Protected when completed

Date Submitted: 2022-05-09 11:03:52
Confirmation Number: 1452945
Template: Full CV

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 (*)

Address

Mailing (*)

XXXXX

Telephone

Mobile (*)	001-XXX-XXXXXXXX

Email

Work	rboshra@princeton.edu
Work (*)	boshra.rober@gmail.com

Website

Community	https://orcid.org/0000-0003-2925-199X
Personal	https://roberboshra.com/
Social Media	https://www.researchgate.net/profile/Rober_Boshra
Social Media	https://www.linkedin.com/in/boshra/

Protected when completed

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, 2016/9 - 2019/7; James Reilly, 2016/9 - 2019/7

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: Brain Injury, Cognitive Function, Concussion, Consciousness, Deep Learning, Electroencephalography (EEG), Event-Related Potentials (ERP), Functional Connectivity, Machine Learning

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

2020/10	Postdoctoral Research Associate Princeton Neuroscience Institute, Princeton University Full-time
2017/11 - 2020/10	Director, AI & Technology VoxNeuro Inc. Lead the AI & technology department and the development of the company's proprietary cloud-based software as a service medical device ($490k budget), partially funded by an award from the National Research Council (IRAP program). Supervised the implementation of ISO13485:2016 and regulatory pathways in Canada and the United States. Developed projects and solutions under the Research and Development department.
2016/9 - 2019/7	Teaching Assistant Biomedical Engineering, Engineering, McMaster University Part-time Tenure Status: Non Tenure Track
2016/9 - 2019/7	Research Assistant Biomedical Engineering, Engineering, McMaster University Full-time Tenure Status: Non Tenure Track
2017/9 - 2017/12	Machine Learning Engineer (OCE TalentEdge) Healthcare Innovation in Neurotechnology Full-time Development of a stroke detection device using continuous EEG data utilizing state of the art machine learning algorithms
2016/11 - 2017/2	Machine Learning Engineer (OCE TalentEdge) Healthcare Innovation in NeuroTechnology Full-time Development of a stroke detection device using continuous EEG data utilizing state of the art machine learning algorithms

2016/9 - 2017/2	Machine Learning NSERC Intern Appnovation Part-time As part of an NSERC Engage, worked on machine learning backend for a mobile application that helps users quit smoking
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 Full-time Tenure Status: Non Tenure Track
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 (*)

(*) 2020/10	Postdoctoral Research Associate, Princeton Neuroscience Institute, Princeton University
2017/11 - 2020/10	Director, AI & Technology, AI & Technology, VoxNeuro Inc.
2018/2 - 2020/1	Postgraduate Affiliate, Affiliates, Vector Institue
2016/9 - 2019/7	PhD Student, Biomedical Engineering, McMaster University
2018/5 - 2019/1	MacData Fellow, Fellows, MacData Institute
2017/9 - 2017/12	Machine Learning Engineer, R&D, Healthcare Innovation in Neurotechnology
2016/11 - 2017/2	Machine Learning Engineer, R&D, Healthcare Innovation in Neurotechnology
2014/9 - 2016/8	Master's Student, Psychiatry and Behavioural Neurosciences, McMaster University
2011/1 - 2013/12	Student, Computer Science, Dalhousie University

Research Funding History

Awarded [n=10]

2021/6 - 2023/5
Principal Applicant

NSERC Postdoctoral Fellowship, Fellowship

2018/4 - 2021/3
Co-applicant

Collaborative Health Research Projects (CHRP): 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)
Portion of Funding Received - 592,724 (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)
Portion of Funding Received - 12,000
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)
Portion of Funding Received - 15,000
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)
Portion of Funding Received - 15,000
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)
Portion of Funding Received - 7,500
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)
Portion of Funding Received - 15,000
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

2022/01/24 - 2022/05/10
Instructor, Princeton University
Course Title: Laboratory in Principles of Neuroscience
Course Code: NEU 350
Course Level: Undergraduate
Number of Students: 33

2021/09/15 - 2022/01/09
Assistant Instructor, Princeton University
Course Title: Mathematical Tools for Neuroscience
Course Code: NEU 314
Course Level: Undergraduate
Academic Session: Fall

2018/09/03 - 2018/12/21
Teaching Assistant, McMaster University
Course Title: COE 4TL4: Digital Signal Processing
Course Topic: Digital Signal Processing
Course Level: Undergraduate
Number of Students: 125
Guest Lecture?: No

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

Number of Scientific and Technical Staff: 1

Number of Visiting Researchers: 0

Number of Highly Qualified Personnel in Research Training: 4

Number of Employees: 2

Number of Volunteers: 4

Event Administration

2020/4 - 2020/12	Stream Owner, Machine Learning in Neuroscience Series, Seminar, AISC, 2020/4 - 2020/12
2017/6 - 2018/1	Logistics coordinator, Delta Hacks IV, Association, 2018/1 - 2018/1
2017/2 - 2017/2	Lecturer / Coordinator, 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

2022/4	Reviewer,Proceedings of the National Academy of Sciences (PNAS)
2021/3	Reviewer,eLife
2020/4	Reviewer,Journal of Neuroscience Methods
2020/3	Reviewer,IEEE Transactions on Neural Systems and Rehabilitation Engineering
2020/3	Reviewer,IEEE Transactions on Biomedical Engineering
2020/3	Reviewer,Sports Medicine,Springer
2019/11	Reviewer,Forensic Sciences Research
2018/7	Reviewer,PLOS Computational Biology

Event Participation

	Panelist, AI Panel in Healthcare & Future, Conference, 2019/10 -

Community and Volunteer Activities

2021/11	Senior Scientific Mentor, ARiEAL Youth Outreach Program
2020/11 - 2020/12	Application Postdoc Mentor, Empowering diversity and Promoting Scientific equity at PNI (EPSP)

2017/3 - 2018/10 Translator, Various
Helped in welcoming newcomers and war refugees to Canada by providing Arabic-English interpretation/translation during early stage acclamation to Canada including completing paperwork, providing information on the financial system, medical interpretation, and schooling preparation

2017/7 - 2017/12 Volunteer, YWCA, Hamilton
Completed administrative tasks and developed a request for proposals to upgrade the infrastructure of the building

Knowledge and Technology Translation

2020/7 - 2021/7 Scientific Mentor, Citizen Engagement
Group/Organization/Business Serviced: Frontiers in Young Minds
Target Stakeholder: General Public
Outcome / Deliverable: Mentoring young aspiring scientists to read, understand, and review scientific articles written for a younger audience interested in Neuroscience. The articles are published and reviewed as part of the Frontiers for Young Minds journal.

2017/11 - 2020/10 Leadership Team member, Involvement in/Creation of Start-up
Target Stakeholder: Healthcare Personnel
Outcome / Deliverable: Translate research targeting cognitive assessment using EEG/ERP methodologies into a practical tool that can be used by healthcare practitioners to better server their patients.
References / Citations / Web Sites: https://www.canhealth.com/2019/09/27/innovative-eeg-system-leads-to-more-effective-rehab/ https://innovationfactory.ca/voxneuro-receive-innovation-support-government-canada/
Activity Description: I served as the Director of AI & Technology at VoxNeuro Inc. I led the development and management of the company's EEG-based assessment Software as a Service platform, which was partially funded by a $272k award ($490 total budget) from the National Research Council (Canada) through the Industrial Research Assistance Program (completed Sept. 2020). The experience also spanned other aspects such as hiring, quality management system development (ISO for medical devices), and regulatory clearance (Health Canada & FDA).

2020/6 - 2020/6 Speaker, Citizen Engagement
Group/Organization/Business Serviced: McMaster Alumni Association
Target Stakeholder: General Public
Outcome / Deliverable: Delivered a talk in the "Ask a Scientist" series targeted towards a younger audience (grades 2-12) answering their questions about machine learning and artificial intelligence.

2018/5 - 2018/5 Presenter, Community Engagement
Target Stakeholder: General Public
Outcome / Deliverable: Exposure of the Hamilton general public to state-of-the-art work regarding neurophysiology, its history, and its utilities in clinical practice
References / Citations / Web Sites: Pint of Science (Hamilton, ON, CA)

2016/2 - 2017/8	Researcher, Technology Transfer and Commercialization Target Stakeholder: The Media Outcome / Deliverable: An interdisciplinary collaboration that pinpointed several factors that affect athletes with a history of multiple concussions decades after their last injury. The findings were disseminated to non-experts through the media and the scientific findings were published in peer-reviewed journals. 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/

Committee Memberships

2020/4 - 2021/12	Committee Member, AISC Steering Committee, Aggregate Intellect

Other Memberships

2020/5	Member, Nova Global
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. Connolly JF, Boshra R, Ruiter KI. (2020). Breakthrough Neurotechnology for Brain Injury Webinar. Brain Injury Canada Webinar, Online, Canada
   Main Audience: General Public
   Invited?: Yes, Keynote?: Yes
2. Connolly J, Boshra R. (2020). A Brief History of Electrophysiological Research on Brain Injury and Recent Advances Enabled by Machine Learning. Vector Institute Friday Seminar, Toronto, Canada
   Main Audience: Researcher
   Invited?: Yes, Keynote?: Yes
3. Connolly J, Boshra R. (2020). Electrophysiological markers of cognitive dysfunction in brain injury and machine learning methods of revealing them. Fields Institute's Focus Program on New Geometric Methods in Neuroscience, Toronto, Canada
   Main Audience: Researcher
   Invited?: Yes, Keynote?: No
4. Connolly J, Boshra R, Ruiter K. (2020). Determining Cognitive Function after Brain Injury – from Coma to Concussion. Holland Bloorview: Brain Bites, Toronto, Canada
   Main Audience: Knowledge User
   Invited?: Yes, Keynote?: Yes

5. Boshra R. (2020). Teaching Computers to Think and Solve Puzzles. Ask a Scientist, Hamilton, Canada
   Main Audience: General Public
   Invited?: Yes, Keynote?: Yes
6. Boshra R. (2020). Why it's important to distinguish between good and bad data. Brain Injury Canada Online Webinars, Online, Canada
   Main Audience: General Public
   Invited?: Yes, Keynote?: Yes
7. Boshra R. (2020). A Literature Review on Machine Learning in Neuroscience. Aggregate Intellect Socratic Circle, Canada
   Main Audience: Knowledge User
   Invited?: Yes, Keynote?: Yes
8. Boshra R. (2020). How can artificial intelligence solve problems in healthcare?. Brain Injury Canada Online Webinars, Canada
   Main Audience: General Public
   Invited?: Yes, Keynote?: Yes
9. Boshra R, Razdaibiedina A, Liaqat D. (2019). AI Panel in Healthcare & Future. York University Hacks, Toronto, Canada
   Main Audience: General Public
   Invited?: Yes, Keynote?: Yes
10. Boshra R. (2019). Machine Learning Detection of Long-Lasting Neurophysiological Concussion Effects in Retired Athletes. Biomedical Engineering Symposium, Hamilton, Canada
    Main Audience: Researcher
    Invited?: Yes, Keynote?: No, Competitive?: Yes
11. 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. Boshra, R;Eradath, M; Dougherty, K; Wu, B; Morea, BM; Pinsk, M; Kastner, S. (2022). Case studies in neuroscience: reversible edema following electric drilling of macaque craniotomy. Journal of Neurophysiology.
First Listed Author
Revision Requested,
Refereed?: Yes

2. The PRIMatE Data and Resource Exchange (PRIME-DRE) Global Collaboration Workshop and Consortium. (2022). Toward next-generation primate neuroscience: A collaboration-based strategic plan for integrative neuroimaging. Neuron.
http://dx.doi.org/10.1016/j.neuron.2021.10.015,

3. Boshra, R; Kastner, S. (2022). Attention control in the primate brain. Current Opinion in Neurobiology.
First Listed Author
Submitted,
Refereed?: Yes
Number of Contributors: 2

4. Rokos, A; Mah, R; Boshra, R; Harrison, A; Choy, TL; Blain-Moraes, S; Connolly, JF. (2021). Eliciting and Recording Event Related Potentials (ERPs) in Behaviourally Unresponsive Populations: A Retrospective Commentary on Critical Factors. Brain Sciences. 11(7): 835.
http://dx.doi.org/10.3390/brainsci11070835
Co-Author
Published,
Refereed?: Yes

5. Kuperman V, Bar-On A, Bertram R, Boshra R, Deutsch A, Kyröläinen A, Mathiopoulou B, Oralova G, Protopapas A. (2021). Prevalence of spelling errors affects reading behavior across languages. Journal of Experimental Psychology: General. : 0.
http://dx.doi.org/10.1037/xge0001038
Co-Author
Published,
Refereed?: Yes
Number of Contributors: 9
Contribution Percentage: 0-10
Description of Contribution Role: Devising the methodology for collecting the EEG-eyetracking data (Mandarin Chinese data) and edits to the manuscript

6. Krokhine SN, Ewers NP, Mangold KI, Boshra R, Lin CYA, Connolly JF. (2020). N2b reflects the cognitive changes in executive functioning after concussion: A scoping review. Frontiers in Human Neuroscience. : 0.
http://dx.doi.org/10.3389/fnhum.2020.601370
Co-Author
Published,
Refereed?: Yes
Number of Contributors: 6
Contribution Percentage: 11-20
Description of Contribution Role: Reviewed the selected articles, edited the manuscript, and provided perspective/additions on the the N2b within the concussion literature and its implications

7. Boshra R, Ruiter KI, Dhindsa K, Sonnadara R, Reilly JP, Connolly JF. (2020). On the time-course of functional connectivity: theory of a dynamic progression of concussion effects. Brain Communications. 2(2): 0.
http://dx.doi.org/10.1093/braincomms/fcaa063
First Listed Author
Published, Oxford University Press,
Refereed?: Yes, Open Access?: Yes
Number of Contributors: 6
Contribution Percentage: 61-70
Description of Contribution Role: Design of the project, data collection, data analysis, writing the initial draft, and revising the manuscript

8. Oralova G, Boshra R, Kyröläinen A, Connolly JF, Kuperman V. (2020). Statistics of spelling errors affects brain processes during natural reading of Chinese: Evidence from co-registration of EEG and eye-tracking signals. Journal of Experimental Psychology: Learning, Memory, and Cognition. : 0.
Co-Author
Submitted,
Refereed?: Yes
Number of Contributors: 5
Contribution Percentage: 31-40
Description of Contribution Role: Designed the technical setup for EEG-Eyetracking coregistration, collected data, formulated and wrote code for data preprocessing and analysis, wrote and edited manuscript revisions

9. Ruiter KI, Boshra R, DeMatteo C, Noseworthy M, Connolly JF. (2020). Neurophysiological markers of cognitive deficits and recovery in concussed adolescents. Brain Research. 1746(1): 146998.
http://dx.doi.org/10.1016/j.brainres.2020.146998
Co-Author
Published, Elsevier,
Refereed?: Yes, Open Access?: Yes
Number of Contributors: 5
Contribution Percentage: 41-50
Description of Contribution Role: Study design, experiment programming, data collection, data analysis, and manuscript edits/additions

10. Boshra R, Dhindsa K, Boursalie 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.
First Listed Author
Published, IEEE,
Refereed?: Yes, Open Access?: No
Number of Contributors: 9
Contribution Percentage: 61-70
Description of Contribution Role: Conceived of the study design, collected the data, led the design and application of the data analytics, data visualization, wrote the first draft, and edited the manuscript

11. 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. : e029621.
Last Author
Published,
Refereed?: Yes, Open Access?: Yes
Number of Contributors: 9
Contribution Percentage: 31-40
Description of Contribution Role: Wrote the first draft, edited the manuscript, adapted the protocol to clinical/logistic limitations. Aided in the creation of the machine learning design, securing the funding, and creation of the illustration

    Funding Sources: Canadian Institutes of Health Research (CIHR) - CPG158287; Natural Sciences and Engineering Research Council of Canada (NSERC) - CHRP 523461-18

12. Ruiter K, Boshra R, Doughty M, Noseworthy M, Connolly JF. (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
Co-Author
Published,
Refereed?: Yes
Number of Contributors: 5
Contribution Percentage: 41-50
Description of Contribution Role: Conceptualization of the design, experiment implementation, data collection, data analysis, first draft writing, data visualization, and manuscript edits

13. 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. 131: 325--332.
Co-Author
Published, Elsevier,
Refereed?: Yes
Number of Contributors: 7
Contribution Percentage: 31-40
Description of Contribution Role: Experiment implementation, data collection, manuscript adaptation from thesis form, data re-analysis, result visualizations, and manuscript edits

14. Boshra R, Ruiter KI, DeMatteo C, Reilly JP, Connolly JF. (2019). Neurophysiological Correlates of Concussion: Deep Learning for Clinical Assessment. Scientific Reports. 9(1): 1-10.
First Listed Author
Published, Nature,
Refereed?: Yes, Open Access?: Yes
Number of Contributors: 5
Contribution Percentage: 81-90
Description of Contribution Role: Conceived the machine learning experiment, wrote the initial draft, conducted the experiment(s), analyzed the results, and edited the manuscript.

15. 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. 10: 248.
Co-Author
Published,
Refereed?: Yes, Open Access?: Yes
Number of Contributors: 8
Contribution Percentage: 21-30
Description of Contribution Role: Collected the data, conducted EEG/ERP analysis, created results visualization, wrote sections in the initial draft, and edited the manuscript

16. 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
Contribution Percentage: 0-10
Description of Contribution Role: Worked on initial version of the analysis pipeline and conducted data analysis on preliminary data

17. 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. 2(1): 1-12.
Co-Author
Published,
Refereed?: Yes
Number of Contributors: 6
Contribution Percentage: 11-20
Description of Contribution Role: Conceptualized early version of analysis pipeline, conducted initial data analysis and visualization, and wrote sections of initial first draft

Thesis/Dissertation

1. Stepping Beyond Behaviour: Explainable Machine Learning for Clinical Neurophysiological Assessment of Concussion Progression. (2019). McMaster University. Doctorate.
Number of Pages: 189 Supervisor: John F. Connolly, James P. Reilly
Contribution Percentage: 71-80
Description of Contribution Role: Lead the development, conceptualization, implementation, and analysis of all studies discussed in the thesis. The work was conducted collaboratively with members of the labs, principal investigators, and other colleagues.

2. Automated Machine Learning Framework for EEG/ERP Analysis: Viable Improvement on Traditional Approaches?. (2016). McMaster University. Master's Thesis. Supervisor: John F. Connolly, James P. Reilly
Contribution Percentage: 81-90
Description of Contribution Role: Lead the development, conceptualization, implementation, and analysis of all studies discussed in the thesis. The work was conducted collaboratively with members of the labs, principal investigators, and other colleagues.

Conference Publications

1. Tavakoli, P;Herrera-Diaz, A;Kolesar, R;Reilly, J; Pajankar, N;Boshra, R; Fox-Robichaud, A; Hamielec, C; Connolly, JF. Using Event-related Potentials to Track Fluctuations in Responsiveness in Disorders of Consciousness: A Case Study of Unresponsive Wakefulness Syndrome. Brain Injury, ,
   Abstract

2. Herrera-Diaz, A;Kolesar, R;Boshra, R; Reilly, J;Tavakoli, P; Pajankar, N;Lin, CY;Bagheri, E; Morrison, H;Connolly, JF. Multivariate Decoding of Auditory Event-Related Potentials to Track Coma Progression. Brain Injury, ,
   Poster

3. Kolesar, RE;Herrera-Diaz, A; Boshra, R; Connolly, JF. General Anesthesia Suppresses Mismatch Negativity During Surgery. Anesthesia and analgesia, ,
   Abstract

4. 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, Invited?: No

5. 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
   Refereed?: Yes, Invited?: No

6. 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. ECEM2019. European Conference on Eye Movements, Spain,
   Conference Date: 2019/8
   Abstract
   Co-Author
   Published
   Refereed?: Yes, Invited?: No
   Contribution Percentage: 31-40
   Description of Contribution Role: Design of apparatus and methodology, data collection, data analysis, and editing

7. 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. SSSR2019. Society for the Scientific Studies of Reading, Toronto, Canada,
   Conference Date: 2019/7
   Poster
   Co-Author
   Published
   Refereed?: Yes, Invited?: No
   Contribution Percentage: 31-40
   Description of Contribution Role: Design of apparatus and methodology, data collection, data analysis, and editing

8. 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. Vector Research Symposium, ,
Conference Date: 2019/5
Poster
First Listed Author
Published
Refereed?: Yes, Invited?: No
Contribution Percentage: 71-80

9. 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
Refereed?: Yes, Invited?: No

10. 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. CAN-ACN2017. 11th Annual Canadian Neuroscience Meeting, ,
Conference Date: 2017/5
Poster
Co-Author
Published
Refereed?: Yes, Invited?: No
Contribution Percentage: 11-20
Description of Contribution Role: Preparation of case-studies, sub-group aggregation, data visualization, and write-up edits

11. Doughty M, Noseworthy M, Boshra R, Ruiter K, Connolly J. (2017). Assessing Functional and Structural Connectivity in ex-Professional Athletes. ISMRM2017. International Society for Magnetic Resonance in Medicine, Honolulu, HI, United States,
Conference Date: 2017/4
Abstract
Co-Author
Published
Refereed?: Yes, Invited?: No
Contribution Percentage: 11-20
Description of Contribution Role: Collaboration on recruitment, conceptualization of EEG-fMRI linkage, and abstract edits

12. 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, Invited?: No

13. 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, Invited?: No

14. 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, Invited?: No

15. 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, Invited?: No

16. Boshra R, Ruiter K, Reilly JP, Connolly JF. (2016). Machine learning based framework for EEG/ERP analysis. CAN-ACN2016. CAN-ACN, Toronto, Canada,
Conference Date: 2016/5
Poster
First Listed Author
Published
Refereed?: Yes, Invited?: No
Contribution Percentage: 71-80
Description of Contribution Role: Design conceptualization, pipeline creation and experimentation, data analysis, and result reporting

17. 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, Invited?: No

18. Ruiter K, Boshra R, DeMatteo C, Noseworthy M, Connolly JF. (2016). ERP investigation of attentional and language processes after concussion. CAN-ACN2016. CAN-ACN, Toronto, Canada,
Conference Date: 2016/5
Poster
Co-Author
Published
Refereed?: Yes, Invited?: No
Contribution Percentage: 31-40
Description of Contribution Role: Experiment conceptualization and implementation, Data collection, and data analysis

Intellectual Property

Patents

1. SYSTEMS AND METHODS FOR COGNITIVE HEALTH ASSESSMENT. United States. US20200015696A1. 2019/06/13.
Patent Status: Granted/Issued
Inventors: Connolly JF, Ruiter KI, Boshra R