

NKECHI NNADI

1515 EB ◦ Department of Computational Mathematics, Science, and Engineering
Michigan State University ◦ East Lansing ◦ MI 48824
nnadinke@msu.edu ◦ www.nkechic.org

EDUCATION

Ph.D., Mathematics **August 2024**

Wayne State University, *Detroit, MI*

M. Sc., Pure and Applied Mathematics **June 2019**

African University of Science and Technology, *Abuja, Nigeria*

B. Tech., Mathematics **December 2016**

Federal University of Technology, *Owerri, Nigeria*

GPA: 4.56/5.0

RESEARCH EXPERIENCE

Michigan State University, East Lansing, MI

Department of Computational Mathematics, Science, and Engineering

Fixed-term Assistant Professor

August 2024 -present

Wayne State University, Detroit, MI

Department of Mathematics

Graduate Research Assistant

Topological data analysis research group

May - August 2022, May - July 2024

March 2020 - July 2022

African University of Science and Technology, Abuja, Nigeria

Mathematics Institute

Master's thesis research

March - June 2019

Topic: Proximal point algorithm for k -strictly pseudo-contractive maps in Hadamard spaces

Federal University of Technology, Owerri Owerri, Nigeria

Department of Mathematics

Undergraduate senior thesis research

March - September 2016

Topic: A review of topological persistence in data analysis

PUBLICATIONS AND PRE-PRINTS

1. Abdallah H., Regalski A., Kang M., Berishaj M., **Nnadi N.**, Chowdhury A., Diwadkar V., and Salch A. (2023). Statistical Inference for Persistent Homology Applied to fMRI Time Series Data. *Foundations of Data Science*, 5(1), 1-25. AIMS. DOI:10.3934/fods.2022014
2. Madukpe, V. N., Ugoala, B. C., **Nnadi, N.**, and Zulkepli, F. S. (2025). A Topological Approach in Analyzing the Shifts in Air Pollutants' Dynamics Pre- and Post-COVID-19 Lockdown Era. *Environmental Monitoring and Assessment*, 197(7), 719. Springer Nature. DOI: 10.1007/s10661-025-14159-3

3. Nnadi N. and Isaksen I. "Simplicial Hausdorff Distance for Topological Data Analysis." Preprint: arXiv: 2502.03744

RESEARCH PRESENTATIONS

1. *Spiraling into shape: detecting patterns with persistent homology.* A poster presentation at the Third Joint SIAM/CAIMS Annual Meetings (AN25), Montréal, Québec, Canada. July 28-August 1, 2025
2. *Simplicial Hausdorff distance.* An invited talk at the Special Session on Applied and Computational Topology at the AMS Fall Eastern Sectional Meeting, SUNY, Albany, NY. October 19-20, 2024
3. *Simplicial Hausdorff distance and Optimal Homology Bases in Topological Data Analysis.* An invited talk at the TDA Seminar of the Computational Mathematics, Science and Engineering Department, Michigan State University, *East Lansing, MI* January 16, 2024
4. *A distance for simplicial complexes in topological data analysis.* A virtual poster presentation at the Randomness in Topology Workshop, organized by the Institute for Mathematical and Statistical Innovation (IMSI), *Chicago, IL.* March 20-24, 2023
5. *A distance for simplicial complexes in topological data analysis.* A poster presentation at the Wayne State University Graduate Research Symposium; *Detroit, MI.* March 6-8, 2023
6. *Topological persistence in Data Analysis.* Contributed talk at the 1st biennial conference of Nigerian Women in Mathematics, *Makurdi, Nigeria.* May 9 -12, 2017
7. *Student Experience in Math.* Colloquium speaker, Department of Mathematics, Federal University of Technology, *Owerri, Nigeria* August 23, 2016

AWARDS AND HONORS

MGB-SIAM Early Career Fellowship (MSEC) 2025-2027.

William Martin Borgman Endowed Scholarship Award for scholastic achievement, Department of Mathematics, Wayne State University, 2023.

Robert and Nancy Irvan Award for outstanding achievement in the PhD Program, Department of Mathematics, Wayne State University, 2021.

Pan-African Materials Institute Scholarship Award, African University of Science and Technology, Abuja, Nigeria, 2018.

MTN Foundation Science and Technology Scholarship Award Federal University of Technology, Owerri, Nigeria, 2012-2016.

Best graduating female student award in the School of Physical Sciences, Federal University of Technology, Owerri, Nigeria, 2016.

PROFESSIONAL ASSOCIATIONS

- Society for Industrial and Applied Mathematics (**SIAM**)
- American Mathematical Society (**AMS**)
- Association for Women in Mathematics (**AWM**)
- Nigerian Mathematical Society (**NMS**)

TEACHING EXPERIENCE

Department of CMSE, Michigan State University

Course title	Course	Semester	Credit load
Computational Modeling and Data Analysis I	CMSE 201	Fall 2024 & Spring 2025	4
Computational Modeling and Data Analysis II	CMSE 202	Fall 2025	4
Linear Algebra with Applications	CMSE/ MTH 314	Fall 2024-present, course co-coordinator Fall 2025	3

Department of Mathematics, Wayne State University

Course title	Course	Semester	Credit load
Elementary Functions (Pre-Calculus)	MAT 1800	Winter 2021 Winter 2023 Fall 2023	4
Elementary Linear Algebra	MAT 2250	Spring/Summer 2021, Spring/Summer 2023	3
Calculus II	MAT 2020	Fall 2022	4
Elementary Statistics	STA 1020	Winter 2020 Fall 2020 Spring/Summer 2021 Fall 2021	3
Algebra with Trigonometry	MAT 1050	Spring/Summer 2020	5

Other roles:

- *Teaching Assistant:* Grader and graduate teaching assistant for Algebra I MAT 5420. I held weekly problem sessions for the students. Winter 2024
- *Course development:* Assisted in the development of a flipped classroom version of Elementary Functions (PreCalculus) - MAT 1800. Fall 2023
- *Teaching mentoring:* Two new graduate teaching assistants observed my online classes as part of their training in effective teaching methods and classroom management. Winter 2021, Fall 2021
- *Tutor assessment:* Conducted oral exams to assess candidates' subject knowledge and ability to communicate mathematical concepts effectively, for tutors at the Mathematics Resource Center. Fall 2022, Winter 2023

STUDENT MENTORING

- **Shantanu Ingalagi** and **Sarthak Kale**, Undergraduate students, MSU
Project title: Topology-Based MRI Classification with Machine Learning February 2025-present
- **Trenton Eugene** (co-advised with Liz Munch), Undergraduate student, SROP MSU
Project title: Quantifying Approximate Symmetry Using the Euler Characteristic Transform
May-August 2025

SERVICE AND COMMUNITY INVOLVEMENT

- Physical and Mathematical Sciences evaluator, Mid-Michigan Symposium for Undergraduate Research Experiences (Mid-SURE). July 23, 2025
- Co-organizer, CMSE Department Open House/Informational Session for 2025 SROP Students at MSU. July 16, 2025
- Poster judge, 2025 Engineering Graduate Research Symposium, MSU. May 8, 2025
- Judge, MSU University Undergraduate Research & Arts Forum (UURAF). April 11, 2025
- Judge, MSU Artificial Intelligence Club End-of-Semester Project Showcase. December 2, 2024
- Member of the AWM Mentor Network. November 2024 - present
- Science fair judge of physical sciences projects at the 66th Science & Engineering Fair of Metro Detroit/Michigan Science and Engineering Fair, Detroit, MI. March 15, 2023
- Volunteer Mentor, Minds Matter Detroit, MI. February - August 2021
 - Mentored two high school students in the Detroit area in their college applications including writing college essays and choosing the right colleges to apply to.
 - 100% of Minds Matter students get accepted to 4-year colleges each year.
- Scientific and educational advocacy as member of Women Graduates-USA. April 2020 - present
- Judge at College of Liberal Arts and Sciences Undergraduate Research Symposium, Wayne State University, Detroit, MI. March 6, 2020
- Volunteer tutor, Department of Mathematics, FUTO, Nigeria. February 2013 - December 2016

TECHNICAL STRENGTHS

Software and coding Python (Jupyter Notebook), R, SPSS, L^AT_EX, Microsoft Excel
Languages English (native), French (conversational), Igbo (native)

ADDITIONAL COURSEWORK AND TRAINING

- *Biostatistics II* Wayne State University School of Medicine FPH 7020 course. Fall 2023
- *Presenting research to the public.* Wayne State University Graduate School Professional Development Series. February 21, 2023
- *How to be a great mentor.* Wayne State University Graduate School Professional Development Series. September 20, 2022
- *Essential Research Practices - Responsible Conduct of Research (GS 0900).* Wayne State University Graduate School course. Winter 2020
- *Teaching Mathematics in College (MAT 5992).* Semester-long training offered by the Wayne State University Mathematics Department for onboarding of new Graduate Teaching Assistants. Fall 2019

MEETINGS ATTENDED

- 2025 Research Collaboration Workshop in the Science of Data and Mathematics (WiSDM).
Hosted by the University of North Carolina School of Data Science and Society, Chapel Hill, NC.
August 4-8, 2025
- Third Joint SIAM/CAIMS Annual Meetings (AN25) at the Montréal Convention Center,
Montréal, Québec, Canada. July 28 - August 1, 2025
- AMS Eastern Sectional Meeting at SUNY, Albany, NY. October 19-20, 2024
- Great Lakes Section of the Society for Industrial and Applied Mathematics (GL-SIAM) Meeting.
Hosted by Purdue University, Northwest, Hammond, IL. October 12, 2024
- 4th workshop on Computational Persistence(ComPer) (virtual participant).
September 23-27, 2024
- Joint Mathematics Meetings (JMM) 2024 in San Francisco, CA. January 3-6, 2024
- Great Lakes Section of the Society for Industrial and Applied Mathematics (GL-SIAM) Meeting.
Hosted by Michigan State University, East Lansing, MI. October 14, 2023
- *Randomness in Topology*. Workshop organized by the Institute for Mathematical and Statistical
Innovation (IMSI), Chicago, IL. March 20-24, 2023
- Great Lakes Section of the Society for Industrial and Applied Mathematics (GL-SIAM) Meeting.
Hosted by Wayne State University, Detroit, MI. September 24, 2022
- *Bridging Applied and Quantitative Topology*. Workshop organized by the Applied Algebraic
Topology Research Network (Virtual). May 9-13, 2022
- *Topological Data Analysis and Clustering*. Workshop hosted by the School of Mathematical and
Statistical Sciences, University of Western Ontario, Ontario, Canada. April 22, 2022
- Joint Mathematics Meetings (JMM) 2022 (Virtual) April 6-9, 2022
- *Optimal Transport, Topological Data Analysis and Applications to Shape and Machine Learning*.
Workshop hosted by the Mathematical Biosciences Institute, Ohio State University, OH. July
27-31, 2020
- Midwest Topology Seminar. Hosted by Wayne State University, Detroit, MI May 14, 2020