

**Bonaventure  
Chidube  
MOLOKWU**

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An active researcher within the domain of Artificial Intelligence (AI) with respect to Social Network Analysis (SNA). My research entails harnessing Machine Learning (ML) and Deep Learning (DL) methodologies toward resolving a vast range of open (research) problems and real-world problems in SNA. To this end, I have successfully developed and implemented effective as well as efficient frameworks for resolving the following research problems, viz: Breakup Prediction, Link Prediction, Link Dynamics and Influence, Node Classification, Trend/Pattern Analysis, and Event-based Analysis/Prediction. In this regard, my research and work have been funded as well as supported by NSERC, CIHR, IBM, Vector Institute for Artificial Intelligence, etc. Also, I am a seasoned solutions and web/mobile developer with over 10 years of industry experience. I am flexible, collaborative, and a good multi-tasker who is self-motivated, committed, and target-driven. I can adapt swiftly to newer skills, and can manage time and other resources wisely without constant supervision.

**EDUCATION**

<b>University of Windsor, Ontario, Canada</b>	2017 - 2021
Ph.D. (Honors)	Cumulative GPA: 92.50%
School of Computer Science - Major in Artificial Intelligence	
<b>University of Nigeria, Enugu State, Nigeria</b>	2014 - 2016
M.Sc. (Honors)	Cumulative GPA: 4.40/5.00
Department of Computer Science - Major in Software Engineering	
<b>University of Benin, Edo State, Nigeria</b>	2006 - 2011
B.Sc. (Honors)	Grade: Second-Class Upper
Department of Computer Science	

**PROFESSIONAL DEVELOPMENT**

<b>University of Windsor, Ontario, Canada</b>	
Centre for Teaching and Learning	
University Teaching Certificate (UTC) .....	2018 - 2021
Certificate - Teaching in a Blackboard Learning Environment (TBLE) .....	2021
Certificate - Instructional Skills Workshop (ISW) .....	2018
<b>Brainbench Incorporated, Virginia, USA</b>	
Information and Communications Technology	
Certified Internet Professional – Web Development (BCIP) .....	2011
Certified PHP: Hypertext Preprocessor 5 Programmer .....	2011
Certified C++ Programmer .....	2011
Certified HTML 4.0 Programmer .....	2011
Certified JavaScript-JQuery Programmer .....	2011

**TECHNICAL & PROFESSIONAL STRENGTHS**

<b>Software &amp; Tools:</b>	TensorFlow Library, Scikit-learn Library, Keras Library, LaTeX, Git Version Control, Apache Cordova Framework, MVC Development Framework, Microsoft Office Suite, Adobe Photoshop CS4 Suite.
<b>Programming Languages:</b>	Python, PHP 5+, Microsoft C#, Microsoft ASP.NET, C/C++, JQuery, JavaScript/JSON, SQL (MS-SQL/MySQL).
<b>Markup Languages:</b>	HTML 5, HTML 4, CSS 3, CSS 2, Bootstrap 3+.

## ACADEMIC AWARDS & RECOGNITION

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1. 2021 Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant, [RGPIN-2021-03181].
2. 2021/2022/2023 Vector Institute for Artificial Intelligence Postgraduate Affiliate Award.
3. 2020 Best Paper Award at the 32<sup>nd</sup> International Conference on Scientific and Statistical Database Management (SSDBM): “Node Classification and Link Prediction in Social Graphs using RLVECN”.
4. 2020 COVID-19 Rapid Research Funding Opportunity: CIHR Finance Grant Account Number (VR5 172669).
5. 2019/2020 University of Windsor Community Scholarship for African Students.
6. 2019/2020 Conference Travel Award (Doctoral): University of Windsor, Canada.
7. 2018/2019/2020/2021 Research Assistantship (RA): Artificial Intelligence Research Laboratory, University of Windsor, Canada.
8. 2017/2018/2019 Graduate Assistantship (GA): School of Computer Science, University of Windsor, Canada.
9. 2017/2018 Research Assistantship (RA): WODD (Warehousing, Object-oriented, Data mining, and Database design) Laboratory, University of Windsor, Canada.
10. 2019 International Business Machines (IBM) Research Support via the provision of a high performance IBM Power System S822LC Linux Server.
11. 2019 Canadian Union of Public Employees (CUPE) local 4580 Students’ Scholarship.
12. 2018 Director’s Honour Roll (recognition of academic excellence): School of Computer Science, University of Windsor, Canada.
13. 2017 Academic/Entrance Scholarship: School of Computer Science, University of Windsor, Canada.
14. First position (computer programming contest), 2010: Nigerian Association of Computer Science Students (NACOSS) – South-South Zone (Team: University of Benin).
15. Second position (software exhibition), 2010: University of Benin Science-Week Exhibition.
16. Fourth position (software exhibition), 2010: Nigerian Association of Computer Science Students (NACOSS) – South-South Zone.

## POSITIONS OF RESPONSIBILITY & SERVICE

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### **ACM Transactions on Information Systems (ACM TOIS)**

<https://dl.acm.org/journal/tois>

*Research Reviewer*

*February 2021 - Till Date*

- Critical review (assessment and evaluation) of assigned research submissions in the domains of Information Retrieval and Information Systems.
- Review criteria is based on, viz: Goals, Description, Evaluation, Importance, Related Work, Discussion, and Clarity.

### **Windsor University Faculty Association (WUFA)**

University of Windsor, Ontario, Canada.

*Member - WUFA’s Ad-Hoc Racial Justice Committee*

*November 2020 - Till Date*

- Finding solutions to issues bordering on racial justice, equity, and inclusion within the University of Windsor.
- Make recommendations regarding changes to WUFA’s Constitution and Bylaws to accompany the new structure and reflect diversity in representation.

### **Computer Science Canada (CS-CAN) / Informatique Canada (Info-CAN)**

Canada.

*Finance Officer & Representative - Student and Postdoc Advisory Committee (SPAC) September 2020 - Till Date*

- Foster and represent the community of Canadian Computer Science post-secondary students and postdoctoral fellows. Financial record keeping with regard to the activities of SPAC.

### **Vector Institute**

<https://vectorinstitute.ai/>

*Reviewer/Member - 2021 Vector Institute Scholarship Adjudication Committee*

*April 2021*

- Assess and review scholarship applications/nominations into the Vector Institute Artificial Intelligence (AI) Master’s programs at tertiary/post-secondary institutions in Ontario.

### **International Joint Conference on Artificial Intelligence (IJCAI)**

Yokohama, Japan.

*Student Volunteer*

*January 2021*

- Hosting, managing, and controlling virtual Zoom meetings for the Tutorial sessions of IJCAI-PRICAI, 2020.

### **Institute of Electrical and Electronics Engineers (IEEE Windsor)**

Windsor, Ontario, Canada.

*Secretary - Windsor Section Joint Chapter, CIS11/SMC28*

*January 2020 - December 2020*

- Management of information for decision making in the executive committee. Submit members' requests and needs to the executive committee. Accountability, maintenance, and ownership of Section's records and correspondence.

**STEM Fellowship Big Data Challenge for High School Students** Toronto, Ontario, Canada.  
*Research Reviewer* 2019 - 2020

- Review, assess, and evaluate selected research paper submissions based on the following criteria: Analysis & Techniques, Diversity & Data Representation, Results & Discussion, and Presentation & Report.

**International Conference on Neural Information Processing (ICONIP)** Sydney, Australia.  
*Program Committee (PC) Member - Two-time Reviewer* 2019 - 2020

- This is a rank 'A' conference based on CORE ranking standards. Primarily, my assignment is to review, assess, and evaluate selected research paper submissions for originality/novelty and worthiness based on the following benchmarks, viz: presentation, innovation, technical soundness, and research-content.

**Académie Ste. Cécile International School** 925 Cousineau Road, Windsor, Ontario N9G 1V8, Canada.  
*Member - Panel of Judges* 2018 - 2020

- Evaluation, assessment, and judgement with respect to science projects exhibited by students ahead of the Ontario-wide competition.

**African Women Association of Windsor (AWAW)** Windsor, Ontario, Canada.  
*Member - Organizing Committee* 2017 - 2019

- Planning and organizing of workshops for African youth in Windsor, Ontario, viz:  
 Workshop - "Keeping Them out of Trouble" (2017 and 2018);  
 Social Affair - "Mothers' Day Taste the Best of African Cuisines" (2017, 2018, 2019).

## PROFESSIONAL EXPERIENCE

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**Sessional Instructor** January 2020 – Till Date  
*School of Computer Science – University of Windsor, 401 Sunset Avenue, Windsor, Ontario N9B 3P4, Canada.*

- Teaching: Introduction to the Internet (COMP-2057) - Winter 2020
- Teaching: Social Media and Mobile Technology for End Users (COMP-2097) - Summer 2020
- Workshop: Deep Learning (COMP-8997) - Summer 2020
- Workshop: Using Compute Canada Cluster-based Environment (COMP-8997) - Summer 2020
- Teaching: Introduction to the Internet (COMP-2057) - Winter 2021
- Workshop: Deep Learning (COMP-8967) - Summer 2021
- Workshop: Machine Learning and Deep Learning using Software-as-a-Service via Google™ Colab (COMP-8967) - Summer 2021

**Research Assistant** September 2017 – Till Date  
*Artificial Intelligence Laboratory (ERIE 3127) – 401 Sunset Avenue, Windsor, Ontario N9B 3P4, Canada.*

- Preparation of Research Grant applications: Natural Sciences and Engineering Research Council (NSERC), Ford Motor Company (FMC), New Digital Research Infrastructure Organization (NDRIO), etc.
- Research partnerships with industries: International Business Machines (IBM), Ford Motor Company (FMC), Canadian Institutes of Health Research (CIHR), Level One Robotics and Controls, etc.
- Supervise undergraduate (Bachelor's degree) students working on selected research project(s).
- Co-supervise graduate (Master's degree) students working on neural-network related tasks or projects.
- Research and experiments with respect to open problems in Social Network Analysis using real-world datasets.

**Laboratory Instructor** September 2017 – December 2019  
*School of Computer Science – University of Windsor, 401 Sunset Avenue, Windsor, Ontario N9B 3P4, Canada.*

- Instruct, guide, and assist students during practical (programming) sessions in the laboratory.
- Conduct and grade assignments and/or examinations for undergraduate students.

**Senior Application Developer** June 2015 – September 2017  
*Head Office - SWIFT Networks Limited, 31 Saka Tinubu Street, Victoria Island, Lagos State, Nigeria.*

- Design, development, implementation, customization, and support of web-based applications.
- System analysis and improvements.

- Working with vendors to resolve more advanced issues where and when necessary.
- Resolving escalated customer complaints.
- Implementation, testing, integration, monitoring, and support of Microsoft CRM/ERP and web applications.

## RESEARCH PROJECTS

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### **Social Network Analysis: A Machine Learning Approach**

January 2021 – January 2022

*Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant*

*Canada*

- NSERC Discovery Grant: RGPIN-2021-03181
- Examine and study several open (research) problems in Social Network Analysis such as: Breakup Prediction, Link Prediction, Link Dynamics and Influence, Node Classification, Trend/Pattern Analysis, Event-based Analysis and Prediction, etc.
- Propose effective and efficient Machine Learning and Deep Learning methodologies toward resolving the aforementioned problems.
- Employ Social Network Analysis toward resolving real-world problems.

### **COVID-19 Rapid Research**

May 2020 – May 2021

*Canadian Institutes of Health Research (CIHR)*

*Canada*

- Funding Reference Number (FRN): VR5 172669
- Assemble the empirical evidence required to inform the design of supply chain processes and infrastructure within and across provincial health systems to meet the significant demands of COVID-19, currently and in future phases.
- To ensure that a resilient and secure supply of products (e.g. Personal Protective Equipment) are available to health teams and Community Health Centres (CHCs) when and where they are needed to care for every Canadian citizen.

### **Anomaly Detection in Automobiles**

September/October 2021 – September/October 2026

*Ford Motor Company (FMC), Natural Sciences and Engineering Research Council (NSERC)*

*Canada*

- Jointly funded and supported by the following: Ford Motor Company (FMC), Natural Sciences and Engineering Research Council (NSERC), and Level One Robotics and Controls
- Anomaly Detection in the engine blocks of automobiles.

## RESEARCH ARTICLES & PUBLICATIONS

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### **Research Articles (Published)**

1. Event Prediction in Complex Social Graphs using One-Dimensional Convolutional Neural Network (28th International Joint Conference on Artificial Intelligence, IJCAI-2019).
2. Event Prediction in Social Graphs Using 1-Dimensional Convolutional Neural Network (32nd Canadian Conference on Artificial Intelligence, Canadian-AI 2019).
3. Event Prediction in Complex Social Graphs via Feature Learning of Vertex Embeddings (26th International Conference on Neural Information Processing of the Asia-Pacific Neural Network Society, ICONIP-2019).
4. Spatial Event Prediction via Multivariate Time Series Analysis of Neighboring Social Units using Deep Neural Networks (2019 International Joint Conference on Neural Network, IJCNN-2019).
5. Social Network Analysis using RLVECN: Representation Learning via Knowledge-Graph Embeddings and Convolutional Neural-Network (29th International Joint Conference on Artificial Intelligence, IJCAI-PRICAI 2020).
6. Node Classification in Complex Social Graphs via Knowledge-Graph Embeddings and Convolutional Neural Network (20th International Conference on Computational Science, ICCS-2020).
7. Node Classification and Link Prediction in Social Graphs using RLVECN (32nd International Conference on Scientific and Statistical Database Management, SSDBM-2020).
8. Simulating the Impact of Hospital Capacity and Social Isolation to Minimize the Propagation of Infectious Diseases (Proceedings of the 26th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining, KDD-2020).
9. Link Prediction in Social Graphs using Representation Learning via Knowledge-Graph Embeddings and ConvNet (Proceedings of the 2020 IEEE International Conference on Systems, Man, and Cybernetics, SMC-2020).
10. Social Network Analysis using Knowledge-Graph Embeddings and Convolution Operations (Proceedings of the 25th International Conference on Pattern Recognition, ICPR-2020).
11. HRotatE: Hybrid Relational Rotation Embedding for Knowledge Graph (2021 International Joint Conference on Neural Network, IJCNN-2021).

### Research Articles (Under Review)

1. A Transfer Learning Framework for COVID-19 Monitoring and the Prediction of PPE Consumption in Community Health Centres (Elsevier Journal of Decision Support Systems, 2021).
2. ClasReg: A Deep Learning and Heuristic Methodology for Predicting Breakups in Social Network Structures (Elsevier Journal of Social Networks, 2021).
3. Simulating and Predicting the Active Cases and Hospitalization Considering the Second Wave of COVID-19 (2021 Winter Simulation Conference, 2021).
4. HTransE: Hybrid Translating Embedding for Knowledge Graph (Proceedings of the 15th ACM Conference on Recommender Systems, RecSys-2021).

### Publications

- [scholar.google.com/citations?user=Bonaventure C. Molokwu](https://scholar.google.com/citations?user=Bonaventure C. Molokwu)
- [semanticscholar.org/search?q=Bonaventure C. Molokwu](https://semanticscholar.org/search?q=Bonaventure C. Molokwu)

## OTHER INFORMATION

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### Professional Memberships

- Institute of Electrical and Electronics Engineers (IEEE)
- Canadian Artificial Intelligence Association (CAIAC)
- International Association of Computer Science and Information Technology (IACSIT)

**Languages:** Fluent English (IELTS 7.5 Band Score), Igbo, and French.

**Hobbies:** Soccer, Chess, Draughts, and Woodwork.