**Fayaud Mezatio Tsafack, PhD  
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+1 819-452-3354 |** [**mezatiofayaud@gmail.com**](mailto:mezatiofayaud@gmail.com) **GitHub:** [**https://github.com/Fayaud**](https://github.com/Fayaud) **LinkedIn:** [**https://www.linkedin.com/in/fayaudmezatio/**](https://www.linkedin.com/in/fayaudmezatio/)

**Professional Title**

**Data Scientist | Applied Mathematician | Mathematics Educator**

Versatile profile in artificial intelligence, mathematical modeling, and data analysis with expertise in Python, SQL, cloud computing (Azure/AWS), and university-level teaching.

**Professional Summary**

Ph.D. in Computational Mathematics with experience in academic research, teaching, and applied data science projects. Strong background in statistical analysis, machine learning, and cloud infrastructure. Open to opportunities in data analytics, R&D, teaching, or tech-related roles. Recognized for analytical rigor, effective communication, and adaptability.

**Core Skills**

**Technical Skills:**

* Programming: Python, MATLAB, R, SQL, Bash
* AI & ML: Neural Networks, NLP, Computer Vision
* Tools: Power BI, Excel, Word, Git, LaTeX
* Analytics: Statistics, Inference, Modeling
* Operating Systems: Linux (Ubuntu), Windows Server

**Soft Skills:**

* Educational Communication (teaching, talks)
* Complex Problem Solving
* Research Project Management
* Cross-cultural Teamwork

**Research Experience**

**Graduate Researcher – AI-Based Artificial Heart Blood Flow Modeling**  
*University of Ottawa, Ottawa, Canada | 2019 – 2024*

* Developed Python code to solve benchmark mathematical models such as the driven cavity problem on a Navier-Stokes flow using neural networks.
* Applied neural network methods to simulate blood motion in a moving artificial domain.

**Graduate Researcher – Computer Vision and Image Recognition**  
*University of Ottawa, Ottawa, Canada | 2020*

* Implemented a ResNet model for image classification tasks on the MNIST dataset.
* Applied data augmentation and preprocessing to improve model generalization.

**Graduate Researcher – Analysis of a Time-Periodic and Nonlinear Navier-Stokes Flow**  
*University of Ottawa, Ottawa, Canada | 2019 – 2024*

* Analyzed existence and uniqueness of time-periodic solutions to nonlinear Navier-Stokes equations in a moving artificial heart domain.
* Investigated minimal regularity required on the membrane and boundary of the domain for solution existence.

**Graduate Researcher – Mathematical Modeling**  
*African Institute for Mathematical Sciences (AIMS-Rwanda), Kigali, Rwanda | 2018 – 2019*

* Used Python to solve epidemiological and reaction-diffusion models on a weekly project basis.
* Designed and implemented simulations for analyzing biological and infectious disease dynamics.
* Used R to analyze statistical data (Statistical Regression).

**Graduate Researcher – Numerical Approach to Reaction-Diffusion Models**  
*University of Yaoundé 1, Cameroon | 2015 – 2017*

* Developed MATLAB simulations for reaction-diffusion models using the Finite Elements Method (FEM).
* Conducted error analysis and stability studies.

**Teaching & Mentorship Experience**

**Assistant Teacher in Mathematics (University level)**  
*University of Ottawa, Ottawa, ON | 2019 – 2024*

* Led classroom discussions and graded assignments.
* Proctored mid-term and final exams.

**Mathematics Tutor (Math Help Center)**  
*University of Ottawa, Ottawa, ON | 2021 – 2024*

* Provided one-on-one tutoring in undergraduate Mathematics.
* Helped students strengthen problem-solving skills and conceptual understanding.

**Volunteer – Math Olympiad & CMS Math Camp**  
*University of Ottawa & AIMS-Rwanda | 2019 – 2024*

* Assisted with competition logistics and student supervision.
* Provided guidance to students participating in Mathematics competitions.

**Mathematics Instructor**  
Biyem-Assi, Yaoundé, Cameroon | 2017 – 2018

* Taught calculus, statistics, and algebra.
* Prepared undergraduate students for entrance exams in STEM fields.

**Education**

**Ph.D. in Mathematics**  
*University of Ottawa, Ottawa, Canada | 2019 – 2024*

**Thesis**: *Analysis of Time-Periodic Navier-Stokes Equations in a Moving Domain and Numerical Computations Using Neural Networks. Applications to Artificial Heart Blood Flow.*

**Completed Courses**: Machine Learning, Partial Differential Equations, Ordinary Differential Equations, Measure Theory, Functional Analysis.

**Summer School (AARMS)**  
*University of Prince Edward Island, Canada | 2019*

**Theme**: Dynamical Systems, Differential Equations, Special Functions

**Courses**: The Mathematics and the Science of Chaos, Fractals Using IFS, Rough Paths Theory.

**Master of Science in Mathematics**  
*African Institute for Mathematical Sciences (AIMS-Rwanda), Kigali, Rwanda | 2018 – 2019*

**Project**: Financial derivative of the Black-Scholes equations

**Thesis**: Toward Regularity Property for a Fractional Keller-Segel Model

**Courses**: Statistical Regression with R, Probability and Statistics, Big Data & Machine Learning, Biomathematics, Numerical Methods for Climate Sciences, Python programming, Remote Sensing for Climate Sciences.

**Master of Science in Mathematics**  
*University of Yaoundé 1, Cameroon | 2015 – 2017*

**Thesis**: Numerical Approach of a Non-Local Coupled System of Reaction-Diffusion

**Courses**: Numerical Analysis, Partial Differential Equations, Ordinary Differential Equations, Measure Theory, Functional Analysis, Sobolev Spaces and Distribution Theory, Advanced Probability, Inferential and Descriptive Statistics.

**Certifications**

* HLLQP – Harmonized Life License Qualification Program (REMIC, March 2025)
* Introduction to Azure Cloud Services (Microsoft, April 2025)
  + Introduction to fundamental cloud computing concepts and service models (IaaS, PaaS, SaaS).
  + Understanding the business benefits of cloud adoption, including security, flexibility, and cost reduction.
* Azure Fundamentals (AZ-900) (Microsoft, April 2025)
  + Proficient in basic Azure concepts, including compute, storage, and networking services.
  + Skilled in evaluating appropriate technology solutions to meet business needs.
  + Awareness of cloud security, privacy, compliance, and governance best practices.

**Publications**

* Arian Novruzi, Fayaud Mezatio. *Existence and Uniqueness of a Time-Periodic Strong Solution to Incompressible Navier-Stokes Equations in a Time-Periodic Moving Domain, Describing the Blood Flow in an Artificial Heart.* Journal of Mathematical Analysis and Applications, Article YJMAA\_129410, Feb 24, 2025. Available [here](https://www.sciencedirect.com/science/article/abs/pii/S0022247X2500191X)
* Fayaud Mezatio Tsafack. *Analysis of Time-Periodic Navier-Stokes Equations in a Moving Domain and Numerical Computations with Radial Basis Neural Networks: Application to Artificial Hearts Blood Flow.* Ph.D. Thesis, University of Ottawa, 2025. Available [here](http://hdl.handle.net/10393/50166)
* Fayaud Mezatio Tsafack. *Towards Regularity of a Fractional Keller-Segel Model.* Master’s Thesis, AIMS-Rwanda, 2019. Available [here](https://library.nexteinstein.org/wpcontent/uploads/2023/03/AIMSRW_Fayaud_Mezatio.pdf)

**Conferences & Talks**

* Baden-Württemberg-Africa Science Collaboration 2021 Virtual Conference (Talk)
* University of Ottawa Seminars (2019 – 2024)
* AIMS-Rwanda Seminars (2018 – 2019)

**Languages**

* English (Fluent)
* French (Fluent)