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## 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.

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## 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.

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## 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
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## 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 I, Cameroon | 2015 – 2017*

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

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## **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.

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## **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 I, 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.

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## 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.

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## 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](#)
- 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](#)
- Fayaud Mezatio Tsafack. *Towards Regularity of a Fractional Keller-Segel Model*. Master's Thesis, AIMS-Rwanda, 2019. Available [here](#)

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## Conferences & Talks

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

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## Languages

- English (Fluent)
- French (Fluent)