Adeyemi Damilare Adeoye

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EDUCATION

Ph.D. in Computer Science and Systems Engineering Nov 2020 – June 2025
IMT School for Advanced Studies Lucca, Italy
Thesis: Quasi-Newton Methods for Solving Nonsmooth Optimization Problems in Learning and Control
Supervisor: Prof. Alberto Bemporad

M.Sc. in Mathematical Sciences (Machine Intelligence) 2019 – 2020
African Institute for Mathematical Sciences, Rwanda
Final essay: A Deep Neural Network Optimization Method via a Hihghway Traffic Model (Grade: Very Good Pass)
Supervisor: Prof. Philipp Petersen (University of Vienna, Austria)

M.Sc. in Mathematical Sciences 2017 – 2018
African Institute for Mathematical Sciences, Cameroon
Final essay: Blood Flow in an Inclined Tapered Stenosed Porous Artery under the Influence of Magnetic Field and Heat Transfer (Grade: Distinction)
Supervisor: Dr. Jos Usman Abubakar (University of Ilorin, Ilorin, Nigeria)

B.Sc. in Mathematics (First Class Honors) 2012 – 2016
University of Ilorin, Ilorin, Nigeria
Final-year project: On Some Finite Difference Methods for Solving Partial Differential Equations (Grade: A)
Supervisor: Dr. Babatunde Morufu Yisa
Other activities: Physical Sciences faculty Quiz and Debate Club membership, and coordination of the debate team in the 2015/2016 academic session.

EXPERIENCE

Research Fellow Feb 2025 – Now
DYSCO (Dynamical Systems, Control and Optimization), IMT School for Advanced Studies Lucca, Italy
Project: "Numerical optimization methods for identification of nonlinear systems"
European Commission-Funded Project (ERC-AdG-2023) COMPACT - Computational Model Predictive and Adaptive Control Tools (Principal Investigator: Prof. Alberto Bemporad)

Visiting Ph.D. Student (Erasmus+ Trainee) Aug 2023 – Jan 2024
Faculty of Mathematics, University of Vienna, Austria
Host supervisor: Prof. Philipp Petersen (Mathematics of Machine Learning research group)
Project: Regularized Gauss-Newton for Optimizing Overparameterized Neural Networks
Other activities: Attended the weekly SE Seminar (Optimization) (250109-1).

Academic Staff (STEM Learning Facilitator) June – Sept 2019
Inspire Paradigm Academy, Yola, Nigeria
- Delivered STEM-oriented instruction through Project-Based Learning methods towards curriculum objectives and academic achievement.
- Evaluated students' performance assessments and provided feedback on the development of students.

Teaching Assistant 2016 – 2017
Mountain Top University, Ogun, Nigeria
- Tutored first and second year students of the university in their Mathematics courses.
- Taught and provided lecturing assistance on first year Descriptive Statistics course.

Data Analyst (Student Intern) Aug – Sept 2015

Kwara State Bureau of Statistics, Ilorin, Nigeria

- Analyzed statistical data using Microsoft Excel and SPSS.

RESEARCH ARTICLES

Preprints

6. M. Korbit, **A. D. Adeoye**, A. Bemporad, and M. Zanon. "Exact Gauss-Newton Optimization for Training Deep Neural Networks." arXiv preprint arXiv:2405.14402 (2024).
5. **A. D. Adeoye**, P. Petersen and A. Bemporad. "Regularized Gauss-Newton for Optimizing Overparameterized Neural Networks." arXiv preprint arXiv:2404.14875 (2024).
4. **A. D. Adeoye**, and A. Bemporad. "Self-concordant Smoothing for Large-Scale Convex Composite Optimization." arXiv preprint arXiv:2309.01781 (2023).

Journal Publications

3. **A. D. Adeoye**, and A. Bemporad. "An Inexact Sequential Quadratic Programming Method for Learning and Control of Recurrent Neural Networks." IEEE Transactions on Neural Networks and Learning Systems, vol. 36, no. 2, pp. 2762-2776, Feb. 2025. doi.org/...
2. **A. D. Adeoye**, and A. Bemporad. "SCORE: approximating curvature information under self-concordant regularization." Computational Optimization and Applications 86.2 (2023): 599-626. doi.org/...
1. J. U. Abubakar, and **A. D. Adeoye**. "Effects of radiative heat and magnetic field on blood flow in an inclined tapered stenosed porous artery." Journal of Taibah University for Science 14.1 (2020): 77-86. doi.org/...

TALKS, POSTERS & PRESENTATIONS

9. "SCORE: Approximating Curvature Information under Self-Concordant Regularization." Poster at Workshop on Optimization for Learning and Control, IMT Lucca, Italy, June 2025.
8. "Quasi-Newton Methods for Solving Nonsmooth Optimization Problems in Learning and Control." PhD Thesis Defence at IMT Lucca, Italy, June 2025.
7. "Newton-type Optimization Methods for Model Learning and Control in Nonlinear Dynamical Systems." Virtual Seminar at the Mathematics and Computer Science (MCS) Division at Argonne National Laboratory (ANL), Lemont, Illinois, USA, Jan 2025.
6. "Optimization of Neural Networks with an Explicit Regularization: Generalized Gauss-Newton Method." Poster at the Applied Harmonic Analysis and Machine Learning Summer School, Department of Mathematics, University of Genova, Genova, Italy, Sept 2024.
5. "Self-concordant Regularization in Machine Learning." Mathematics of Machine Learning Group Seminar, University of Vienna, Dec 2023.
4. "Self-concordant Regularization in Machine Learning." DYSCO Research Unit Seminar, IMT Lucca, Italy (Virtual), Nov 2023.
3. "Self-concordant Regularization for Convex Composite Optimization." Mathematics of Machine Learning Research Group, Faculty of Mathematics, University of Vienna, Aug 2023.
2. "Inexact SQP for Neural Network-Based Identification of Nonlinear Dynamical Systems." DYSCO Research Unit Mini-Symposium, IMT Lucca, Italy, Feb 2023.
1. "SCORE: Approximating Curvature Information under Self-Concordant Regularization." Poster at the Eastern European Machine Learning (EEML) Summer School, Vilnius, Lithuania (Virtual), July 2022.

MENTORSHIP EXPERIENCE

Research Mentor — ThinkingBeyond 1 Nov 2024 – 4 Dec 2024

BeyondAI: Introduction to AI and Research

- Mentored a total of 6 high-school and undergraduate students in 3 group research projects on multilayer perceptrons and optimization.

RESEARCH SOFTWARE

SelfCondordantSmoothOptimization.jl

- A Julia package that implements a quasi-Newton framework for large-scale composite optimization problems
- URL: https://github.com/adeyemiadeoye/SelfConcordantSmoothOptimization.jl
- A Python port of the package is available at https://github.com/adeyemiadeoye/pySCSOpt

HONORS & AWARDS

Research Fellowship | *ERC-AdG-2023 COMPACT (PI: Prof. Alberto Bemporad)* 2025

Erasmus+ Traineeship Grant | *The European Commission at IMT Lucca, Italy* 2023

Ph.D. Studentship | *IMT School for Advanced Studies Lucca, Italy* 2020

Graduate Scholarship | *Google and Facebook (now Meta) at AIMS-AMMI, Rwanda* 2019

Mastercard Foundation Scholarship | *African Institute for Mathematical Sciences, Cameroon* 2017

Award of Excellence | *Kwara Class of Honors, Kwara, Nigeria* Dec 2016

- With cash award for earning a First Class Honors in Mathematics at the University of Ilorin.

Silver Medal | *National Mathematical Center (NMC), Abuja, Nigeria* April 2016

- National Mathematics Competition for University Students (NAMCUS): Silver medal in individual category and first runner-up in universities team category.
- NAMCUS is a competition organized by NMC, Abuja, Nigeria for the next generation Nigerian mathematicians. Number of participants: Up to 30 universities, 4 contestants each. Focus areas: Algebra, Complex Analysis, Real Analysis, Functional Analysis and Differential Equations.

Undergraduate Scholarship | *MTN Foundation (MTNF) Scholarship Scheme, Nigeria* 2014 – 2016

Others | *Prizes at local/state and national primary and high school level mathematics competitions in Nigeria*

COMPUTER SKILLS

Programming (main)	○ **Python:** used since 2017 for scientific computing, deep learning and data analysis ○ **Julia:** formal use since January 2022 for most computational mathematics tasks ○ **LaTeX:** used since 2014 as only document preparation system ○ **SageMath:** used at AIMS-Cameroon in a course; occasional use ○ **Maxima:** used at AIMS-Volkswagen Stiftung Workshop on CAS (2017); occasional use
Frameworks	JAX, PyTorch, TensorFlow, FluxML, SciML, JuMP.jl, JuliaDiff, JAX, NumPy, SciPy, pandas
Toolbox	Visual Studio Code, PyCharm, JupyterLab, GitHub, TeXstudio, wxMaxima
Operating Systems	Linux, Windows

REFERENCES

Available on request.