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Dr. Rober Boshra

Correspondence language: English

Sex: Male

Date of Birth: 4/05

Canadian Residency Status: Canadian Citizen

Country of Citizenship: Canada, Egypt

Contact Information

The primary information is denoted by (*)

Telephone

Mobile (*) 001-647-8915905

Email

Work (*) boshra.rober@gmail.com

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Website

Personal <https://roberboshra.com/>

Dr. Rober Boshra

Language Skills

Language	Read	Write	Speak	Understand	Peer Review
Arabic	Yes	Yes	Yes	Yes	Yes
English	Yes	Yes	Yes	Yes	Yes
French	Yes	Yes	No	No	No
German	Yes	Yes	No	No	No

Degrees

- 2016/9 - 2019/7 Doctorate, Interdisciplinary PhD, Biomedical Engineering, McMaster University
 Degree Status: Completed
 Thesis Title: Stepping Beyond Behaviour: Explainable Machine Learning for Clinical Neurophysiological Assessment of Concussion Progression
 Transferred to PhD without completing Masters?: No
 Supervisors: John Connolly; James Reilly
- 2014/9 - 2016/8 Master's Thesis, Masters of Science, Neuroscience, McMaster University
 Degree Status: Completed
 Supervisors: John Connolly, 2014/9 - ; James Reilly, 2014/9 -
 Research Disciplines: Neurosciences, Electrical Engineering and Electronic Engineering, Computer Science
 Areas of Research: Cognition, Neuronal Systems
 Fields of Application: Foundations and Knowledge Acquisition
- 2010/1 - 2013/12 Bachelor's Honours, Bachelor of science, Computer Science, Dalhousie University
 Degree Status: Completed
 Thesis Title: Detection of event related brain potentials using machine learning methods: A single subject study
 Supervisors: Thomas Trappenberg, 2011/5 - 2013/12
 Research Disciplines: Computer Science, Psychology
 Areas of Research: Cognition, Neuronal Systems, Shape Recognition and Computer Graphics, Somatosensory System
 Fields of Application: Biomedical Aspects of Human Health, Communication and Information Technologies, Security

Recognitions

2016/2 MiNDS Recognition Award
 McMaster University
 Prize / Award
 Recognition of leadership role in the program

User Profile

Research Specialization Keywords: Machine Learning, Neurosignal processing

Disciplines Trained In: Biomedical Engineering and Biochemical Engineering, Computer Science, Neurosciences

Research Disciplines: Computer Science, Psychology, Neurosciences

Areas of Research: Neuronal Systems, Cognition, Expert Systems

Fields of Application: Biomedical Aspects of Human Health, Communication and Information Technologies, Public Health

Employment

2017/10 Director, AI & Technology
 VoxNeuro Inc.

2016/9 - 2019/7 Teaching Assistant
 Biomedical Engineering, Engineering, McMaster University

2016/9 - 2019/7 Research Assistant
 Biomedical Engineering, Engineering, McMaster University

2017/9 - 2017/12 Machine Learning Engineer
 Healthcare Innovation in Neurotechnology
 Full-time

2016/11 - 2017/2 Machine Learning Engineer
 Healthcare Innovation in NeuroTechnology
 Full-time
 Development of stroke detection in continuous EEG data utilising state of the art machine learning algorithms

2016/9 - 2017/2 Machine Learning NSERC Intern
 Appnovation
 Part-time
 As part of an NSERC Engage

2014/9 - 2016/8 Teaching Assistant
 Neuroscience, Health Sciences, McMaster University
 Part-time
 Tenure Status: Non Tenure Track
 Organize and present tutorial materials. Mark essays and tests. Help guide students in identifying career options that suit them.

2014/9 - 2016/8 Research Assistant
 Neuroscience, Health Sciences, McMaster University

2013/9 - 2013/12	Research Assistant Computer Science, Dalhousie University Full-time Tenure Status: Non Tenure Track Worked under the supervision of Dr. Thomas Trappenberg on research topics including visual analysis of microcirculatory videos and detection of ERPs in EEG signals using machine learning.
2011/9 - 2013/12	Teaching Assistant Computer Science, Dalhousie University Part-time Tenure Status: Non Tenure Track Responsible for helping students in the computer science learning center. Focus on networking, algorithms and database systems.
2011/5 - 2011/8	Research Assistant Computer Science, Dalhousie University Full-time Tenure Status: Non Tenure Track Worked under the supervision of Dr. Thomas Trappenberg on research topics including change detection in dynamic environments, autonomous robotics (RatSLAM) and continuous attractor networks.

Affiliations

The primary affiliation is denoted by (*)

(*) 2018/5	Director, AI & Technology, VoxNeuro Inc.
2018/2 - 2020/1	Postgraduate Affiliate, Vector Institute
2016/9 - 2019/7	PhD Student, McMaster University
2018/5 - 2019/1	MacData Fellow, MacData Institute
2017/9 - 2017/12	Machine Learning Engineer, Healthcare Innovation in Neurotechnology
2016/11 - 2017/2	Machine Learning Engineer, Healthcare Innovation in Neurotechnology
2014/9 - 2016/8	Master's Student, McMaster University
2011/1 - 2013/12	Student, Dalhousie University

Research Funding History

Awarded [n=9]

2018/4 - 2021/3 Co-applicant	Development of a Point of Care System for Automated Coma Prognosis, Grant Funding Sources: 2018/4 - 2021/3 Canadian Institutes of Health Research (CIHR) Collaborative Health Research Projects (NSERC partnered), Operating Total Funding - 592,724 (Canadian dollar) (Canadian dollar) Funding Competitive?: Yes
2018/1 - 2020/1 Principal Applicant	Vector Institute Postgraduate Honorarium, Fellowship

Funding Sources:

2018/1 - 2020/1 Vector Institute
 Postgraduate affiliateship
 Total Funding - 12,000 (Canadian dollar)
 Funding Competitive?: Yes

2018/9 - 2019/8
 Principal Applicant Clifton W. Sherman graduate scholarship, Grant

Funding Sources:

2018/9 - 2019/8 Ministry of Training, Colleges and Universities
 Total Funding - 15,000 (Canadian dollar)
 Funding Competitive?: Yes

2017/9 - 2018/8
 Principal Applicant Queen Elizabeth II Graduate Scholarship, Scholarship

Funding Sources:

2017/9 - 2018/8 Ministry of Training, Colleges and Universities
 Total Funding - 15,000 (Canadian dollar)
 Funding Competitive?: Yes

2015/9 - 2016/8
 Principal Applicant Ontario Graduate Scholarship, Scholarship

Funding Sources:

2015/9 - 2016/8 McMaster University
 Total Funding - 15,000 (Canadian dollar)
 Portion of Funding Received - 15,000
 Funding Competitive?: Yes

2014/9 - 2015/8
 Principal Applicant Woodburn Heron Ontario Graduate Scholarship, Scholarship

Funding Sources:

2014/9 - 2015/8 McMaster University
 Total Funding - 15,000 (Canadian dollar)
 Portion of Funding Received - 15,000
 Funding Competitive?: Yes

2013/6 - 2013/8
 Principal Applicant Sexton Scholar, Grant

Funding Sources:

2013/6 - 2013/8 Dalhousie University
 Total Funding - 400 (Canadian dollar)
 Portion of Funding Received - 400
 Funding Competitive?: No

2012/9 - 2012/12
 Principal Applicant In-course Scholarship, Scholarship

Funding Sources:

2012/9 - 2012/12 Dalhousie University
 Total Funding - 900 (Canadian dollar)
 Portion of Funding Received - 900
 Funding Competitive?: No

2012/1 - 2012/4
 Principal Applicant Sexton Scholar, Grant

Funding Sources:

2012/1 - 2012/4 Dalhousie University
 Total Funding - 400 (Canadian dollar)
 Portion of Funding Received - 400
 Funding Competitive?: No

Completed [n=4]

2018/5 - 2019/1
 Principal Applicant

MacData Fellowship, Fellowship

Funding Sources:

2018/5 - 2019/1 McMaster University
 MacData
 Total Funding - 7,500 (Canadian dollar)
 Funding Competitive?: Yes

2016/9 - 2017/8
 Principal Applicant

Clifton W. Sherman Ontario Graduate Scholarship, Scholarship

Funding Sources:

2016/9 - 2017/8 McMaster University
 Total Funding - 15,000 (Canadian dollar)
 Funding Competitive?: Yes

2013/9 - 2013/12
 Principal Applicant

Undergraduate Research Scholarship, Scholarship

Funding Sources:

2013/9 - 2013/12 Dalhousie University
 Total Funding - 8,000 (Canadian dollar)
 Portion of Funding Received - 8,000
 Funding Competitive?: Yes

2012/5 - 2012/8
 Principal Applicant

Undergraduate Research Scholarship, Scholarship

Funding Sources:

2012/5 - 2012/8 Dalhousie University
 Total Funding - 8,000 (Canadian dollar)
 Portion of Funding Received - 8,000
 Funding Competitive?: Yes

Courses Taught

2017/01/05 -
 2017/04/20

Teaching Assistant, McMaster University
 Course Title: Introduction to Software Development
 Course Code: COMPSCI 2ME3
 Course Level: Undergraduate
 Section: Computer science and engineering
 Number of Students: 213
 Number of Credits: 3
 Lecture Hours Per Week: 3
 Tutorial Hours Per Week: 2
 Lab Hours Per Week: 0
 Guest Lecture?: No

2017/01/05 - 2017/02/28	Guest Lecturer, McMaster University Course Title: Special Topics in Cognitive Science of Language Course Code: COGSCIL 713 Course Topic: Human electrophysiology, cognition, language, and brain injury Course Level: Graduate Section: Cognitive Neuroscience Lecture Hours Per Week: 3 Tutorial Hours Per Week: 0 Lab Hours Per Week: 0 Guest Lecture?: Yes
2015/09/01 - 2016/05/13	Teaching Assistant, Neuroscience, McMaster University Course Title: Meeting of the Minds Journal Club Course Topic: Trending topics in Neuroscience Course Level: Graduate Number of Students: 50
2014/09/01 - 2014/12/10	Teaching assistant, Lifescience, McMaster University Course Title: LifeSci 3A03 - Health and Disease Course Level: Undergraduate Guest Lecture?: No

Staff Supervision

Event Administration

2017/6 - 2018/1	Logistics coordinator, Delta Hacks IV, Association
2017/2 - 2017/2	Lecturer, EEG Analysis workshop, Workshop, Language Brain and Memory Lab, 2017/2 - 2017/2
2014/9 - 2015/5	Social coordinator, MiNDS post-colloquium reception, Seminar, 2014/9 - 2014/12 Responsible for overseeing and organizing receptions for biweekly faculty colloquiums.

Journal Review Activities

Reviewer, PLOS ONE

Knowledge and Technology Translation

2018/5 - 2018/5	Presenter, Community Engagement Target Stakeholder: General Public References / Citations / Web Sites: Pint of Science (Hamilton, ON, CA)
2016/2 - 2017/8	Researcher, Technology Transfer and Commercialization Target Stakeholder: The Media Evidence of Uptake/Impact: The study has been discussed in many media outlets including, but not limited to, the CBC and the Toronto star. References / Citations / Web Sites: https://www.thespec.com/news-story/7525066-collision-course-a-spectator-report-on-the-science-of-hard-head-knocks/

Other Memberships

2018/2	Postgraduate Affiliate, Vector Institute
2012/9 - 2020/9	Member, Golden Key International Honour Society
2018/5 - 2019/2	MacData Graduate Fellow, McMaster University
2012/9 - 2013/8	Member, Dalhousie Robotics Club Dalhousie robotics club was a student-run team of engineering and computer science students building an autonomous robot to partake in the annual Intelligent Ground Vehicle Competition (IGVC). The team was successful in attaining an honorable mention and a "Rookie of the Year" award in 2013. Main role was to build the navigation system of the robot and to integrate sensor systems into the autonomous navigation module.

Presentations

1. Boshra R. (2019). AI in Healthcare Panel. York University Hacks, Canada
Main Audience: General Public
Invited?: Yes
2. Boshra R. (2019). Machine Learning Detection of Long-Lasting Neurophysiological Concussion Effects in Retired Athletes. Biomedical Engineering Symposium, Hamilton, Canada
Main Audience: Researcher, Competitive?: Yes
3. Boshra R. (2016). Machine learning based framework for EEG/ERP analysis. McMaster University FHS Plenary, Hamilton, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No

Text Interviews

2019/10/02	Cognitive Health Assessments in Healthcare, Jerry Zeidenberg, Canadian Healthcare Technologies
2019/09/24	NRC IRAP VoxNeuro Press Release, Various
2018/12/12	Neurological consequences of football concussions, Steve Buist, The Hamilton Spectator
2018/02/26	Machine Learning and the Vector Institute, McMaster Brighter World
2018/02/20	A look inside McMaster's Centre for Advanced Research in Experimental and Applied Linguistics, McMaster Brighter World

Publications

Journal Articles

1. Ruitter KI, Boshra R, DeMatteo C, Noseworthy M, Connolly JF. (2019). Neurophysiological markers of cognitive deficits and recovery in concussed adolescents. Brain Research. Revision Requested,

2. Boshra R, Dhindsa K, Boursalieu O, Ruiter KI, Sonnadara RR, Samavi R, Doyle TE, Reilly JP, Connolly JF. (2019). From Group-Level Statistics to Single-Subject Prediction: Machine Learning Detection of Concussion in Retired Athletes. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*. (7): 1492 - 1501.
Published, IEEE,
3. Boshra R, Ruiter KI, Dhindsa K, Sonnadara R, Reilly JP, Connolly JF. (2019). On the Time-Course of Functional Brain Connectivity: Theory of the Dynamic Progression of Concussion Effects. *Nature Neuroscience*.
Submitted, Nature,
4. Connolly JF, Reilly JP, Fox-Robichaud A, Britz P, Blain-Moraes S, Sonnadara R, Hamielec C, Herrera-Díaz A, Boshra R. (2019). Development of a Point of Care System for Automated Coma Prognosis – A Prospective Cohort Study Protocol. *BMJ Open*.
Last Author
Published,
Refereed?: Yes, Open Access?: Yes

Funding Sources: Canadian Institutes of Health Research (CIHR) - CPG158287; Natural Sciences and Engineering Research Council of Canada (NSERC) - CHRP 523461-18
5. Ruiter K, Boshra R, Doughty M, Noseworthy M, Connolly F. (2019). Disruption of function: Neurophysiological markers of cognitive deficits in retired football players. *Clinical Neurophysiology*. 130(1): 111-121.
<http://dx.doi.org/https://doi.org/10.1016/j.clinph.2018.10.013>
Published,
6. Ho A, Boshra R, Schmidtke D, Oralova G, Moro AL, Service E, Connolly JF. (2019). Electrophysiological Evidence for the Integral Nature of Tone in Mandarin Spoken Word Recognition. *Neuropsychologia*.
Co-Author
Published, Elsevier,
Refereed?: Yes
7. Boshra R, Ruiter KI, DeMatteo C, Reilly JP, Connolly JF. (2019). Neurophysiological Correlates of Concussion: Deep Learning for Clinical Assessment. *Scientific Reports*.
Revision Requested, Nature,
8. Blain-Moraes S, Boshra R, Ma HK, Mah R, Ruiter K, Avidan M, Connolly JF, Mashour GA. (2016). Normal Brain Response to Propofol in Advance of Recovery from Unresponsive Wakefulness Syndrome. *Frontiers in Human Neuroscience*.
Co-Author
Published,
Refereed?: Yes, Open Access?: Yes
9. Sculthorpe-Petley L, Liu C, Hajra SG, Parvar H, Satel J, Trappenberg TP, Boshra R, D’Arcy RCN. (2015). A rapid event-related potential (ERP) method for point-of-care evaluation of brain function: Development of the Halifax Consciousness Scanner. *Journal of neuroscience methods*. 245: 64-72.
Co-Author
Published, Elsevier,
Refereed?: Yes
Number of Contributors: 8
10. Parvar H, Sculthorpe-Petley L, Satel J, Boshra R, D’Arcy RCN, Trappenberg TP. (2014). Detection of event-related potentials in individual subjects using support vector machines. *Brain Informatics: Brain Data Computing and Health Studies*.
Co-Author
Published,
Refereed?: Yes

Conference Publications

1. Boshra R, Dhindsa K, Boursalie O, Ruiter KI, Sonnadara RR, Samavi R, Doyle TE, Reilly JP, Connolly JF. (2019). Machine Learning Detection of Chronic Neurophysiological Effects of Concussion in Retired Athletes. Neuroscience Symposium - Neuroplasticity and Brain Health, Hamilton, Canada,
Poster
First Listed Author
Published
Refereed?: Yes
2. Oralova G, Boshra R, Schmidtke D, Connolly JF, Kuperman V. (2019). The time-course of lexical and semantic effects in derived word recognition: a combined EEG and eye-tracking study. European Conference on Eye Movements, Spain,
Abstract
Co-Author
Published
Refereed?: Yes
3. Boshra R, Dhindsa K, Boursalie O, Ruiter KI, Sonnadara RR, Samavi R, Doyle TE, Reilly JP, Connolly JF. (2019). Interpretable Detection of Concussion in Retired Athletes Decades Following Injury. Vector Research Symposium, ,
Poster
First Listed Author
Published
4. Oralova G, Boshra R, Schmidtke D, Connolly JF, Kuperman V. (2019). The time-course of lexical and semantic effects in derived word recognition: a combined EEG and eye-tracking study. European Conference on Eye-movements, Alicante, Spain,
Conference Date: 2019/8
Poster
Co-Author
Published
5. Oralova G, Boshra R, Kyröläinen A, Connolly JF, Kuperman V. (2019). What an incorrect use of a character tells us about the organization of Chinese mental lexicon: a combined EEG & eye-tracking study. Society for the Scientific Studies of Reading, Toronto, Canada,
Conference Date: 2019/7
Poster
Co-Author
Published
6. Ruiter K, Boshra R, Doughty M, Noseworthy M, Connolly J. (2018). MMN detection of early attention abnormalities in cases of multiple concussions. MMN2018, ,
Poster
Co-Author
Published
7. Rokos A, Mah R, Boshra R, Harrison A, Choy TL, Blain-Moraes S, Connolly JF. (2017). Recording Event-Related Potentials from Unresponsive Populations: Identifying Best Practices and Implications for the Study of Consciousness. 11th Annual Canadian Neuroscience Meeting, ,
Poster
Co-Author
Published

8. Doughty M, Noseworthy M, Boshra R, Ruiter K, Connolly J. (2017). Assessing Functional and Structural Connectivity in ex-Professional Athletes. International Society for Magnetic Resonance in Medicine, Honolulu, HI, United States,
Conference Date: 2017/4
Abstract
Co-Author
Published
Refereed?: Yes
9. Doughty M, Boshra R, Ruiter K, Connolly JF, Noseworthy M. (2017). Assessing Functional and Structural Connectivity in ex-Professional Athletes. Imaging Network of Ontario - IMNO, London, Canada,
Conference Date: 2017/3
Abstract
Co-Author
Published
Refereed?: Yes
10. Ruiter R, Boshra R, Connolly JF. (2016). Correlation of ERP and behavioural responses in patients suffering from post-concussion syndrome. International Organization of Psychophysiology, Havana, Cuba,
Conference Date: 2016/8
Abstract
Co-Author
Published
Refereed?: Yes
11. Boshra R, Ruiter K, Reilly JP, Connolly JF. (2016). Automated machine learning analysis in EEG/ERP data. International Organization of Psychophysiology, Havana, Cuba,
Conference Date: 2016/8
Abstract
First Listed Author
Published
Refereed?: Yes
12. Blain-Moraes S, Boshra R, Ma HK, Mah R, Ruiter K, Avidan M, Connolly JF, Mashour GA. (2016). Anesthetic Detection of Covert Consciousness in a Patient with Unresponsive Wakefulness Syndrome. CAN-ACN, Toronto, Canada,
Conference Date: 2016/6
Poster
Co-Author
Published
Refereed?: Yes
13. Boshra R, Ruiter K, Reilly JP, Connolly JF. (2016). Machine learning based framework for EEG/ERP analysis. CAN-ACN, Toronto, Canada,
Conference Date: 2016/5
Poster
First Listed Author
Published
Refereed?: Yes
14. Ruiter K, Boshra R, DeMatteo C, Noseworthy M, Connolly JF. (2016). ERP investigation of attentional and language processes after concussion. McMaster University FHS plenary, Hamilton, Canada,
Conference Date: 2016/5
Poster
Co-Author
Published
Refereed?: Yes

15. Ruiter K, Boshra R, DeMatteo C, Noseworthy M, Connolly JF. (2016). ERP investigation of attentional and language processes after concussion. CAN-ACN, Toronto, Canada,
Conference Date: 2016/5
Poster
Co-Author
Published
Refereed?: Yes

Intellectual Property

Patents

1. SYSTEMS AND METHODS FOR COGNITIVE HEALTH ASSESSMENT. Canada. 2019/06/13.
Patent Status: Pending
Inventors: Connolly JF, Boshra R, Ruiter KI