG using Freescale embedded platform, Exchange student from Brazil.

**Prizes that my students received:**

- F. Dadboud, V. Patel, V. Mehta got the *second place* in “drone-vs-bird” detection challenge, launched in conjunction with the activities of the 17-th IEEE International Conference on Advanced Video and Signal-based Surveillance (AVSS), 2021.
- H. Qassoud, D. Shapiro, Peer choice poster award winner, Research poster competition at the Faculty of Engineering, University of Ottawa 2017.
- I. Nejadgholi, Young Investigator Award, Merit Prize (4<sup>th</sup> place) by International Federation for Medical and Biological Engineering for the paper: “Classification of responders versus non-responders to tDCS by analyzing voltage between anode and cathode during treatment session,” presented at the World Congress on Medical Physics and Biomedical Engineering (WC 2015), Toronto, Canada, June, 2015.
- J. Parri, D.C. Shapiro, A. Borisenko, L. Monczak, O. Draghici, Supervisor M. Bolic, Second prize, Graduate Business case competition, University of Ottawa, 2010.
- A. Borisenko, L. Monczak, O. Draghici, I. Singh, Supervisor M. Bolic, 5<sup>th</sup> place, North America Altera FPGA Competition, 2010.
- B. Laska, Winner of University Senate Medal for Academic Achievement at the PhD Level, Carleton University, Ottawa, May 2010.
- A. Borisenko, L. Monczak, O. Draghici, I. Singh, Supervisor M. Bolic, First prize, Undergraduate Business case competition, University of Ottawa, 2010.
- B. Laska, Award for best presentation, Canadian Acoustics Conference, Sept. 2009.
- D. Shapiro, Ranked 3<sup>rd</sup> place poster in Electrical and Computer Engineering, Annual Graduate Studies and Research Day, University of Ottawa, 2009.
- D. Shapiro, V. Thareja, 1<sup>st</sup> prize for the research poster competition at the Faculty of Engineering, University of Ottawa 2008.
- D. Shapiro, V. Thareja, S. Ratti, S. Vijayakumar, M. Yang, Supervisor M. Bolic, ISE for LEON processor, 2<sup>nd</sup> Prize in the Canadian Altera FPGA Competition, 2008.
- T. Burton, G. Green, Supervisor M. Bolic, Hardware implementation of a wavelet - based image compression algorithm, 3<sup>rd</sup> Prize in the Canadian Altera FPGA Competition, 2008.

**FUNDING**

Role	Source	Amount	Term	Title	Type	Co- Investigators and partners
PI	NRC Lab2Market	\$20,000	2022	An IoT-based contactless vital signs monitoring system	Market research	-
PI	NRC	\$241,780	2021-2024	BVLOS Inspection of critical logistics infra- and superstructures using coordinated multiple UAS	R&D	University of Victoria
PI	NSERC Alliance	\$50,000	2020-2021	Thermal imaging for efficient detection of vital signs during COVID-19 pandemic	R&D	J&M Group

PI	NSERC Discovery	\$140,000	2020-2025	Machine Learning with Uncertainty for Monitoring Moving Objects and People	R&D	-
PI	NRC	\$237,600	2020-2022	AI and machine learning for development of insillico digital twin	R&D	NRC, McGill University
PI	NSERC	\$25,000	2019-2020	AI Methods for Automated Software Testing	R&D	Ericsson
PI	Aerosystems Montreal	\$108,000	2019	Life sign monitoring system	Contract R&D	-
PI	Mitacs	\$40,000	2018, 2019	Generative Adversarial Networks for Addressing Data Privacy Issues	Research and development	Partner: IMRSV Data Labs
PI	NSERC Engage	\$25,000	2018	Multi-Microphone Signal Processing and Machine Learning	Research and development	Partner: UCIC
PI	NSERC Engage	\$25,000	2017	Skin color changes as an assessment of sleep disordered breathing	Research and development	Partner: Clear Water
PI	NSERC I2I	\$125,000	2016-2018	Contactless System for Elderly Fall Detection	Development	Sreeraman Rajan
PI	NSERC Engage	\$25,000	2015-2016	Combined video and radar signal processing for fall detection	Research and development	Partner: Ramotronics
PI	Correctional Services Canada	\$99,600	2015-2016	Doppler Radar-Based Life Sign Monitoring System, Phase 2	Research and development	H. Dajani, V. Groza, S. Rajan
PI	NSERC Discovery	\$125,000	2015-2019	Automated Monitoring and Localization of People	Research and development	-
PI	Correctional Services Canada	\$98,000	2014-2015	Doppler Radar-Based Life Sign Monitoring System	Research and development	H. Dajani, V. Groza, S. Rajan
PI	Mitacs, IRAP, KG Spectrum	\$15,000	2014	Classification and signal processing of radar signals to detect stop of breathing	Research and development	-
PI	OCE and Connect Canada	\$25,000	2014	Electrodes for Noninvasive Brain Stimulation Capable of Maintaining Constant Temperature	Research and development	Nuraleve
PI	Mitacs Cluster, Nordocs	\$80,667 from Mitacs \$66,000 from Nordocs	2013-2014	Addiction Neuromodulation System	Research and development	Industrial partner: Nordocs
R	Mitacs Cluster Phase 2b	\$125,000	2013	ECG Assisted Blood Pressure Measurement	Industrial	Industrial partner: Health Parametrics PI: Saif Ahmad
PI	NSERC CRD	\$55,000	2013-2014	Surface electrodes and models for controlled current delivery and bioimpedance measurements	Research	H. Dajani, A. Adler
PI	NRC-IRAP	\$30,000	2013	Development of a Method for Electrocardiogram R-Peak Controlled Stepwise Cuff Deflation	Industrial	Industrial partner: Health Parametrics S. Ahmad, S. Fanjoy
PI	OCE TPS Light	\$25,000	2013	Clinical Trial Management Software for Non-invasive Brain Stimulation	Research and Development	Industrial partner: Nordocs Industrial partner: Nordocs
PI	NSERC Engage	\$25,000	2012-2013	Software acceleration on embedded GPUs	Research	Industrial partner: YouI Labs
PI	OCE Market Readiness Phase 1	\$75,000	2012	ECG Assisted Blood Pressure Measurement	Industrial	H. Dajani, V. Groza
PI	FedDev SME4SME	\$125,000	2012-2013	Diagnostic medical device using tDCS electrodes	Research and Industrial	Industrial partner: Nordocs
PI	NSERC Engage	\$25,000	2012	RFID System for Eloping Prevention	Research	Industrial partner: Zodiac Light Inc.

PI	Mitacs Accelerate Program	\$90,000	2012	Requirements Investigation and Practical Application of Neural Interface for Treatment of Cognitive Impairment.	Research	Industrial partner: Nordocs Technologies
PI	Mitacs Accelerate Program	\$15,000	2011	Investigation of optimal AES mapping on FPGA hardware	Research	Industrial partner: Elliptic Technologies
PI	OCE	\$25,000	2011	IACP - Technical Problem Solving – Light: Neuro-Electrode Array Research	Research	V. Groza Industrial partner: Nordocs
PI	Nordocs Technologies	140,000	2011-2012	Brain Human Computer Interface	Industrial	
PI	NSERC	130,000	2010-2015	NSERC Discovery: System for Localization and Tracking	Research	
EC	NSF SBIR	100,000	2009	SBIR Phase 1	Research	PI: P.M.Djuric
PI	NSERC	73,290	2009-2010	NSERC Collaborative Research and Development grant, Title: Using RFID technology for mining services applications	Research	M. Yagoub, Industrial partner: Orica
PI	OCE	350,000	2008-2010	Ontario Centres of Excellence. Title: Remote Objective Monitoring of Bio-Signals (ROMOBS),	Research	Co-investigators: H. Dejadi, W.Almuhadi, Industrial partner: Biosign Inc.
PI	NSERC	198,000	2008-2009	NSERC Strategic grant. Title: Modular Design of Configurable/Reconfigurable systems	Research	V. Groza
PI	Industry: Orica Inc.	62,700	2008-2009	Orica Inc. Title: Using Rubee Technology in Mining Service Applications	Industrial	M. Yagoub
PI	NSERC	100,000	2005-2010	NSERC Discovery grant. Title: A System for Automated Implementation of Algorithms for Positioning, Tracking and Navigation	Research	-
PI	U. of Ottawa	25,000	2004-2005	Start-up grant Type of funding: G	Research	-
R	CFI	62,864	2006	CFI: Leaders Opportunity Fund, Title: Infrastructure for Smart Autonomous Mobile Robots for Rescue Missions (SAMRRM), Type of funding: G	Infrastructure	W. Gueaieb
R	ORF	62,864	2006	Ontario Research Fund (ORF)– matching for CFI Type of funding: G	Infrastructure	W. Gueaieb
R	NSERC	75,000	2006	NSERC Research Tools and Instruments grant, Title: Infrastructure for Advanced Research in Wireless Sensor Networks with Realistic Physical Layer, Type of funding: G	Infrastructure	PI: I. Stojmenovic, Co-investigators: Amiya Nayak.
R	OCE	37,500	2007	Ontario Centres of Excellence: Proof of Concept, Title: Robust Blood Pressure Monitoring System, Type of funding: G	Research	PI: V. Groza Industrial Partner: Biosign Inc.
R	NSERC	450,000	2006-2008	NSERC Collaborative Research and Development grant, Title: Intelligent Signal Processing for Environment-Sensitive Hearing Devices, Type of funding: G	Research	PI: T. Aboulnasr, Co-investigators: M. Bouchard, C. Giguere, R. Goubran, and W. Gueaieb, Industrial partner: Siemens.
<b>Total as a PI</b>		<b>~\$3.05M</b>				

**Acronyms used in the table above.**

NSERC: Natural Science and Engineering Research Council  
CFI: Canada Foundation for Innovation  
OCE: Ontario Centres of Excellence  
ORF: Ontario Research Fund  
PI – principal investigator

## INDUSTRY PARTNERS

- Astraion LLC, NY
- Nuraleve (Nordocs Inc.), Ottawa
- Siemens, Germany
- Biosign Inc., Toronto, Canada
- Zodioptics Inc., Ottawa, Canada
- Orica Inc.
- Larus Technologies, Ottawa
- Biopeak Technologies, Ottawa
- YouI Labs, Ottawa
- Amita Corporation
- Correctional Services Canada
- K & G Spectrum
- Braebon Corporation
- UCIC.io Toronto
- IMRSV Data Labs
- Ericsson

## COLLABORATORS

- External: P.M. Djuric, A. Athlaye, V. Drndarevic, Hong-Zhou Tan, Guan Yong Liang, P. Mishra, J. Miguez, R. Goubran, A. Adler, T. Pearce, D. Holder, S. Rapuano, V. Savic, T. Li, S. Rajan, S. Majumdar, J. Valdes
- University of Ottawa: A. Nayak, V. Groza, H. Dajani, F. Tremblay, M. Bouchard, M. Yagoub, R. Abielmona, X. Cao, S. Shirmohammadi

## TEACHING EXPERIENCE

### Undergraduate

- CEG4136 “Computer Architecture III”, fall 2004, 2005, 2006, 2007, 2008, 2010, 2011, 2012, 2013, 2014, 2015, 2016
- CEG3156 “High-Level Computer System Design”, winter 2005 – 2012, 2014, 2016
- ELG4177 “Digital Signal Processing”, winter 2007 – 2009, 2014, 2022.
- CEG3155 “Digital Design II”, fall 2014, 2015

### Graduate

- ELG6163 “Digital Signal Processing Microprocessors, Software and Applications”, winter 2006, 2007
- ELG6158 “Digital systems architectures”, Fall 2007, Winter 2010, 2012
- ELG7177 “Topics in Communications: Radio Frequency Identification (RFID) Systems”, Fall 2009, 2011, 2012
- ELG7187 “Topics in Computers: Multiprocessor Systems on Chip,” Fall 2010, Winter 2012.
- BIOM 5100 / BMG 5103 / SYSC5302 / ELG 6321 “Bioinstrumentation/Principles & Design of Advanced Biomedical Instrumentation,” Fall 2013, 2014, 2015, 2016, 2018,

2020.

- ELG 7172B: Topics in Signal Processing: Principles of Data and Error Analysis in Engineering, 2017
- ELG5218: Uncertainty Evaluation in Engineering Measurements and Machine Learning, 2019, 2021, 2022.
- 

Directed study courses:

- ELG 7199 Parallel multiprocessing systems on the chip
- ELG 7199 Radio Frequency Identification
- ELG 7199 Internet-of-things

Short courses

- “Introduction to RFID systems,” Short course (6 hours), sponsored by GS1 Serbia.

## HONOURS

- Winner of the *2017 IEEE I&M Faculty Course Development Award* for the course “Principles of Uncertainty Evaluation in Engineering Measurements”.
- *Meritorious Paper for 2015* in Computers in Biology and Medicine for the paper: I. Nejadgholi, M. Bolic, “A Comparative Study of PCA, SIMCA and Cole model for Classification of Bioimpedance Spectroscopy Measurements”.
- 2014 *George S. Glinski Award for excellence in research* (Category: Emerging Professors), Faculty of Engineering, University of Ottawa.
- 2013 *IEEE Ottawa Section Outstanding Engineering Educator Award*.
- *Paper selected for Highlights in Physiological Measurements Journal for 2012*: K. Soueidan, S. Chen, H. R. Dajani, M. Bolic and V. Groza, “Augmented blood pressure measurement through the noninvasive estimation of physiological arterial pressure variability,” *Physiological Measurement*, 2012.
- *Best paper award* in The 3rd International Conference on Advances in Multimedia, April 2011 for the paper: C. Perera, D. Shapiro, J. Parri, M. Bolic, V. Groza, "Accelerating Image Processing in Flash using SIMD Standard Operations".
- Stony Brook University scholarship, US, 2000-2004.
- A National Fellowship for most prospective graduate students, Yugoslavia 1996-1998.
- Winner of the Belgrade Chamber of Commerce annual Award for undergraduate diploma thesis, Serbia, 1996.

## PROFESSIONAL ACTIVITIES

*Professional activities*

- Organizing a special session in MeMea 2016: Recent advances in Non-invasive Blood Pressure Measurement.
- Associate editor for the journal *Telecommunication Systems*, Springer (2008-2010)
- Associate editor for the *International Journal of Reconfigurable Computing* (2011-2016), Hindawi

- Chair of the joint chapter of signal processing, oceanic engineering, and geoscience and remote sensing for IEEE Ottawa section (2004-2007). Organized seminars and invited distinguished lecturers.
- Guest editor for the special issue of IEEE Transactions on Instrumentation and Measurements (2010) based on the papers from Memea workshop.
- TPC Chair – Memea 2013.
- Co-chair of the Signal and Multimedia Processing Symposium (CCECE 2009), publication chair for Memea Workshop 2010.
- Program Committee Member for several conferences including Mobile Ad-hoc and Sensor Networks (MSN 2006) and IEEE Canadian Conference on Electrical and Computer Engineering 2006 (CCECE'06), 2007 International Conference on Complex Open Distributed Systems, SensID workshop 2007, IEEE International Workshop on Medical Measurement and Applications, 2008, IEEE/IFIP International Conference On Embedded and Ubiquitous Computing(EUC 2008), 2nd Workshop on Convergence of RFID and Wireless Sensor Networks and their Applications (SenseID 2009), TPC member of IEEE RFID 2010, TPC member of The IEEE International Conference on RFID-Technology and Applications 2010, and Memea conferences until 2017.
- Local host for the Linux Symposium 2011 and 2012.
- Reviewer for several journals including the IEEE Transactions on Signal Processing, the EURASIP Journal of Applied Signal Processing, the IEEE Tran. on Instrumentation and Measurements, Int. Journal of Ad Hoc & Sensor Wireless Networks, EURASIP Journal of Wireless Communications and Networking, and IET Circuits, Devices & Systems and others.
- Reviewer for Ontario Centres of Excellences and NSERC
- Reviewer for Israel and Serbian Science Foundation
- OGS panel reviewer
- External PhD thesis committee member in University of Toronto, Queen's University

#### *Administrative activities at the University of Ottawa*

- Research Ethics Board member and representative of Faculty of Engineering in REB Committee (2018 - )
- University of Ottawa IEEE Student Branch Liaison (2006-2007)
- Coordinator for Cooperative education program for computer engineering at EECS, University of Ottawa (2007-present)
- Cooperative education program marking (2005-present)
- CEG Curriculum committee member at the University of Ottawa (2004-)
- Examiner for Ph.D. and MS theses at Carleton University and University of Ottawa (2005-)
- University of Ottawa representative for CMC Microsystems

#### **SELECTED PUBLICATIONS**

Life-time summary according to the following categories:

Papers in magazines and reviews:	9
Papers in refereed journals:	69
Papers in refereed conference proceedings:	119
Books and monographs	2

Chapters in books	5
Patents: granted/applications	2/3
Abstracts:	7

### Selected reviews and magazine papers

- [M9] M. Bolic, H.R. Dajani, M. Yoshida, V. Groza, “Progress in the assessment of arterial stiffness,” accepted for publication in *IEEE Instrumentation and Measurement Magazine*, 2020.
- [M8] **M. Forouzanfar**, S. Rajan, I. Batkin, H. R. Dajani, M. Bolic, and V. Groza, “Oscillometric Blood Pressure Estimation: Past, Present, and Future,” *IEEE Reviews in Biomedical Engineering*, Vol. 8, pp. 44-63, 2015.
- [M7] **H. Caytak, D. Shapiro**, A. Borisenko and M. Bolic, “Advances in tDCS could provide a mainstream clinical tool for noninvasive neuromodulation,” *IEEE Pulse*, Vol 6, Issue 2, pp. 21-24, 2015.
- [M6] M. Bolic, **M. Rostamian**, P.M. Djuric, “Proximity Detection with RFID: A Step Toward the Internet of Things,” *IEEE Pervasive Computing*, Vol. 14, pp. 70-76, 2015.
- [M5] T. Li, M. Bolic and P.M. Djuric, “Resampling Methods for Particle Filtering: Classification, implementation, and strategies,” *IEEE Signal Processing Magazine*, Vol. 32, Issue 3, pp. 70-86, 2015.
- [M4] **P. K. Mishra**, R.F. Stewart, M. Bolic, M. Yagoub, “RFID in Underground-Mining Service Applications,” *IEEE Pervasive Computing*, Volume 13, Issue 1, pp.72-79, January 2014.
- [M3] **J. Parri, D. Shapiro**, M. Bolic and V. Groza, “Returning Control to the Programmer: SIMD Intrinsics for Virtual Machines,” *ACM Queue*, Vol. 9 Issue 2, February 2011. The same paper was published in *ACM Communications*.
- [M2] **P.K. Mishra**, R.F. Stewart, M. Bolic, M. Yagoub, “RFID Technology for Tracking and Tracing Explosives and Detonators in Mining Services Applications,” *Journal of Applied Geophysics*, Elsevier, Vol. 76, pp. 33-43, 2012.
- [M1] **H. Liu**, M. Bolic, A. Nayak, I. Stojmenović, “Taxonomy and Challenges of Integration of RFID and Wireless Sensor Networks,” *IEEE Network*, vol. 22, no. 6, pp. 26-32, 2008.

### Selected journal papers

- [J59] A. Fallatah, M. Bolic, M. MacPherson, D.J. La Russa, “Monitoring respiratory motion during VMAT treatment delivery using ultra-wide band radar,” *Sensors*, MDPI, 2022.
- [J58] **S. He, Z. Han, C. Iglesias, V. Mehta**, M. Bolic, “A Real-Time Respiration Monitoring and Classification System using a Depth Camera and Radars,” *Frontiers in Physiology*, section Physio-logging, 2022.
- [J57] **F. Yang, S. He**, S. Sadanand, A. Yusuf and M. Bolic, “Contactless Measurement of Vital Signs Using Thermal and RGB Cameras: A Study of COVID 19-Related Health Monitoring,” accepted for publication in *Sensors*, MDPI, 2022.
- [J56] **Q. Zhai**, M. Bolic, Y. Li, W. Cheng, and C. Liu, “A Q-learning based Resource Allocation for Downlink Non-Orthogonal Multiple Access Systems Considering QoS,” *IEEE Access*, vol. 9, pp. 72702-72711, 2021.
- [J55] **H. Sadreazami**, M. Bolic and S. Rajan, “Contactless Fall Detection using Time-Frequency Analysis and Convolutional Neural Network,” accepted for publication in *IEEE Transactions of Industrial Informatics*, 2020.

- [J54] **H. Sadreazami**, M. Bolic and S. Rajan, "CapsFall: Fall Detection Using Ultra-Wideband Radar and Capsule Networks," *IEEE Access*, vol. 7, pp 55336-55343, 2019.
- [J53] **H. Sadreazami**, S. Rajan and M. Bolic, "Fall Detection using Standoff Radar-based Sensing and Deep Convolutional Neural Network," *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 67, no. 1, pp. 197-201, 2019.
- [J52] **I. Nejadgholi**, **H. Sadreazami**, Z. Baird, S. Rajan and M. Bolic, "Estimation of Breathing Rate with Confidence Interval Using Single Channel CW Radar," *Journal of Healthcare Engineering*, vol. 2019, 2019. <https://doi.org/10.1155/2019/2658675>.
- [J51] **X. Jia**, M. Bolic, Y. Feng, Y. Gu, "An Efficient Dynamic Anti-collision Protocol for Mobile RFID Tags," *IEEE Communications Letters*, pp: 620-623, 2018.
- [J50] **I. Nejadgholi**, **H. Sadreazami**, M. Bolic, S. Rajan, "Classification of Doppler Radar Reflections as Preprocessing for Breathing Rate Monitoring," *IET Signal Processing*, vol. 13, no. 1, pp. 21-28, 2018.
- [J49] S. Obeidat, **D. Shapiro**, M. Lemay, M. K. MacPherson, and M. Bolic, "Adaptive Portfolio Asset Allocation Optimization with Deep Learning," *International Journal on Advances in Intelligent Systems*, IARIA Journals, vol 11, no 1 &2, pp. 25-34, 2018.
- [J48] **D. Shapiro**, N. Japkowicz, M. Lemay, M. Bolic, "Fuzzy String Matching with a Deep Neural Network," *Applied Artificial Intelligence*, Taylor & Francis, 2018, published online at <https://doi.org/10.1080/08839514.2018.1448137>.
- [J47] **J. Wang**, M. Bolic, "Indoor localization using augmented UHF RFID system for Internet of Things," accepted for publication in *International Journal of Distributed Sensor Networks*, Hindawi, November 7, 2017. <https://doi.org/10.1177/1550147717739814>.
- [J46] H. N. Abderahman, H. R. Dajani, M. Bolic, V. Z. Groza, "An Integrated Blood Pressure Measurement System for Suppression of Motion Artifacts," *Computer Methods and Programs in Biomedicine*, Elsevier, Vol. 145, pp. 1-10, 2017.
- [J45] S. Baktash, **M. Forouzanfar**, I. Batkin, M. Bolic, V. Z. Groza, S. Ahmad, H. R. Dajani, "Characteristic Ratio-Independent Arterial Stiffness-Based Blood Pressure Estimation," *IEEE Journal of Biomedical and Health Informatics (J-BHI)*, vol. 21, no. 5, pp. 1263-1270, Sept. 2017.
- [J44] **M. Forouzanfar**, **M. Mabrouk**, S. Rajan, M. Bolic, H. R. Dajani, "Event Recognition for Contactless Activity Monitoring Using Phase-Modulated Continuous Wave Radar," *IEEE Transactions on Biomedical Engineering*, Vol: 64, Issue: 2, pp. 479 – 491, Feb. 2017.
- [J43] **W. Wang**, M. Bolic, **J. Parri**, "pvFPGA: Paravirtualizing an FPGA-based Hardware Accelerator towards General Purpose Computing," *International Journal of High Performance Computing and Networking*, Vol. 10, Issue 3, pp: 179-193, 2017.
- [J42] T. **Davidson**, M. Bolic, F. Tremblay, "Predicting Modulation in Corticomotor Excitability and in Transcallosal Inhibition in Response to Anodal Transcranial Direct Current Stimulation," *Frontiers in Human Neuroscience*, Vol: 10, Issue 49, 2016.
- [J41] **M. Mabrouk**, S. Rajan, M. Bolic, **M. Forouzanfar**, H. R. Dajani and I. Batkin, "Human breathing rate estimation from radar returns using harmonically related filters," *Journal of Sensors*, Hindawi Publishing Corporation, Article ID 9891852, Vol. 2016, 2016.
- [J40] H. Guo, C. He, N. Wang, M. Bolic, "PSR: A Novel High Efficiency and Easy-to-Implement Parallel Algorithm for Anticollision in RFID Systems," *IEEE Transactions on Industrial Informatics*, Vol: 12, Issue: 3, pp: 1134-1145, 2016.

- [J39] T. Li, S. Sun, M. Bolić and J. M. Corchado, “Algorithm Design for Parallel-Processing Implementation of the SMC-PHD Filter,” *Signal Processing, Elsevier*, Vol. 119, pp. 115-127, 2016.
- [J38] F. Tremblay, A. Remaud, **A. Mekonnen**, **S. Gholami-Boroujeny**, K.É. Racine, M. Bolic, “Lasting Depression in Corticomotor Excitability associated with Local Scalp Cooling,” *Neuroscience Letters, Elsevier*, vol. 600, pp. 127–131, 23 July 2015.
- [J37] **Sh. Gholami-Boroujeny**, M. Bolic, “Extraction of Cole parameters from the electrical bioimpedance spectrum using bacterial foraging optimization algorithm,” *Medical & Biological Engineering & Computing, Springer*, Vol. 54, Issue 4, pp. 643-651, 2016.
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- [J35] **I. Nejadgholi**, M. Bolic, “A Comparative Study of PCA, SIMCA and Cole model for Classification of Bioimpedance Spectroscopy Measurements,” *Computers in Biology and Medicine, Elsevier*, Vol. 63, pp 42 – 51, 2015. *Meritorious Paper for 2015*.
- [J34] **M. Forouzanfar**, S. Ahmad, I. Batkin, H. R. Dajani, M. Bolic, and V. Groza, “Model-Based Mean Arterial Pressure Estimation Using Simultaneous Electrocardiogram and Oscillometric Blood Pressure Measurements,” *IEEE Transactions on Instrumentation and Measurements*, Vol. 64, Issue 99, pp. 2443-2452, 2015.
- [J33] **I. Nejadgholi**, **H. Caytak**, M. Bolic, I. Batkin, S. Shirmohammadi, “Preprocessing and Parameterizing of Bioimpedance Spectroscopy Measurements By Singular Value Decomposition,” *Physiological Measurement*, Vol. 36, No. 5, pp. 983-999, May 2015.
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- [J28] **M. Forouzanfar**, S. Ahmad, I. Batkin, H. R. Dajani, M. Bolic, and V. Groza, “Coefficient-Free Blood Pressure Estimation Based on Pulse Transit Time-Cuff Pressure Dependence,” *IEEE Transactions on Biomedical Engineering*, Vol. 60, Issue 7, 1814 – 1824, 2013.
- [J27] **S. Ahmad**, I. Batkin, O. Kelly, H. R. Dajani, M. Bolic, and V. Groza, “Multi-Parameter Physiological Analysis in Obstructive Sleep Apnea Simulated With Mueller Maneuver,” *IEEE Transactions of Instrumentation and Measurements*, Vol. 62, Issue 10, pp. 2751 – 2762, 2013.
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- [J25] M. Bolic, **A. Borisenko**, P. Seguin, "Automating Evidence Collection at the Crime Scene using RFID Technology for CBRNE Events," *An International Journal of Forensic Science Policy & Management*, Taylor & Francis, Vol 3, Issue 1, pp. 3-11, 2012.
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- [J15] **B. Laska**, M. Bolic, R. Goubran, "Discrete Cosine Transform Particle Filter Speech Enhancement Speech Communication," *Speech Communications, Elsevier*, vol 52, no. 9, pp. 762-775, 2010.
- [J14] **F. Mustiere**, M. Bolic, M. Bouchard, "Speech enhancement based on nonlinear models using particle filters," *IEEE Transaction on Neural Networks*, vol. 20, Issue 12, pp. 1923-1937, 2009.
- [J13] **N. Irfan**, M. Bolic, M. Yagoub, and V. Narashiman, "Localization of Sensors in Indoor Environment with Neural Network Method," *Telecommunication Systems Journal*, Springer, vol. 44, issue 1, pp. 149-158, 2010.
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- [J10] **P. Longa**, A. Miri, M. Bolic, “A Modified Distributed Arithmetic Based Area-Efficient Architecture for Discrete Wavelet Transforms,” *IET Electronic Letters*, Vol. 44, Issue 4, pp. 270 – 271, 2008.
- [J9] **B. Laska**, R. Goubran, M. Bolic, “Subband improved proportionate LMS for acoustic echo cancellation in changing environments,” *IEEE Signal Processing Letters*, Vol. 15, pp. 337 – 340, 2008.
- [J8] S. Hong, S.-S. Chin, P. M. Djurić, M. Bolić, “Design and Implementation of Flexible Resampling Mechanism for High-Speed Parallel Particle Filters,” *The Journal of VLSI Signal Processing*, Springer, vol. 44, Issue 1-2, pp: 47 – 62, August 2006.
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- [J1] M. Bolic, V. Drndarevic, B. Samardzic, “Distributed Measurement and Control System Based On Microcontrollers with Automatic Configuration,” *Sensors and Actuators A*, Elsevier Science, vol. 90, pp. 215-221, 2001.

### **Selected conference papers**

- [C101] A. Schumann, et al., “Drone-vs-Bird Detection Challenge at IEEE AVSS2021,” The 17th IEEE International Conference on Advanced Video and Signal-based Surveillance, 2021.
- [C100] **F. Dadboud**, **V. Patel**, **V. Mehta**, M. Bolic, I. Mantegh, “Single-Stage UAV Detection and Classification with YOLOV5: Mosaic Data Augmentation and PANet,” The 17th IEEE International Conference on Advanced Video and Signal-based Surveillance, 2021.
- [C99] **C. Iglesias Jr**, **V. Mehta**, A. Venereo-Sanchez, X. Xu, J. Robitaille, R. Voyer, R. Richard, N. Belacel, A. Kamen, M. Bolic, “Handling Massive Proportion of Missing Labels in Multivariate Long-Term Time Series Forecasting,” 10th International Conference on Mathematical Modeling in Physical Sciences, 2021.
- [C98] **A. Boyer**, R. Abielmona, M. Bolic, E. Petriu, “Vessel Identification using Convolution Neural Network-based Hardware Accelerators,” accepted for publication in CIVEMSA 2021.

- [C97] **R. Hathurusinghe**, I. Nejadgholi, M. Bolic, "A Privacy-Preserving Approach to Extraction of Personal Information through Automatic Annotation and Federated Learning," accepted for publication in *PrivateNLP @ NAACL-HLT 2021*.
- [C96] H.H. Olhosseiny, M. Mirzaloo, M. Bolic, H.R. Dajani, V. Groza, M. Yoshida, "Identifying High Risk of Atherosclerosis Using Deep Learning and Ensemble Learning," accepted for publication at *MeMea 2021*.
- [C95] **V. Mehta**, M. Bolic, I. Mantegh, C. Vidal, "Detection and classification of drones and birds at a far distance using radar data," *NATO Future Forces Forum*, 2021.
- [C94] **H. Sadreazami**, D. Mitra, S. Rajan and M. Bolic, "Compressed domain contactless fall incident detection using UWB radar signals," in *Proc. IEEE Int. New Circuits and Systems Conference (NEWCAS)*, pp. 90-93, 2020.
- [C93] **X. Zhang**, **V. Mehta**, M. Bolic and I. Mantegh, "Hybrid AI-enabled Method for UAS and Bird Detection and Classification," accepted for publication in *IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, 2020.
- [C92] **S. He**, **V. Mehta**, M. Bolic, "A Joint Localization Assisted Respiratory Rate Estimation using IR-UWB Radars," *EMBC conference*, Montreal, 2020.
- [C91] **F. Yang**, **Z. Han**, M. Bolic, "Detection of Respiratory Signal Based on Depth Camera Body Tracking," *EMBC conference*, Montreal, 2020.
- [C90] J.J. Valdes, Z. Baird, S. Rajan and M. Bolic, "Radar-based Noncontact Human Activity Classification Using Genetic Programming," *IEEE CEC 2020*.
- [C89] **H. Sadreazami**, M. Bolic, S. Rajan, "TL-FALL: Contactless indoor fall detection using transfer learning from a pretrained model," *IEEE International Symposium on Medical Measurements and Applications (MeMeA)*, 2019.
- [C88] **S. He**, H. R. Dajani, R. D. Meade, G. P. Kenny, M. Bolic, "Continuous Tracking of Changes in Systolic Blood Pressure using BCG and ECG," *EMBC 2019*, pp. 6826-6829.
- [C87] **D. Shapiro**, M. Lemay, M. K. MacPherson, K. Yee, M. Bolic, "Sidecar: Augmenting Word Embedding Models With Expert Knowledge," accepted for publication in the *Future of Information and Communications Conference (FICC) 2020*, San Francisco.
- [C86] E. Sidhu, M. Yoshida, H. Dajani, V. Groza, M. Bolic, "Performance Analysis of Oscillometric Blood Pressure Estimation Techniques in Cardiac Patients," *MeMea*, 2019.
- [C85] **H. Sadreazami**, S. Rajan and M. Bolic, "Residual Network-Based Supervised Learning of Remotely Sensed Fall Incidents Using Ultra-Wideband Radar," *2019 IEEE International Symposium on Circuits and Systems (ISCAS)*, pp. 1-4, 2019.
- [C84] **M. Asni**, **D. Shapiro**, M. Bolic, **T. Mathew** and L. Grebler, "Speaker Differentiation Using a Convolutional Autoencoder," *IEEE International Conference on the Science of Electrical Engineering in Israel (ICSEE)*, Eilat, Israel, 2018, pp. 1-5.
- [C83] **H. Sadreazami**, S. Rajan and M. Bolic, "On the use of ultra wideband radar and stacked LSTM-RNN for at home fall detection," in *Proc. Life Sciences Conference (LSC)*, 2018.
- [C82] **M. Vrbaski**, M. Bolic, S. Majumdar, "Complex Event Recognition Notification Methodology for Uncertain IOT Systems Based on Micro-Service Architecture," *FiCloud 2018*.
- [C81] Z. Baird, S. Rajan, M. Bolic, "Classification of Human Posture from Radar Returns Using Ultra-Wideband Radar," *EMBC 2018*.
- [C80] **S. He**, X. Li, I. Batkin, H. Dajani, M. Bolic, "Detecting Cardiac Activity by Capacitive Electrodes from a Single Point on the Arm," *EMBC 2018*.

- [C79] J.J. Valdes, Z. Baird, S. Rajan and M. Bolic, "Single Channel Continuous Wave Doppler Radar for Differentiating Types of Human Activity," IJCNN 2018 Paper.
- [C78] Z. Baird, J. Valdes, S. Rajan, M. Bolic, "Classification of Human Activity Level Using Single Channel CW Doppler Radar," ICPRAI 2018.
- [C77] **H. Qassoud**, M. Bolic, S. Rajan, "Posture and Fall Detection System Using 3D Motion Sensors," ICPRAI 2018.
- [C76] J. Valdes, Z. Baird, S. Rajan, M. Bolic, "Pattern Structure of Human Motion Using Single Channel CW Doppler Radar: An Unsupervised Perspective," ICPRAI 2018.
- [C75] **M. Rostamian, J. Wang**, M. Bolić, "An Accurate Passive RFID Indoor Localization System Based on Sense-a-Tag and Zoning Algorithm," Ad Hoc Networks, 2017.
- [C74] **D. Shapiro**, H. Qassoud, M. Lemay, M. Bolic, "Unsupervised Deep Learning Recommender System for Personal Computer Users," INTELLI 2017, The Sixth International Conference on Intelligent Systems and Applications, France, 2017.
- [C73] **J. Wang** and M. Bolic, "Accurate Localization Using Augmented UHF RFID System for Internet-of-Things," ICWMC 2017, The Thirteenth International Conference on Wireless and Mobile Communications, France, 2017.
- [C72] **D. Shapiro**, H. Qassoud, M. Lemay, M. Bolic, "Visual Deep Learning Recommender System for Personal Computer Users," VISUAL 2017, The Second International Conference on Applications and Systems of Visual Paradigms, France, 2017.
- [C71] Z. Baird, **I. Gunasekara**, S. Rajan, M. Bolic, "Principal Component Analysis-Based Occupancy Detection with Ultra Wideband Radar," IEEE 60th International Midwest Symposium on Circuits and Systems, 2017.
- [C70] H.N. Abderahman, H.R. Dajani, M. Bolic, V.Z. Groza, "An integrated system to compensate for temperature drift and ageing in non-invasive blood pressure," IEEE International Conference on Medical Measurements and Applications (MeMeA), 2016
- [C69] **I. Nejadgholi, H. Caytak**, M. Bolic, "Using Bioimpedance Spectroscopy Parameters as Real-Time Feedback During tDCS," EMBC, 2016.
- [C68] **M. Rostamian, J. Wang** and M. Bolic, "An accurate passive RFID indoor localization system based on Sense-a-Tag and zoning algorithm," in Proc. EAI Int. Conf. Ad Hoc Netw. (AdHocNets), Sept. 2016.
- [C67] **I. Nejadgholi**, S. Rajan, M. Bolic, "Time-Frequency Based Contactless Estimation of Vital Signs of Human While Walking Using PMCW Radar," 2016 IEEE 18th International Conference on e-Health Networking, Applications and Services (Healthcom).
- [C66] I. Batkin, M. Bolic, "Mathematical analysis of dermal absorption rate of heavy metals," EMBC, 2015.
- [C65] **H. Caytak, I. Nejadgholi**, I. Batkin, M. Bolic, "Bioimpedance spectroscopy method for investigating changes to intracranial dose during tDCS," EMBC, 2015.
- [C64] **J. Wang**, M. Bolic, "Reducing Phase Cancellation Effect with ASK-PSK Modulated Stamp in Augmented UHF RFID Indoor Localization System," the second International Workshop on the Future of the Internet of Things, FOIOT 2015.
- [C63] **I. Nejadgholi**, M. Bolic, T. Davidson, F. Tremblay, C. **Blais**, "Classification of responders versus non-responders to tDCS by analyzing voltage between anode and cathode during treatment session," World Congress on Medical Physics and Biomedical Engineering (WC 2015), Toronto, Canada, June, 2015. *4<sup>th</sup> place in IFMBE Young Investigator Competition.*

- [C62] M. Bolic, **M. Rostamian**, P. Djuric, "Proximity Detection with RFID in the Internet of Things," 48th Asilomar Conference on Signals, Systems and Computers, 2014.
- [C61] **M. Mabrouk**, S. Rajan, M. Bolic, I. Batkin, H. R. Dajani, V. Z. Groza, "Model of Human Breathing Reflected Signal Received by PN-UWB Radar," EMBC 2014.
- [C60] **J. Wang**, M. Bolic, "Exploiting Dual-Antenna Diversity for Phase Cancellation in Augmented RFID System," SaCoNet 2014.
- [C59] **P.K. Mishra**, M. Bolic, M. Yagoub, "A simulation study of loop antennas for RFID readers used for underground caverns," XXXI General Assembly of the International Union of Radio Science, 2014.
- [C58] **O. Draghici**, I. Batkin, I. Chapman, M. Bolic, "Performance Evaluation of the MouthPad," MeMea 2014.
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- [M2] M. Bolic, D. Simplot-Ryl, I. Stojmenovic, *RFID Systems: Research trends and challenges*, edited book, Wiley, 2010.
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- [B1] **H. Liu**, M. Bolic, A. Nayak, I. Stojmenović, Integrating of RFID and Wireless Sensor Network, Book chapter, *Encyclopedia on Ad Hoc and Ubiquitous Computing*, World Scientific Press, Singapore, Editor Dharma P. Agrawal, 2009.
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4. M. Mabrouk at al., Remote sensing of human breathing at a distance, US patent, US10401479B2, 2019.
5. M. Bolic, J.S. Wight, R. E. Amaya, C. P. Slaby, “Charging battery-less long-range RFID tags,” US provisional patent application, US20170116443 A1, 2016.

### **Invited talks and short courses**

1. Keynote speech, “Computer Architectures and Algorithms: From Filtering to Deep Learning,” EMCA Developer Conference, Ericsson, Ottawa, 2019
2. Keynote speech, “Contactless monitoring of people,” Infoware 2017 in France
3. Invited speech, “Contactless monitoring of vital signs,” Canadian Intellectual Property Office, 2017
4. Invited tutorial, “Uncertainties in biomedical instrumentation and signal processing,” MeMea Conference, Rochester, USA, 2017.
5. Invited speech, “Contactless monitoring of vital signs,” IEEE EMBS Ottawa Seminar, 2017.
6. Invited speech, “Biomedical and wireless research in pervasive healthcare,” SYSU-CMU Shunde International Joint Research Institute, Shunde, Guangdong, China, 2015
7. Invited speech, “Wearable Devices: Everything that We Wear. Handheld Devices: Everything that We Hold,” BioMed Partnering Forum, Heart Institute, Ottawa, 2015.
8. Invited speech, “RFID Applications in Society,” E-Business Doctoral Seminar, University of Ottawa, February, 2015, 2016.
9. Invited speech, “RFID systems: present and future,” Internet of Things, October 2014.
10. Invited tutorial, “Innovative Blood Pressure Measurements,” for the workshop “Emerging Methods for Blood Pressure Measurements and Calibration” at EMBC 2013.
11. Invited short course, “Short course on UHF RFID,” about 8 hours of lectures, Sun Yat-Sen University, Guangzhou, China, 2010.
12. Invited speech, “Embedded Multicores,” Sun Yat-Sen University, Guangzhou, China.
13. Invited short course, “Short course on RFID,” GS1 Serbia, Belgrade, Serbia, 2010.
14. M. Bolic, “Introduction to RFID Technology,” Wisense, University of Ottawa, 2009.
15. Invited speech, “Automated design of configurable embedded systems” IBM Ottawa, 2009.
16. Invited speech, “Modular Design of Configurable Systems on Chip,” IEEE Computer Society Chapter, Ottawa, 2009.
17. Invited speech, “Radio Frequency Identification (RFID) Technology,” Defense Research and Development Canada, 2006.

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### Application Notes

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- **D. Shapiro, J. Parri, J.-M. Desmarais, A. Kouri, J.-P. Bergeron, M. Bolic,** "[Soft Co-Processor Based Hardware Acceleration for Image Blending](#)," Computer Architecture Research Group, University of Ottawa, Ottawa, Ont., Report No. TR-2011-2, March. 2011.
- **D. Shapiro, M. Bolic,** "[Improved ISE Identification Under Hardware Constraint](#)," Computer Architecture Research Group, University of Ottawa, Ottawa, Ont., Report No. TR-2011-1, Jan. 2011.
- **M. Branchaud, D. Shapiro, V. Thareja, S. Vijayakumar** and M. Bolic, "[SING: A multiprocessor system-on-chip design and system generation tool](#)," Computer Architecture Research Group, University of Ottawa, Ottawa, Ont., Report No. TR-2010-3, Jan. 2009.
- **M. Montcalm, D. Shapiro, V. Groza, and M. Bolic,** "[ITS: An ILP-based combined instruction/task static scheduling algorithm](#)," Computer Architecture Research Group, University of Ottawa, Ottawa, Ont., Report No. TR-2010-2, Jan. 2010.
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3. M. Cheng, T. Venkatesh, H. Dajani, M. Bolic, "A practical device to warn on impending syncopal episodes," to be presented at World Congress on Medical Physics and Biomedical Engineering (WC 2015), Toronto, Canada, June, 2015.
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5. I. Nejadgholi, I. Batkin, M. Bolic, A. Adler and S. Shirmohammadi, "Segmental Spectral Decomposition as a Time Persistent Method of BioImpedance Spectroscopy Feature Extraction," EIT conference 2014.

6. S. Ahmad, I. Batkin, M. Bolic, H. R. Dajani, and V. Groza, S. Chander, “Electrocardiogram-Assisted Blood Pressure Estimation in Patients with Atrial Fibrillation and other Chronic Conditions,” Canadian Hypertension Congress, Gatineau, Quebec, October 2014.
7. T. Davidson, F. Tremblay, M. Bolic, “Modulation of transcallosal inhibition in the motor cortex by transcranial direct current stimulation (tDCS),” Neuroscience 2014.