

# Dr. B. A. Sawyerr

## CURRENT RESEARCH

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### Areas

Artificial Intelligence, Evolutionary Machine Learning, Deep and Reinforcement Learning, Global Optimization and data mining using Evolutionary algorithms

## RESEARCH GROUP MEMBERSHIP

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|---|--------------|
| <b>Research Lead</b> in Machine Intelligence Research Group (MIRG), Department of Computer Sciences, University of Lagos. | 2012 to date |
| <b>Optimization Research Lead</b> in Mathematical Analysis and Optimization Research Group (MANORG), UNILAG               | 2013 to date |

## RESEARCH VISITS/FELLOWSHIPS

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| 1 | School Of Mathematics, Statistics and Computer Science. University of Kwa-Zulu Natal, Westville, Durban, South Africa. <b>HOST:</b> Dr. A. O. Adewumi | March 2012 – February 2013 |
| 2 | School Of Computational and Applied Mathematics. University of The Witwatersrand, Johannesburg, South Africa. <b>HOST:</b> Prof. Montaz. M. ALI       | February 2009 – July 2009  |
| 3 | SITE, LORIA, Laboratoire Lorrain de Recherche en Informatique et ses Applications. Nancy, France. <b>HOST:</b> Prof. Amos DAVID                       | October 2008 & June 2010   |

## Invited Talks:

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1. **Artificial Intelligence: A double edged Sword in Cybersecurity.** A talk delivered in the third (3<sup>rd</sup>) Annual Forensic Conference of Society of Forensic and Analytical Scientist Nigeria (November 2021).
2. **Evolving Technology.** A talk delivered in a Symposium organized by Computer Science undergraduate students at the University of Lagos (August 2018).
3. **Natural Computing Algorithms.** A talk delivered at the Faculty Seminar of the Faculty of Science, University of Lagos (May 2013).
4. **Biologically Inspired Algorithms for Solving Global Optimization Problems.** A talk delivered at the School of Engineering, University of KwaZulu Natal, Durban, South Africa (June 2012).

## BOOKS, MONOGRAPHS AND MANUALS

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**Sawyerr B.A.** (2017). Artificial Intelligence and Its Business Applications Workbook.

### PhD Thesis

**Sawyerr B.A.** (2010). *Hybrid Real Coded Genetic Algorithms with Pattern Search and Projection.* PhD thesis. University of Lagos, Lagos, Nigeria.

## REFEREED JOURNAL ARTICLES

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1. E.O. Amuta, S.T. Wara, A.F. Agbetuyi, & **B.A. Sawyerr** (2022) Weibull distribution-based analysis for reliability assessment of an isolated power micro-grid system, Materials Today: Proceedings, ISSN 2214-7853, <https://doi.org/10.1016/j.matpr.2022.06.244>.
2. G. A. Idowu, M. O. Adamu, R. A. Mustapha, **B. A. Sawyerr** & I. O. Rahman (2022): Forward Shift Heuristic for Minimization of Number of Early-Tardy Jobs in Just-In-Time Scheduling in a Flow Shop with Distinct Due Windows. International Journal of Innovative Science and Research

- Technology, 7 (3), 1562 – 1573.
3. V.T. Odumuyiwa, A. Umeh, O. A. Sennaiké, **B. A. Sawyerr** & E. P. Fasina (2022) Clustering Based Approach for Ground Truth Inference in Crowdsourced Data". Federal University Oye-Ekiti (FUOYE) Journal of Engineering & Technology June 2022.
  4. G. A. Idowu, M. O. Adamu, **B. A. Sawyerr**, (2020): Hybrid Metaheuristic for Just-in-Time Scheduling in a Flow Shop with Distinct Time Windows. International Journal of Mathematical Analysis and Optimization: Theory and Applications. vol. 2020 (1), 741-756.
  5. O. O Adeyemo, S. T Oladosu and **B. A. Sawyerr** (2015): *Usability and Accessibility Enrichment E-Mail Application System for The Visually Impaired*. Information Systems, Development Informatics & Allied Research Journal, 6(1), 61-68.
  6. **B. A. Sawyerr**, A. O. Adewumi & M. M. Ali (2014): *Benchmarking RCGAu on the Noiseless BBOB Testbed*, Recent Advancements in Soft Computing and its Application. The Scientific World Journal, vol. 2014, Article ID 734957, 2014.
  7. **B. A. Sawyerr**, A. O. Adewumi & M. M. Ali (2014): *Real-coded genetic algorithm with uniform random local search*, Applied Mathematics and Computation, 228 (6), 589–597.
  8. **B. A. Sawyerr**, E. P. Fasina & O. O Adeyemo (2013): *Black-Box Optimization Benchmarking of PRCGA on Noisy Testbed*. The Journal of Computer Science and its Applications, 20(2), 93-106.
  9. **B. A. Sawyerr**, M. M Ali, & A. O. Adewumi (2011) *A comparative study of some real-coded genetic algorithms for unconstrained global optimization*, Optimization Methods and Software, Optimization Methods and Software, 26 (6), 945 – 970.
  10. O. Osofisan, O. O. Adeyemo, **B. A. Sawyerr**, & O. Eweje (2011) *Prediction of kidney failure using artificial neural networks*, European Journal of Scientific Research, 61 (4), 487-492.
  11. O. Adewumi, **B. A. Sawyerr**, & M. M. Ali (2009), *A heuristic solution to the university timetabling problem*, Engineering Computation, 26 (8), 972-984.
  12. **B.A. Sawyerr**, A.K. Ojo, A.B. Sofoluwe, & O. Abass (1999). *A Survey of Biocomputing Paradigms: Biologically Inspired Approaches for the Intelligent Industry*. Journal of Scientific Research and Development 1999, vol. 4, 107 – 124.

## BOOK CHAPTER

1. K. Igbineweka, **B. A. Sawyerr**, E. P. Fasina. (2020) Improved Plant Species Identification Using Convolutional Neural Networks with Transfer Learning and Test Time Augmentation. In: Subair S., Thron C. (eds) Implementations and Applications of Machine Learning. Studies in Computational Intelligence, vol 782:197 – 206, Springer, Cham.

## PEER REVIEWED CONFERENCE PROCEEDINGS

1. P. Boglo, B. W. Botha & **B. A. Sawyerr** (2018). *Comparison of Real-Coded Genetic Algorithm and Real-Coded Biogeography-Based Optimization, Global Unconstrained Optimization Algorithms*. Proceedings of the International Conference on Industrial Engineering and Operations Management, pages 1927-1940, Pretoria/ Johannesburg, South Africa, October 29 – November 1, 2018.
2. C. P. Ojiako, E. P. Fasina and **B. A. Sawyerr** (2016): *Insights to Particle Swarm Optimization Algorithm*. Proceedings of Transition from Observation to Knowledge to Intelligence, pages 463 - 472, Lagos, Nigeria on 25-26 August 2016.
3. O. Adewumi, L. O. Joel & **B. A. Sawyerr** (2014): *Campus Parking Space Allocation Distribution Using Pattern Search and Particle Swarm Pattern Search Algorithms*, In the Proceedings of the Joint 7th International Conference on Soft Computing and Intelligent Systems and 15th International Symposium on Advanced Intelligent Systems, SCIS & ISIS 2014, Kitakyushu, Japan

- on December 3-6, 2014.
4. **B. A. Sawyerr**, A. O. Adewumi & M. M. Ali (2013): *Benchmarking Projection-Based Real Coded Genetic Algorithm on BBOB-2013 Noiseless Function Testbed*, In Proceedings of the 15th annual conference companion on Genetic and evolutionary computation GECCO (Companion), pages 1193–1200, 2013.
  5. L. O. Joel, A. O. Adewumi & **B. A. Sawyerr** (2013): *An Exact Solution for Allocating Car Parking Spaces on Campus*. Proceedings of the International Science, Technology, Education, Arts, Management and Social Sciences (iSTEAMS) Nexus Research Conference, May 30 – June 1, 2013. Series 4, volume 3, pages 463 -472.
  6. Adewumi, A.O., **Sawyerr B.A**, Fasina E.P, Ayeni, J.O.A. & Ali, M.M. (2008) *Observation on the heuristics to University TimeTabling Problem*. Proceedings of the International Conference on Applied Business Research (ICABR), February 18 - 22, 2008 at Ghana College of Physicians and Surgeons, Accra – Ghana organised by Mendel University in Brno, Kasetsart University – Thailand and University of Ghana International.
  7. Adewumi, A. O., **Sawyerr, B. A.** & Ayeni, J. A. O. (2005). *Enhancing Software Engineering Practice through Result-oriented Academia/Industry Collaboration*. 8<sup>th</sup> International Conference Proceedings of Nigeria Computer Society. Vol 16 ICABUILD 2005. ed. A. O. Iteboje.

#### **WORKSHOP AND CONFERENCES ATTENDED**

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1. 9<sup>th</sup> International Workshop and Conference on Mathematical Analysis and Optimization: Theory and Practice (ICAPTA 2018), Dangbo, Republic of Benin. May 2022
2. 8<sup>th</sup> International Workshop and Conference on Mathematical Analysis and Optimization: Theory and Practice (ICAPTA 2018), Abuja, Nigeria. July 2021
3. 7<sup>th</sup> International Workshop and Conference on Mathematical Analysis and Optimization: Theory and Practice (ICAPTA 2018), (Virtual), Nigeria. March 2020.
4. 5<sup>th</sup> International Workshop and Conference on Mathematical Analysis and Optimization: Theory and Practice (ICAPTA 2018), Lagos, Nigeria. March 2018
5. Mathematics/Industry Study Group, School of Computer Science and Applied Mathematics, The University of Witwatersrand, Johannesburg, South Africa. January 2018
6. 4<sup>th</sup> International Workshop and Conference on Mathematical Analysis and Optimization: Theory and Practice (ICAPTA 2017), Lagos, Nigeria. March 2017
7. 3<sup>rd</sup> International Workshop and Conference on Mathematical Analysis and Optimization: Theory and Practice (ICAPTA 2016), Lagos, Nigeria. March 2016
8. 2<sup>nd</sup> International Workshop and Conference on Mathematical Analysis and Optimization: Theory and Practice (ICAPTA 2015), Lagos, Nigeria. March 2015
9. World Congress on Global Optimization (WCGO 2015), Gainesville, Florida, USA. February 2015
10. 1<sup>st</sup> International Conference on Mathematical Analysis and Optimization: Theory and Practice (ICAPTA 2014), Lagos, Nigeria. March 2014.
11. Genetic and Evolutionary Computation Conference of ACM (GECCO 2013), Amsterdam, The Netherlands. July 2013.
12. Mathematics/Industry Study Group, School of Computational and Applied Mathematics, The University of Witwatersrand, Johannesburg, South Africa. January 2013.
13. Google EMEA Faculty Summit, May 11 – 13, 2011 in Zurich, Switzerland. May 2011.
14. Data Mining & Predictive Analytics Training, February 21 – 23, 2011 in Lagos, Nigeria. February 2011.
15. International Workshop on Stochastic and Applied Global Optimization (SAGO 2008), July 19 – 22, 2008 in Skukuza, South Africa. July 2008.

16. Covenant University International Workshop on Pattern Discovery in Biology by Department of Computer and Information Sciences, Covenant University, Otta, Ogun State. April 2005.
17. International Course on Software Project Management by The International Institute for Software Technology United Nations University, Macau and Department of Computer Sciences in conjunction with Unilag Consult, University of Lagos. June 2004.
18. Regional Training Course on Bioinformatics Applied to Tropical Diseases in Africa Sponsored by UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases at South African National Bioinformatics Institute (SANBI) University of the Western Cape, Cape Town South Africa. February 2004

## **ACADEMIC QUALIFICATIONS**

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B.Sc. (Hons.) Microbiology (1990), University of Lagos, Akoka, Lagos  
 PGD Computer Science (1995), University of Lagos, Akoka, Lagos  
 M.Sc. (Hons.) Computer Science (1997), University of Lagos, Akoka, Lagos  
 PhD Computer Science (2010), University of Lagos, Akoka, Lagos

## **SCHOLARSHIP**

PhD Study Grant from The University of Lagos, 2008/09  
 Post-doctoral Study, University of Kwa-Zulu Natal, 2012/13

## **ACADEMIC POSITIONS**

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### **Academic Staff, University of Lagos**

Administrative Duties:

1. Postgraduate Coordinator Department of Computer Sciences (August 2019 – September 2021),
2. Acting Head of Department (August 2017 to July 2018), MIT Coordinator (January 2016 to August 2017),
3. Faculty Examination Officer, Faculty of Science (January 2016 to December 2017).

### **Academic Position**

Senior Lecturer	October 2014 to date
Lecturer I	October 2010 to September 2014
Lecturer II	October 2001 – September 2010
Assistant Lecturer	March 1999 - September 2001

### **Sabbatical Leave Appointment**

Department of Computer Science, Faculty of Science, Lagos State University, Ojo (October 2018 – September 2019)

### **Visiting Lecturer**

Université Nancy II, Nancy, France, June 2010

### **Post-doctoral Study**

University of Kwa-Zulu Natal, Westville, Durban	March 2012 – February 2013
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## **ACADEMIC AND PROFESSIONAL COMMITTEES**

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1. Member, Sub Committee on National AI Policy of Nigeria Computer Society (2022 – date).
2. Member, Innovation, Research and Development Committee of Nigeria Computer Society (NCS) (2021 – date).
3. Member, Computer Professionals Disciplinary Committee of Computer Professional Registration Council of Nigeria (September 2019 – till date).
4. Member, School of Postgraduate Studies Board, University of Lagos (August 2019 to July 2020).
5. Member, Panel investigating problems in the technical unit of the Department of Computer Sciences, University of Lagos (December 2016 – March 2017).
6. Chairman, Sub Committee on Restructuring of CITS Web Teamwork, UNILAG (April to June 2014).
7. Member, Curriculum Drafting Committee Department of Computer Sciences (September 2014 to October 2016).
8. Member, Faculty of Science Strategic Action Plan Committee (August 2013 to May 2014).
9. Chairman, Strategic Plan committee of Department of Computer Sciences (June 2013 – February 2014).
10. Member, Board of Trustees EKO Konnect Research and Education Initiatives (February 2010 to date)

## **OTHER ACADEMIC RESPONSIBILITIES**

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- 1 **External Examiner**, MSc thesis, Computer Science Department of Computer of Computer Science & Engineering Obafemi Awolowo University, Ile Ife, Osun State, Nigeria (June 2017).
- 2 **External Moderator**, Department of Computer Technology, School of Technology, Yaba College of Technology (November 2014 to date).
- 3 **External Examiner**, Postgraduate Programmes, School of Science and Technology, National Open University of Nigeria, Lagos (December 2015 to date)
- 4 **External Examiner**, PhD thesis, Computer Science, School of Mathematics, Statistics and Computer Science, University of Kwazulu-Natal, Durban, South Africa (November 2014)
- 5 **External Examiner**, MSc thesis, Mathematics, School of Graduate Studies, University of Botswana, Gaborone, Botswana (May 2015 – April 2016).
- 6 **Editor**, International Journal of Mathematical Analysis and Optimization: Theory and Applications (March 2014 to date).
- 7 **Reviewer**, An International Journal of Optimization and Control: Theories & Applications (IJOCTA), (June 2016 – February 2017).
- 8 **Reviewer**, Chemometrics and Intelligent Laboratory Systems, Elsevier (July 2014)
- 9 **Reviewer**, UNILAG Journal of Medicine, Science and Technology, University of Lagos (May 2015 to date).
- 10 **Reviewer**, Journal of Scientific Research and Development, Faculty of Science, University of Lagos (June 2015 to date).
- 11 **Reviewer**, Journal of Nigeria Computer Society (November 2021 to date).
- 12 **Reviewer**, Journal of Advanced Computational Intelligence, and Intelligent Informatics (December 2021).
- 13 **Reviewer**, Institution of Electronics and Telecommunication Engineers (IETE) Journal of Research (December 2017 to date).

## **MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS**

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	<b>SINCE</b>	<b>JOINED</b>
Fellow, Nigeria Computer Society (FNCS)	2020	2000

Senior member, Association for Computing Machinery (SACM)	2022	2002
Member, ACM Special Interest Group Evolutionary (SIGEVO)		2000
Member, Computer Professional Registration Council of Nigeria (CPN)		1999

### **Professional Activities**

- Joint supervision of MSc. and PhD students in deep reinforcement learning and evolutionary machine learning with JP Morgan Researchers from JP Morgan AI research lab, USA. (2022 January to date).
- Supervised and currently supervising PhD students in Bioinformatics, Computational Biology, Computer Science and Mathematics (2013).
- Supervised and currently supervising student projects for the M.Sc. in Computer Science and Master of Information Technology (MIT) programmes (2010 to date).
- Supervised and currently supervising undergraduate and Postgraduate Diploma student projects in Computer Science (1999 to date).
- Teaching both undergraduate and postgraduate studies (1999 to date).

### **HOBBIES**

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#### **Reading**

Fiction, Science, Philosophy, Religion, History and Politics

#### **Sports**

Chess Player, UNILAG Chess Coach and International Arbiter of Chess