

Mohamed Sofiane SAGOUMA

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Profile

First-year Master's student in Scientific Computing with skills in numerical methods, high-performance computing, and programming. Passionate about applying computational techniques to scientific problems. Able to work independently and collaboratively to complete complex projects. Currently seeking an internship opportunity for the Master 2 thesis year.

Education

University of Reims Champagne Ardenne

Sep 2023 - June 2024

Master 1 of Science in Scientific Computing

Reims, France

- **Relevant Coursework:** Probability & Statistics (Python, R), Programming (C, C++), Continuum Mechanics, Finite Element (Python, FreeFem++, GMSH), Linear and Nonlinear Programming (Octave, Python), Theory of Distributions, Mathematical Modeling (Finite Difference Method, Octave, Python).

University of Algiers 1

Sep 2019 - Jul 2021

Master 2 of Science in Operations Research

Algiers, Algeria

- **Relevant Coursework:** Advanced graph theory, Heuristic and Metaheuristic Algorithms (Octave, Python), Optimization Techniques (linear programming, integer programming, dynamic programming, nonlinear programming, Multi-criteria optimization), Data mining (R, Python), Game theory, Queuing theory.

University of Algiers 1

Sep 2015 - Jul 2019

Bachelor of Science in Mathematics, Mathematics and computer Science

Algiers, Algeria

- **Relevant Coursework:** Programming and Data Structures, Algebra, Complex Analysis, Coding and Information Representation, Numerical Analysis, Mathematical Physics Equations, Probability, Measure and Integration, Random Processes.

Experience

Sonatrach

Apr 2021 – June 2021

Internship: Forecasting Analyst for the USA Market

Algiers, Algeria

- Analyzing data to extract readable and relevant insights.
- Making forecasts regarding the evolution of the LPG gas market on the American market.
- Comparison between statistical models and machine learning models for time series.

University of Algiers 1

Jan 2023 – Aug 2023

Part-time Teacher in Statistical Data Analysis

Algiers, Algeria

- Managed first-year computer science students.
- Organized exercises and graded exams.
- Implemented active teaching methods, taking into account different skill levels.

Projects

Impact of Geometry on the Solution of a Problem in Numerical Fluid Mechanics | *Fenicsx, GMSH, Pyvista, Paraview, Python*

- Numerical fluid simulation using the Stokes equations with the finite element method (FEniCSx).
- Study of the convergence of the approximate solution using Taylor Hood $\mathbf{P}^1 - \mathbf{P}^2$.
- Construction of a numerical Poiseuille profile in complex geometries by calibrating the numerical solution.
- Impact of geometry in a Poiseuille flow in 2D and 3D.
- Physical validation of Poiseuille flow solutions in 2D and 3D.

Simulation of heat in a space launcher | *FreeFem++, Python, GMSH*

- Study of heat diffusion inside a space launcher.
- Investigation of the impact of velocity, thermal conductivity of the material, and thickness of the insulation on the numerical solution.
- Reliability study of the numerical solution through cross-validation using FreeFem++ and Python.

A Optimization Problem for the Installation of a New Relay Antenna | *Octave*

- Minimization of the distance between clients and antennas based on nonlinear numerical methods.
- Comparison between several nonlinear optimization algorithms: Uzawa, projected gradient, and optimal step gradient method.
- Graphical visualization of the convergence of numerical methods towards the minimum.

Statistical Study of Risk Factors Influencing Heart Diseases | *R*

- Exploratory data analysis on heart diseases.
- Graphical analysis of the various relationships between factors and the presence of heart diseases.
- Application of statistical tests to determine factors influencing heart diseases.

Online Courses and Certifications

- Understanding Data Science (Jul. 2022) - [Datacamp](#)
- Introduction to Machine Learning (May. 2022) - [Kaggle](#)
- Intermediate SQL Queries (Aug. 2022) - [Datacamp](#)
- Tableau training (Aug. 2022) - [Simplilearn](#)

Skills

- **Programming Languages:** Python, C++, R, Matlab, Java, Julia, GMSH, Fenicsx, Paraview, FreeFem++, HTML, Linux.
- **Numerical Methods:** finite difference methods, finite element methods, and numerical optimization.
- **Data Visualization:** Matplotlib, Seaborn, Plotly, and Pyvista.
- **Machine Learning:** Numpy, Pandas, SciPy, scikit-learn, TensorFlow, Keras, PyTorch.
- **Numerical Simulation:** Dolfinx, ufl, PETSc, Basix, Meshio.
- **Soft skills:** Communication, Team Collaboration, Problem-Solving, Time Management, Critical Thinking, Attention to Detail, Team Collaboration, Adaptability, Creativity.

Languages

- **English** [Upper-Intermediate] - B2
- **German** [Basic] - A2
- **French** [Advanced] - C1
- **Arabic** [Native]

Achievements

🏆 **Kaggle Expert** - [Kaggle profil](#)

Earned the Kaggle Expert title by participating in numerous data science competitions, achieving high rankings, and contributing to the Kaggle community.