Kayode Olumoyin

Contact

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Research Interest

Deep Learning, Infectious Disease Modeling, Numerical Analysis, Numerical Partial Differential Equations, and Fractional Differential Equations.

Education

- Ph.D., Computational Science, Middle Tennessee State University, Murfreesboro, Tennessee, **May, 2022**.

- M.A., Computational and Applied Mathematics, Bowling Green State University, Bowling Green, Ohio, **August, 2016**.

- M.A., Mathematics, Marshall University, Huntington, West Virginia, **May, 2013**.

- B.Sc., Mathematics, University of Agriculture, Abeokuta, Nigeria, **January, 2009**.

Experience

- **Middle Tennessee State University, Murfreesboro, TN**

  - Adjunct Faculty, Mathematics Department
    Fall 2021 – Spring 2022
  - Graduate Teaching Assistant, Mathematics Department
    Fall 2020 – Spring 2022
  - Mentor, Student Athletics Enhancement Center
    Fall 2019 – Spring 2020
  - Adjunct Faculty, University Studies
    Fall 2019
  - Lecturer, University Studies
    Fall 2016 – Summer 2019

- **Bowling Green State University, Bowling Green, OH**

  - Graduate Teaching Assistant, Mathematics Department
    Fall 2013 – Spring 2016

- **Marshall University, Huntington, WV**

  - Graduate Teaching Assistant, Mathematics Department
    Fall 2011 – Spring 2013

- **National Youth Service Corp (volunteer program), Borno, Nigeria**

- Headmaster, Bayo Foundation School, Briyel, Bayo LGA
  January 2010 – July 2010
- Mathematics Teacher, UBE Junior School, Briyel, Bayo LGA
  August 2009 – January 2010

Programming Skills

Python, TensorFlow, Keras, PyTorch, FEniCS, FreeFem++, C, C++, MPI, Matlab, Mathematica,

Awards

1. Best presentation award at CBAS Graduate Research Showcase, February 5, 2021, Middle Tennessee State University, Murfreesboro, Tennessee.

2. SIAM student travel award to attend 2020 SIAM conference on Mathematics of Data Science (MDS20), May 5-7, 2020, Cincinnati, Ohio.

3. Winifred O. Stone Presidential Graduate Scholarship Award for Diversity Enhancement, 2013 & 2014, Bowling Green State University.

4. First Position, National Mathematics Competition for University Students (NAMCUS 2008), Abuja, Nigeria.

Publications

1. Olumoyin, K.D. Data-driven deep Neural Networks for epidemiological and biochemical models, Ph.D. dissertation, Middle Tennessee State University, **2022**.

2. Olumoyin, K.D., Khaliq, A.Q.M., Furati, K.M. Multi-variant COVID-19 model with heterogeneous transmission rates using deep neural networks. *arXiv:2205.06834v1* **2022**. `https://doi.org/10.48550/arXiv.2205.06834`*(submitted to CNSNS)*

3. Olumoyin, K.D. Learning differential equations from data. *arXiv:2205.11483v1* **2022**. `https://doi.org/10.48550/arXiv.2205.11483`

4. Olumoyin, K.D, Khaliq, A.Q.M., Furati, K. Data-driven deep learning algorithm for Asymptomatic COVID-19 model with varying mitigation measures and transmission rate. *Epidemiologia* **2021**, 2, 471-489. `https://doi.org/10.3390/epidemiologia2040033`

5. Olumoyin, K.D, Khaliq, A.Q.M., Furati, K. Data-driven deep learning algorithms for time-varying infection rates of COVID-19 and mitigation measures. *arXiv:2104.02603v3* **2021**. `https://doi.org/10.48550/arXiv.2104.02603`

6. Olumoyin, K.D. Solutions of Dynamic Equations on Time Scales with Jumps, M.A. thesis, Marshall University, **2013**.

Conference Presentation

1. *Physics-informed Attention Neural Network: Learning the dynamics of Partial Differential Systems with an attention-based model.* Lightening talk at Holistic Design of Time-Dependent PDE Discretizations, January 10−15, 2022, Topical Workshop held at ICERM, Providence, Rhode Island.

2. *Data-driven deep learning algorithm for Asymptomatic COVID-19 model with time-varying transmission rate.* poster presentation at Modeling in a Heterogeneous World, XVIII Red Raider Minisymposium, August 20−21, 2021, held at Texas Tech University, Lubbock, Texas.

3. *Data-driven deep learning algorithms for COVID-19 time-varying infection rates and mitigation measures.* minisymposium at SIAM Conference on Computational Science and Engineering, CSE21, March 1−5, 2021, held Virtually.

4. *Learning time-varying COVID-19 infection rate from data.* CBAS Graduate Research Showcase, February 5, 2021, Middle Tennessee State University, Murfreesboro, Tennessee.

5. *PDE Based Neural Network Approach Using Noisy Data in Facial recognition.* SIAM conference on Mathematics of Data Science (MDS20), May 5−7, 2020, Cincinnati, OH.

6. *The Marshall−Simpson Differential Analyzer Project: Mechanical Interpretations of Mathematical Equations* (co−presented with Dr. Bonita Lawrence and Molly Peterson), Simpson College, Iowa, March 18, 2013.

7. *Generalization of First Order Linear Differential and Difference Equations.* 40th Annual Mathematics and Statistics Conference, Miami University, Oxford, Ohio, September, 2012.

Conference Participation

1. MANNA (Modeling, Analysis and Numerics for Nonlocal Applications), Santa Fe, New Mexico, December 11 - 15, 2017.

2. Informal Analysis Seminar, Kent State University, Ohio, April 11 - 13, 2014.

3. 40th Annual Mathematics and Statistics Conference, Miami University, Oxford, Ohio, September 2012.

4. 96th Annual Meeting of the Mathematical Association of America, Ohio Section, Spring 2012, Xavier University, Cincinnati, Ohio, April 2012.

5. The 31st Southeastern-Atlantic Regional Conference on Differential Equations, Georgia Southern University, Georgia, September 2011.

Professional Membership

SIAM, Pi Mu Epsilon (West Virginia beta)

References

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